

# Forest Restoration, Carbon Offsets and Indigenous Cultural Burning

Jurisdictional Review for Xeni Gwet'in First Nation - Tintowh

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## **Purpose Statement**

Multi-value ecosystem restoration can help support Xení Gwet'in traditional practices and sovereignty, while also confronting catastrophic wildfire risk and climate change. The Caretaker Area and IR's present an opportunity for forest restoration according to community priorities and application of management techniques like traditional cultural burning. Management should support community values and provide benefits, both cultural and economic, to Xení Gwet'in citizens. The forest stewardship goals in the [Xení Gwet'in Forest Management Strategy \(2020-2024\)](#) comes with financial costs, some of which could be covered by revenue from carbon offsets that might be generated and sold through forest restoration activities. A proposed policy that is in the late stages of review, BC's Forest Carbon Offset Protocol v2, provides a new opportunity to address both the expressed desire to bring traditional cultural fire stewardship back to the land and to generate revenue through forest carbon offsets.

This report is a summary of recent policies and projects related to Indigenous-led forest carbon offsets and cultural burning. Existing projects might provide useful guidance and support the implementation of cultural burning and carbon offset projects by Xení Gwet'in.

## **Author's Perspective**

As a scientist, I am learning to take pause and reflect on how my training and identity affect how I see the world and what I put into it. This report is no different – I filtered the content here through my experience as someone raised outside of fire prone lands (the temperate forests of southern Ontario), as a trained Western scientist (I have two university degrees and am working on a third), and as a non-resident of Xení Gwet'in Traditional Territory (currently in Vancouver). I recognize that these perspectives may result in filtering and interpretation that might not resonate with Xení Gwet'in citizens or their place-based knowledge and experience. I have tried to write here in a way that highlights some of the important parts of complex forest and fire ecology, and the picture is not complete. Rather than writing an exhaustive review, I hope that this document will prompt conversation and give people information so people can bring carbon into forest restoration activities underway in Xení Gwet'in.

Sechanalyagh, Mike

## **Disclaimer**

This report was produced as part of the UBC Sustainability Scholars Program, a partnership between the University of British Columbia and various local governments and organisations in support of providing graduate students with opportunities to do applied research on projects that advance sustainability and climate action across the region.

This project was conducted under the mentorship of Xení Gwet'in Tintowh staff. The opinions and recommendations in this report and any errors are those of the author and do not necessarily reflect the views of Xení Gwet'in Tintowh or the University of British Columbia.

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## **Background**

### **Forest Carbon**

Carbon is one of the fundamental building-blocks of living things. In plants, it is an essential part of tissues, called biomass or organic matter. It is also part of the energy system that plants use to live and grow. Forest ecosystems can store large volumes of carbon in the wood and foliage of trees, other plants and in soils.

Intentional stewardship of mature dry forests to promote carbon storage would help mitigate global climate change. Direct or indirect actions can affect forest carbon storage. Commercial clear-cut harvesting directly removes much of the carbon stored in a forest stand, which may take decades or centuries to regrow. Indirect effects of forest stewardship can leave forests unhealthy and prone to large scale insect epidemics that kill many trees, leaving them dead and dry, which could fuel wildfire and result in large-scale emissions. Mature forests, mature grasslands and wetlands can rapidly store substantial amounts of carbon and hold it for long periods of time, so management that promotes these ecosystems are most beneficial from a carbon and climate change perspective.

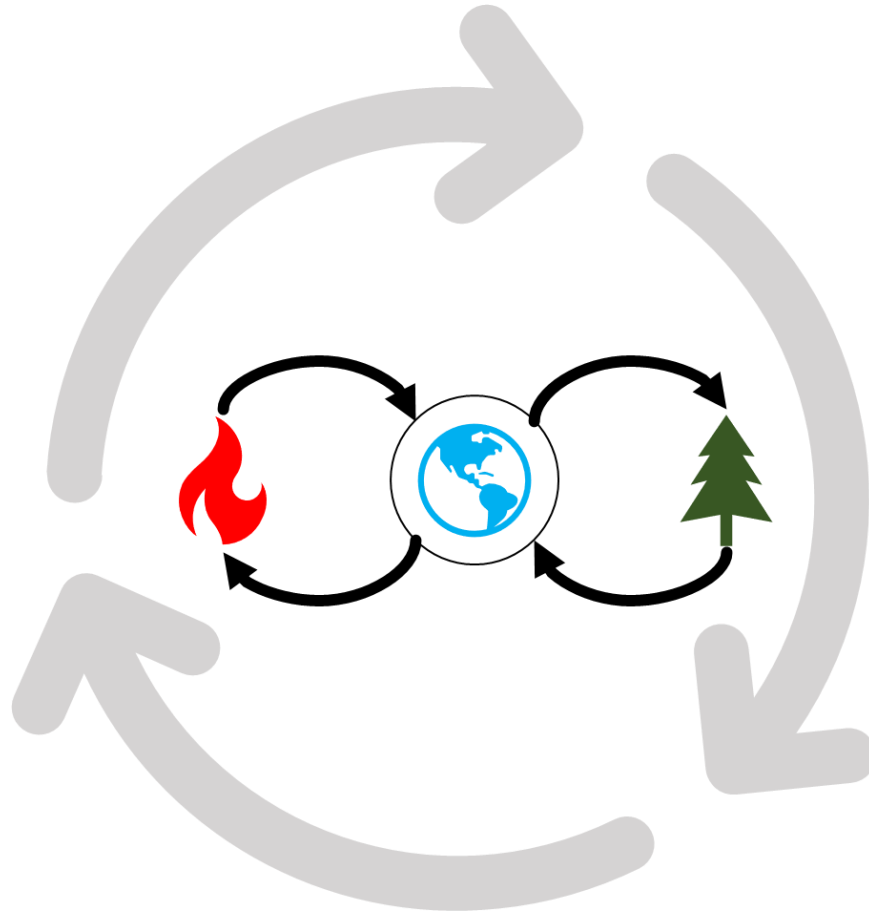


*Figure 1 – Trees are approximately 50% carbon by dry weight. Trees and forests are an important global carbon storage pool.*

### **Fire and Forest Carbon**

Vegetation and fire have an important reciprocal relationship and regulate dry ecosystems together. Through the process of photosynthesis, plants take carbon from the air (CO<sub>2</sub> gas), nutrients from the soil and water to make materials that they use to grow. Through the process of photosynthesis, fire releases the carbon within plants back into the atmosphere.

Carbon is stored in ‘pools’ within different parts of a forest ecosystem. These pools are parts of a forest ecosystem that we can use to sort forest fuels into parts that have similar carbon characteristics. Important pools are living versus dead and above versus belowground. The unique physiological features of different species also extend to their carbon characteristics – how much they may store, the rate they accumulate more and the amount they may release in a fire. Trees are important for carbon storage globally because they are highly productive in terms of the carbon they store, hold it for a long time (decades to centuries) and can be turned into wood products that keep stored carbon from being released back into the atmosphere.



*Figure 2 – The dry forest carbon cycle. Vegetation takes carbon from the atmosphere, and fire returns it and makes it available to vegetation once again.*

Forest and fire management have important implications for carbon storage in dry ecosystems. Leaving forests to grow allows for carbon storage but leaves forests vulnerable to high severity fires that would release most of that carbon. Thinning forests and removing small trees removes some carbon but can increase the growth rate of remaining trees and reduce fire risk. Maintaining areas as grasslands or open woodlands result in less carbon stored in those areas but can serve as fire breaks that safeguard surrounding forests from aggressive fires. Forest management activities certainly affect the carbon dynamics and management strategies could integrate carbon and other greenhouse gas management and have positive impacts on global climate change.

### **Intentional Fire Stewardship**

Dry forests rely on fire. Without fire plants grow densely together which causes competition and the development of dense fuels that enable fires to burn more intensely. This is part of the ‘fire paradox’ – by putting out fires people have caused fires to become worse<sup>1</sup>.

<sup>1</sup> Tymstra, C., *et al.* 2020. Wildfire management in Canada: Review, challenges and opportunities. *Progress in Disaster Science*. 5, 100045. [DOI: 10.1016/j.pdas.2019.100045](https://doi.org/10.1016/j.pdas.2019.100045)

Wildfires may pose direct threats, for example to people's homes, which is often how fire risk is presented – as a threat to lives and livelihoods. But fire also has important implications for forest health, wildlife, and global climate change. Climate change is driven by 'greenhouse gasses' that cause global warming. In central BC summers are likely to get longer, warmer, and drier in future, which will make fires more intense. In turn, climate change driven wildfires will lead to more greenhouse gas emissions, including CO<sub>2</sub>, acting as a positive feedback loop.

Greenhouse gas emissions from wildfires vary depending on how intensely a fire burns and the types of fuels that are burned. In dry ecosystems more and more woody fuels have built up because of fire suppression policies imposed by settler colonial governments. Recent large 'megafires' in BC like the 2017 Plateau Complex or Hanceville-Riske Creek Complex burned through these dense woody fuels that grew in the absence of fire and emitted vast amounts of greenhouse gasses.

Intentional reintroduction of fire in a good way can help reduce the likelihood of catastrophic fires. Indigenous fire stewardship, also known as cultural burning, has many benefits for land, water, carbon, and people. A broad umbrella term, Indigenous fire stewardship is a diverse set of traditional practices for applying fire to the land, often as an intergenerational practice informed by Indigenous knowledge embedded in place<sup>2</sup>. Many First Nations communities have cultural burning traditions, but these practices were criminalized by settler colonial governments. Indigenous fire traditions are being reclaimed and applied to the land again<sup>3</sup>.

Prescribed fire, also known as Rx fire or controlled fire, is a land management technique generally used to reduce forest fuels to mitigate catastrophic wildfire risk. Extensive planning by large teams and substantial investment of time, scientific expertise and resources are required to conduct prescribed fires. Prescribed fire is generally practiced and accepted as safe by government agencies.

Indigenous fire stewardship and prescribed fire both have the potential to produce benefits for forest health and forest carbon. Both are generally safe, as the proportion of escaped fires is very low<sup>4</sup>. Though fires directly result in carbon emissions, if applied carefully they can reduce the risk of future catastrophic wildfire emissions.

## Carbon Offsets

Careful forest restoration and stewardship activities are often more expensive and less profitable than commercial forest harvest, making restoration difficult to fund. Carbon offsets, also known as carbon credits, attach monetary value to trees and forests on the land, which can offset the higher costs and lower revenues of forest restoration.

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<sup>2</sup> Lake, FK., & Christianson, AC. 2019. Indigenous Fire Stewardship. In *Encyclopedia of Wildfires and Wildland-Urban Interface (WUI) Fires*. Manzello, S (Editor). Springer, Cham. [DOI: 10.1007/978-3-319-51727-8\\_225-1](https://doi.org/10.1007/978-3-319-51727-8_225-1)

<sup>3</sup> Nikolakis, W., & Ross, RM. 2023. Lighting the Path Forward: Understanding Social Value from Indigenous Fire (*Qwen*) Stewardship. Chapter 7 in *Social Value, Climate Change and Environmental Stewardship: Insights from Theory and Practice*. Springer, Cham. Pg 105-115. [DOI: 10.1007/978-3-031-23145-2\\_7](https://doi.org/10.1007/978-3-031-23145-2_7)

<sup>4</sup> Kolden, CA. 2019. We're Not Doing Enough Prescribed Fire in the Western United States to Mitigate Wildfire Risk. *Fire*. 2, 30. [DOI: 10.3390/fire2020030](https://doi.org/10.3390/fire2020030)

Carbon offsets are a way for individuals, organizations, and governments to reduce their impacts on global climate change and go 'carbon neutral'. Many industrial activities produce greenhouse gas emissions. Companies may try to reduce their emissions by increasing operational efficiency or shifting to non-emitting technologies but may not be able to achieve carbon neutral status on their own because of the nature of their industry. For example, forestry equipment like trucks and chainsaws emit greenhouse gasses and no zero-emission technologies are currently available at the required scale. Companies may offset the emissions that they cannot avoid by purchase carbon offsets (see Figure 3).

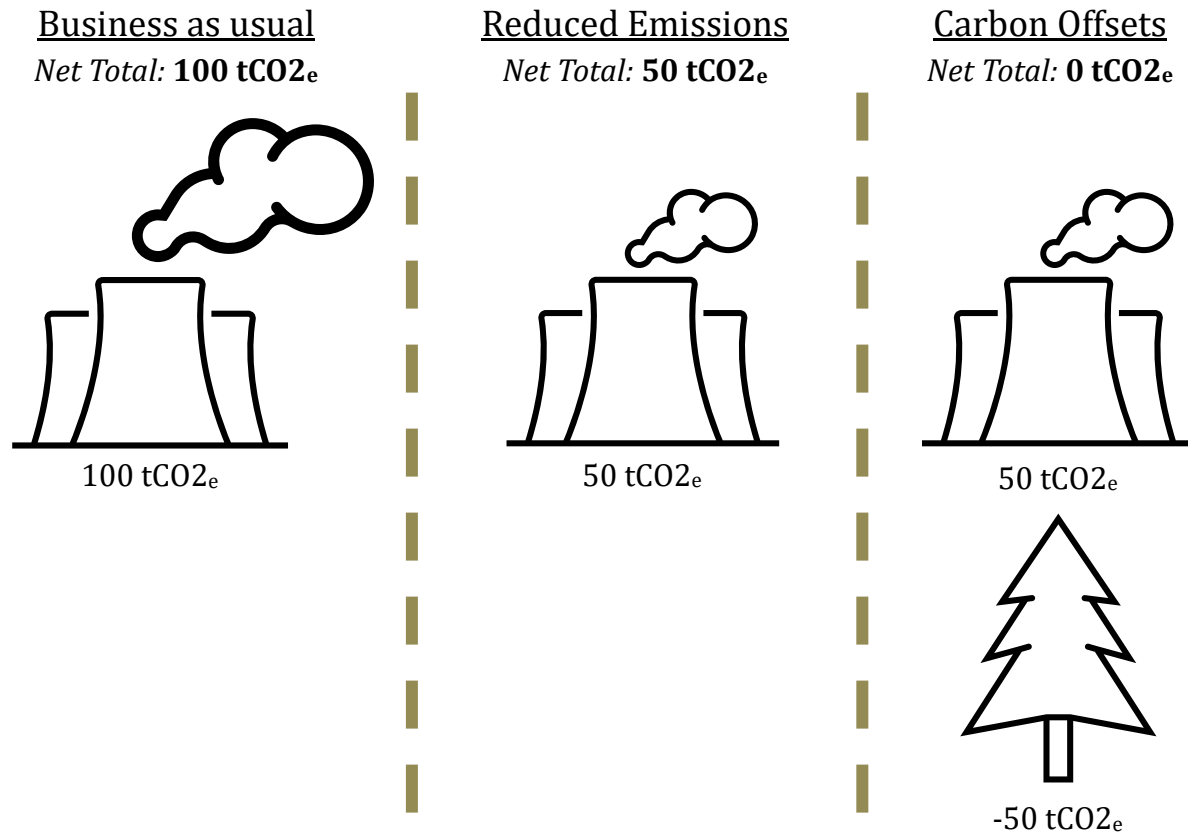
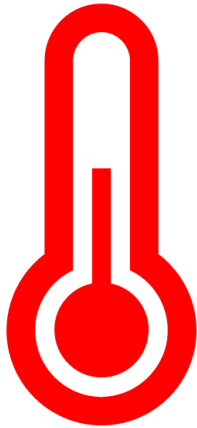


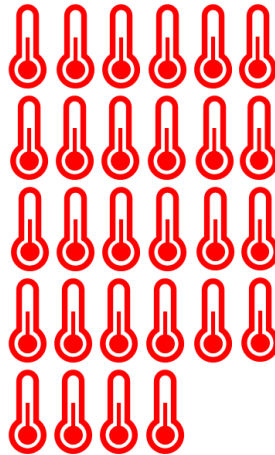
Figure 3 – Carbon offsets allow emitters to offset emissions that they cannot reduce and reach 'net zero' emissions from their operations.

Carbon offsets are expressed as tons of carbon dioxide equivalent gas: 1 offset = 1 ton CO<sub>2e</sub>. This is a simple and standard unit that captures emissions from all types of greenhouse gasses (see Figure 4). Fires emit many different greenhouse gasses, and more intense fires generally emit larger amounts of more potent greenhouse gasses, especially when large wood or other organic materials smoulder and are completely consumed.

Carbon Dioxide (CO<sub>2</sub>)  
**1 GWP**



Methane (CH<sub>4</sub>)  
**28 GWP**



Nitrous Oxide (N<sub>2</sub>O)  
**265 GWP**



Figure 4 - The three major greenhouse gasses and their Global Warming Potential (GWP), or the warming effect of a gas in the atmosphere. 1 GWP = 1 tCO<sub>2e</sub> = 1 carbon offset.

## Cultural Burning, Forest Stewardship and Carbon Offsets

The [Xeni Gwet'in Forest Management Strategy](#)<sup>5</sup> for stewardship includes cultural and prescribed burning and forest carbon management to generate revenue as tools to achieve desired forest conditions. The importance of wildfire management was highlighted by the Hanceville Riske-Creek and Plateau Complex megafires that burned in Tsilhqot'in territory in 2017<sup>6</sup>. Xeni Gwet'in traditional knowledge and laws guide forest stewardship, and all forest stewardship should benefit the lands, waters, creatures, and culture of Xeni Gwet'in. Revitalizing cultural burning and managing for forest carbon aligns with Xeni Gwet'in priorities.

The [Carbon Pricing Primer](#)<sup>7</sup> outlined three possible carbon offset strategies for Xeni Gwet'in: a conservation-based strategy on Title Lands, a conservation-based strategy in the Caretaker Area, and a catastrophic wildfire risk reduction strategy. The wildfire risk reduction strategy was speculative at the time of publication. With the release of the [draft BC Forest Carbon Offset Protocol v2](#)<sup>8</sup>, Canada's draft [Improved Forest Management on Private Land](#) offset protocol<sup>9</sup>, and the Climate Action Reserve - Climate Forward Initiative's [Reduced Emissions from Megafires](#) protocol<sup>10</sup> there is new potential to generate carbon offsets through forest restoration and catastrophic wildfire risk reduction.

<sup>5</sup> Cathro Consulting Ltd. 2020. Xeni Gwet'in Forest Management Strategy 2020-2024. [Link](#)

<sup>6</sup> Verhaeghe, C., Feltes, E., & Stacey, J. 2017. NAGWEDIŽK'AN GWANEŠ GANU CH'INIDŽED GANEXWILAGH: The Fires Awakened Us. Tsilhqot'in Report. [Link](#)

<sup>7</sup> Reynolds, N. 2020. Xeni Gwet'in Forest Management Strategy Appendix 5: Carbon Pricing Primer.

<sup>8</sup> 2022. (draft) British Columbia Greenhouse Gas Offset Protocol: Forest Carbon. BC Ministry of Environment and Climate Change Strategy. [Link](#)

<sup>9</sup> 2023. (draft) Improved Forest Management on Private Land. Environment and Climate Change Canada. [Link](#)

<sup>10</sup> Climate Forward. 2023. Reduced Emissions from Megafires (REM) Forecast Methodology. Climate Action Reserve. [Link](#)



## **Forest Carbon Offsets**

### **Offset Certification Process**

To establish and market carbon offsets, a project proponent must demonstrate how their project addresses three fundamental components: additionality, leakage, and perpetuity.

*Additionality:* the proposed project must include activities that will result in either greater storage or lesser emissions of greenhouse gasses *in addition to* storage or emissions reductions that would occur without the project. Additionality is quantified by comparing a 'business as usual' and proposed alternative scenario (see Figure 3).

*Leakage:* the proposed project must not result in an increase in emission outside the project area. In other words, avoided emissions from this project should not *leak* outside of what is proposed to be contained in an offset.

*Perpetuity:* the proposed project and resulting carbon storage or emission reductions should be *perpetual* and long-lasting. Offsets are often certified for 25 to 100 years.

High-quality carbon offsets with these qualities represent a strong justification for potential buyers to trust that purchasing an offset will produce a real and tangible environmental benefit.



*Figure 5 – Steps in the carbon offset certification process.*

Carbon offsets are certified through rigorous processes to ensure their legitimacy (see Figure 5). Before beginning this process, a project proponent should review and assess the requirements of potential offset protocols and their economics to ensure that a project is feasible. First Nations should take extra care to ensure that an offset project aligns with community priorities and values.

*First*, the project proposal should detail how proposed forest management activities in a chosen area will affect forest carbon. The proposal must address leakage, perpetuity, and risk factors (e.g., wildfire) that might result in unexpected damage to offsets. Additionality should be clearly demonstrated, as it serves as the basis for the number of offsets that can be certified and sold. A project retirement period, after which offsets are no longer certified, should be chosen to suit local conditions and the proposed management activities. Writing a carbon offset project proposal requires substantial technical expertise and time to prepare both a forest management plan and simulate carbon scenarios.

*Second*, independent third-party experts verify the project proposal. They review the plan for consistency with the desired standard, check for errors and confirm that the proposed activities will result in real environmental benefits that match the scale of the proposed number of carbon offsets. This process can be lengthy and expensive, particularly under high quality standards that require an additional audit of the verification report.

*Third*, offsets can be marketed and sold. Selling offsets constitutes an obligation to proceed with the proposed forest management activities. Various primary (government) or secondary (private) markets exist and are available depending on certification.

*Fourth*, projects are monitored according to a schedule determined by the chosen standard. Offset amounts may be adjusted depending on management or disturbance impacts. Monitoring occurs on a regular schedule using consistent methods.

*Fifth* and finally, at the end of the project lifetime offsets are retired. Once retired, the project ceases and all obligations under the project proposal cease. Buyers should purchase new offsets at this stage if they have not reduced their emissions.

There may be repetition in some of these steps during the lifetime of a carbon offset project. Monitoring activities may reveal additional offsets that can be marketed, or disturbances (e.g., wildfire or insects) may emit carbon so some offsets may be removed from market. Some standards allow for additional projects to be added to existing projects, so a project may include additional proposal and verification steps during its lifetime. In sum, the offset certification process is rigorous and flexible to allow for natural forest processes and for project proponents to build on success.

## **Forest Carbon Offsets in BC**

### **Legal and Regulatory Framework**

BC is a voluntary compliance jurisdiction, meaning that greenhouse gas emitters must report emissions over 10,000 tCO<sub>2e</sub>/year, but are not required to reduce or offset them. The provincial government committed to achieve [Carbon Neutral Government](#)<sup>11</sup>. To achieve carbon-neutral status, the provincial government purchased 600,000-700,000 tCO<sub>2e</sub> per year in offsets for a total of 8.7 million tCO<sub>2e</sub> between 2010 and 2022.

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<sup>11</sup> [website] BC: Carbon Neutral Government program requirements. [Link](#)

First Nations in BC that have implemented carbon offset projects first negotiated and signed [Atmospheric Benefits Sharing Agreements](#) (ABSA) with the provincial government<sup>12</sup>. The purpose of an ABSA is to “[clarify First Nations ownership and the right to sell tonnes of carbon in local or international carbon markets](#)”. ABSA require that a participating First Nation first signed a [Reconciliation Protocol agreement](#) with the provincial government<sup>13</sup>.

Carbon offset projects on public lands must meet the requirements of BC’s [Greenhouse Gas Industrial Reporting and Control Act \(GGIRCA\)](#)<sup>14</sup>, the [Greenhouse Gas Emission Control Regulation](#)<sup>15</sup> and [associated regulatory bulletins](#)<sup>16</sup>. Projects on private or Reserve lands may choose to use a provincial or voluntary offset standard.

Carbon offset projects must adhere to relevant protocols, and BC protocols are regulated under the [BC Offset Protocol Policy](#)<sup>17</sup>, which dictates the terms under which protocols are approved and reviewed. Notably, this policy states that “Rights-holders and stakeholders” may suggest BC consider implementing protocols from other jurisdictions to “streamline the process” of identifying and implementing offset protocols.

[BC Offset Units](#) are provincially certified according to protocols approved by the Director of the Ministry of Environment and Climate Change Strategy and are regulated through provincial oversight and independent third-party verification and validation. BC Offset projects go through two phases. The [development phase](#) involves feasibility assessment, project plan creation, and independent validation and submission<sup>18</sup>. The implementation and [management phase](#) involves monitoring, regular reporting, independent report verification, and submitting validated reports for issuance of BC Offset Units, which can then be sold<sup>19</sup>. In sum, offset units are issued after a thorough and appropriate plan is proposed and activities under that plan have occurred and been validated. [Project planning and reporting guidance and templates can be found here.](#)

The [BC Carbon Registry](#)<sup>20</sup> is where BC Offset Units are issued, sold and retired. It is administered by the provincial government, and primarily used by the provincial government to meet commitments to achieve public-sector carbon neutral status. Private buyers can use this registry to meet voluntary emission reduction or net-zero targets.

Currently, BC is not issuing new offsets or purchasing offsets from new projects. Offset purchasing policies and new protocols are actively under review<sup>21</sup>.

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<sup>12</sup> [website] BC: Atmospheric Benefit Sharing Agreements. [Link](#)

<sup>13</sup> [website] BC: Reconciliation & Other Agreements. [Link](#)

<sup>14</sup> BC Greenhouse Gas Industrial Reporting And Control Act. SBC 2014. [Link](#)

<sup>15</sup> BC Greenhouse Gas Emission Control Regulation. BC Reg 250/2015. [Link](#)

<sup>16</sup> [website] BC: Bulletins, legislation and guidance. [Link](#)

<sup>17</sup> 2022. British Columbia Offset Program Offset Protocol Policy. Ministry of Environment and Climate Change Strategy. [Link](#)

<sup>18</sup> [website] BC: Developing emission offset projects. [Link](#)

<sup>19</sup> [website] BC: Managing projects and offset insurance. [Link](#)

<sup>20</sup> [website] BC: Accessing the BC Carbon Registry. [Link](#)

<sup>21</sup> [website] BC: Selling carbon offsets to the Province. [Link](#)

Read more about BC Carbon Offset legal and regulatory frameworks:

- [BC Offset Protocol Policy \(2022\)](#)
- [BC GHG Offset Guidance Document](#)
- [BC Carbon Offset Pricing 2014-forward](#)
- [BC Offset Economic Analysis Report \(2015\)](#)

## **British Columbia Forest Carbon Offset Protocol v2**

The [BC Forest Carbon Offset Protocol v2](#) (FCOP2)<sup>8</sup> is a proposed offset protocol to generate BC Offset Units from forest management. It is intended to replace the Forest Carbon Offset Protocol v1 (FCOP1), which was repealed in 2015<sup>22</sup>. FCOP2 allows for three types of offset projects to avoid carbon emissions or increase forest carbon storage.

*Afforestation / Reforestation (AFF/REF):* establish new forests. Forests re-established on non-forested lands (e.g., urban, agricultural or industrial) to increase carbon storage.

*Conservation / Improved Forest Management (CONS/IFM):* forest stewardship. These projects include forest stewardship systems that promote forest carbon storage, reduce emissions, and may include commercial harvest. Activities may be designed to increase the rate of carbon storage, reduce emissions from management activities and/or increase long-term carbon storage. The allowable types of forest stewardship activities are broad, which allows project proponents to select activities that best suit their forests, capacity, and objectives. Forest management activities may reduce forest densities to 25% canopy cover at maturity.

*Avoided Conversion (AC):* prevent forest destruction. Certain forested lands (Municipal use fee-simple Crown lands) are eligible. In cases where there is a threat that forested lands will be converted to non-forest (e.g., urban, agricultural or industrial), protect carbon stored in those forests that would be emitted from land conversion.

Note that projects may include land parcels where the proposed activities could qualify under more than one project type (e.g., reforestation then harvest), and FCOP2 includes guidance on how to apply project types in such cases.

Project proposals (called Project Plans) under FCOP2 include a description of the project location, proposed activities and their effects on carbon storage or emissions. They must also assert that the proposed project passes three tests.

*Financial obstacles test:* Is revenue from offsets required for the project to proceed?

*Legal obstacles test:* Do proposed activities exceed all relevant regulatory requirements?

*Exclusive ownership test:* Are activities funded through another stream on a per-emission-unit basis?; & are activities credited under another protocol or regime? In other words, are the proposed offset units exclusively BC Carbon Offsets?

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<sup>22</sup> 2016. (repealed) Protocol for the Creation of Forest Carbon Offsets in British Columbia. BC Ministry of Environment and Climate Change Strategy. [Link](#)

Projects may be conducted on public lands, private lands or First Nations land. FCOP2 includes specific requirements demonstrating entitlement to access and conduct projects on public lands and who may benefit from offset units. First Nations projects may be on Reserves, Treaty Land, Treaty Settlement Land, and Aboriginal Title Land. Atmospheric Benefits Agreements will determine entitlement to sell and benefit from offsets, and it is not clear if/how these differ from [ABSAs](#).

FCOP2 projects have two phases: crediting period of 10 to 25 years, and the monitoring period of 100 years following the crediting period. Offset additionality in terms of total emission reductions or carbon storage will be summed during the crediting period and then are certified for sale. The monitoring period may include forest stewardship activities that were included in the project proposal (e.g., thinning). The proponent is to be responsible for monitoring that certified offsets remain during the monitoring period, which represents permanence. Monitoring under FCOP2 must meet the [ISO 14064-2](#) standard<sup>23</sup>.

The commitment period for FCOP2 offset projects could be up to 125 years, which introduces uncertainty and the possibility that an unexpected disturbance might change the project. FCOP2 addresses uncertainty through possibilities for limitations, reversals and through a contingency account. Project proponents should estimate the 'risk of reversal' for project benefits. The level and magnitude of risk determines the proportion of Offset Units that should be added to the Contingency Account at the start of offset sales. The Contingency Account is controlled by the provincial Director and acts as a form of insurance that protects all offset projects in the event of unexpected reversals, which in turn helps maintain the environmental benefits of all BC Carbon Offset projects.

FCOP2 first went out for public consultation in March 2021 and again in February 2023<sup>24</sup>. Initial public feedback was summarized in a [2021 report](#)<sup>25</sup>. [The BC Assembly of First Nations submitted an open response to FCOP2 public consultation](#)<sup>26</sup>. They provide a detailed critique of the draft with an emphasis on barriers to participation for Indigenous rights holders. They note that current language specific to First Nations is limited and does not include First Nations Rights and Title, which created uncertainty about applicability. They also note that traditional stewardship practices may be eligible for projects but not eligible for reversal risk reduction and associated reduction in contributions to the Contingency Account, which would result in reduced project profitability for projects using traditional forest stewardship as they are considered to have elevated risk. They

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<sup>23</sup> [website] ISO 14064-2:2019. Greenhouse gases – Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements. [Link](#)

<sup>24</sup> [website] BC: BC Offset Program consultations. [Link](#)

<sup>25</sup> 2021. Forest Carbon Offset Protocol: What We Heard Report. BC Ministry of Environment and Climate Change Strategy. [Link](#)

<sup>26</sup> BCAFN. 2021. British Columbia Assembly of First Nations Submission to: BC Climate Action Secretariat on the DRAFT BC FOREST CARBON OFFSET PROTOCOL VERSION 2.0. [Link](#)

maintain that carbon offsets will be an important tool for First Nations to conduct community-lead climate initiatives<sup>27,28</sup>.

The Gathering Voices Society reviewed FCOP2 for suitability with Xení Gwet'in and Yunesit'in priorities<sup>29</sup>. They found that challenges in implementing a carbon offset project under FCOP2 will likely come from: 1) limited forest inventory and carbon emissions data specific to these regions, 2) additional administrative burden from implementing the 'mixed' project type that would likely be the best fit for proposed forest restoration activities, & 3) restrictions or challenges timing burns under appropriate conditions to meet objectives given potential permitting requirements and the reawakening of traditional fire knowledge. They also highlight that it is not clear whether an ABSA would be required on Title lands in the Caretaker Area. Overall, they find FCOP2 to be a promising protocol that appears suitable for Xení Gwet'in and Yunesit'in forest restoration priorities.

FCOP2 is under internal review as of August 2023.

## **First Nation Carbon Case Studies in British Columbia**

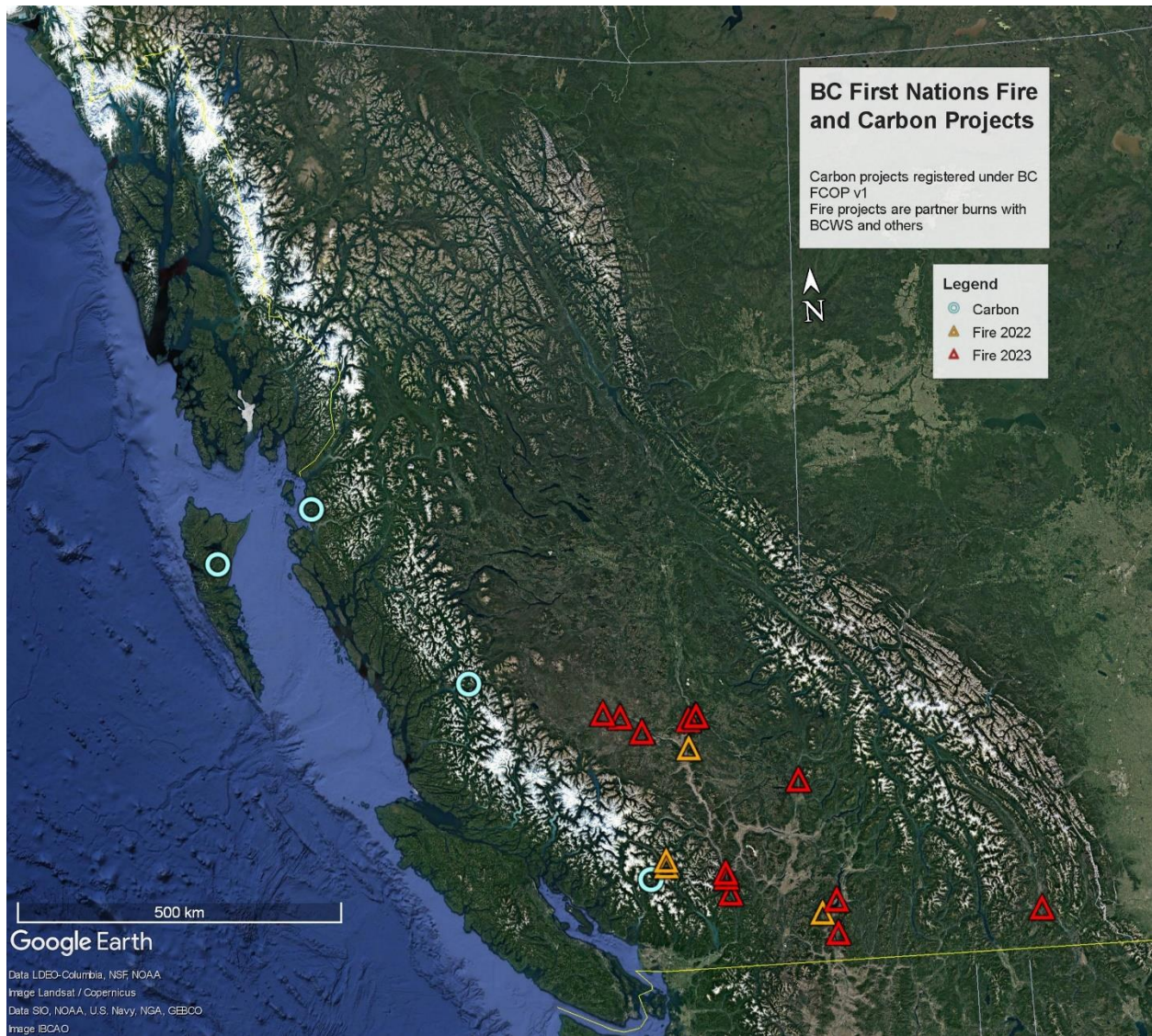
Case studies of First Nations carbon offsets in British Columbia are described below (see Figure 6). Four large-scale First Nations carbon projects were approved under FCOP1 and continue operating under grandfathered status after FCOP1 was repealed. These case studies highlight the potential for carbon offsets to generate revenue for self-directed First Nations forest stewardship according to community values and laws.

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<sup>27</sup> [website] British Columbia Assembly of First Nations: First Nations Carbon Offsets. [Link](#)

<sup>28</sup> Connolly, M. 2022. First Nations Carbon: A BCAFN Discussion Paper. BC Assembly of First Nations. [Link](#)

<sup>29</sup> Nikolakis, W., Welham, C., & Greene, G. Diffusion of indigenous fire management and carbon-credit programs: Opportunities and challenges for “scaling up” to temperate ecosystems. *Frontiers in Forests and Global Change*. 4: 967653. [DOI: 10.3389/ffgc.2022.967653](https://doi.org/10.3389/ffgc.2022.967653)



*Figure 6 – Case Studies in British Columbia. Carbon offset projects are circles and prescribed burns are triangles. Burns in red were conducted in spring 2023, and burns in orange were conducted in 2022. There were 13 burn projects, some including multiple burns, conducted in partnership between the BC Wildfire Service (BCWS) and First Nations in spring 2023.*

## Case Study: Cheakamus Community Forest

Sources: 30, 31, 32, 33, 34, 35

Improved forest management activities are the basis of carbon offsets sold by the [Cheakamus Community Forest](#). They have 10,000-15,000 tCO<sub>2</sub>e in verified offsets each year, which generates an annual average revenue of approximately \$100,000. Most offsets have been sold to the BC provincial government (80%), and others are purchased by other clients including the Resort Municipality of Whistler. This revenue supports the not-for-profit community forest to conduct forest management activities that are above the environmental standards set by BC, and to reduce their harvest volume by nearly 50% (41,170 m<sup>3</sup>/yr to 21,000 m<sup>3</sup>/yr). Most importantly, the revenue from offsets allowed Cheakamus to manage forests with flexibility to uphold the values of the Cheakamus Community Forest Society partners: Lil'wat Nation, Squamish Nation, and the Resort Municipality of Whistler.

The improved forest management practices that generate carbon offsets are part of a broader ecosystem-based management plan at Cheakamus. Practices are to 1) maintain a full range of age, species, and ecosystem representation across tenure area with objective of increasing representation of old growth over time; 2) use small cut blocks (1 to 5ha), preserve existing older structural components, & protect scenic vistas; 3) double minimum buffer distance around riparian and cultural areas; & 4) protect important wildlife habitat. These techniques are intended to emulate blow-down disturbance and support multi-value management over timber-only management, which was important to the partners. Note that BC community forests have minimum annual harvest targets imposed by the province, and activities under this plan were first negotiated with BC under an Atmospheric Benefits Sharing Agreement, signed in 2015, which reset the annual volume target and established the basis for selling carbon offsets to the BC government.

The legal and scientific basis for these offsets fell under FCOP1. Partners [Brinkman Group](#) and [Ecotrust Canada](#) worked with the community forest to develop the project plan and sell offsets. The project plan and estimated offsets were based on a timber supply analysis and forest carbon budget model. All partners note that the independent third-party verification process was difficult, lengthy, and costly. They also note that limited awareness of offsets in the voluntary private market and fluctuating offset prices made it difficult to maintain stable revenue estimates year-over-year, but that overall, the project is a success in that it has supported multi-value Indigenous-led management in the community forest.

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<sup>30</sup> [website] Cheakamus Community Forest: Carbon Project. [Link](#)

<sup>31</sup> Wood, SK. 2021/08/14. Meet the Cheakamus, the only community forest to develop carbon offsets in B.C. The Narwhal. [Link](#)

<sup>32</sup> [press release] 2015/04/28. Cheakamus Community Forest and B.C. sign carbon offset agreement. [Link](#)

<sup>33</sup> Dupuis, B. 2015/05/06. Cheakamus Community Forest set to sell carbon offsets. Pique News Magazine. [Link](#)

<sup>34</sup> [website] Brinkman Earth Systems: Cheakamus Community Forest. [Link](#)

<sup>35</sup> [website] BC Carbon Registry: Cheakamus Community Forest Carbon Project (ID: 10400000026363). [Link](#)



## Case Study: Great Bear Rainforest

Sources: 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47

This ground-breaking project is internationally renowned for being the first atmospheric benefits sharing agreement related to forest carbon that was signed between a government and Indigenous community. The ABSA<sup>12,39</sup> that enabled official progress on the project was signed by BC and Coast First Nations in 2009. A priority in the agreement was to generate revenue to support forest protection and land stewardship priorities established by the partner Coast Nations.

The novel partnership, support for broader stewardship, and offsets centering in a globally significant rainforest, home to the unique and beautiful Spirit Bear, makes the offsets sold very 'charismatic'. Client companies and governments pay a premium to purchase these offsets and attach the positive messaging and values with their branding. For example: *'The project is unique in that it is the only Improved Forest Management Project of its scale that has equal involvement with the First Nations and the BC Government, strong legal and policy foundations, and robust data to support the quantification of ecosystem services. This is not simply a conservation project; it is a model for sustainable development in an economically valuable but ecologically and culturally vulnerable area.'*<sup>43</sup> The Coastal First Nations cite the project's charismatic nature as an important component because it allows them to choose buyers who support their values, rather than indiscriminate buyers looking for cheap public relations support. *"A company that purchases carbon credits from Coastal First Nations is almost certain to tell our story in their communications. It will be important that our communities are comfortable with the ethics and business practices of any potential buyer."*<sup>38</sup>

Offsets are based on improved forest stewardship through protection of coastal rainforests that were designated, sanctioned, or approved for commercial harvest. Avoiding harvest in this ecosystem supports continued growth and carbon sequestration at high rates and volumes in mature stands, that would otherwise require centuries to develop to the same rate should the

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<sup>36</sup> Thompson, J. 2020/01/31. Why \$25 million of carbon credits from the Great Bear Rainforest are sitting on the shelf. The Narwhal. [Link](#)

<sup>37</sup> [website] Coastal First Nations Great Bear Initiative: Carbon Credits. [Link](#)

<sup>38</sup> 2010. Forest Carbon Credits – Economic Revenue for Forest Conservation. Coastal First Nations. [Link](#)

<sup>39</sup> 2011/09/28. Atmospheric Benefit Sharing Agreement between British Columbia and Central and North Coast First Nations. [Link](#)

<sup>40</sup> [presentation] Oxley, D., & Warren, D. 2022. Coastal First Nations – The Great Bear Rainforest Carbon Project. [Link](#)

<sup>41</sup> Berman-Hatch, F. 2022/02/04. Great Bear Rainforest offsets key to AMS carbon neutrality announcement. The Ubysey. [Link](#)

<sup>42</sup> [pamphlet] Great Bear Forest Carbon Project. Offsetters. [Link](#)

<sup>43</sup> [website] Offsetters Community: Great Bear Forest Carbon Project. [Link](#)

<sup>44</sup> [website] Great Bear Business Corporation: Great Bear Carbon Credit Corporation. [Link](#)

<sup>45</sup> [website] BC Carbon Registry: The Great Bear (Haida Gwaii) Forest Carbon Project (ID: 104000000011559). [Link](#)

<sup>46</sup> [website] BC Carbon Registry: The Great Bear (North and Central-Mid Coast) Forest Carbon Project (ID: 104000000012798). [Link](#)

<sup>47</sup> [website] BC Carbon Registry: The Great Bear (South Central Coast) Forest Carbon Project (ID: 104000000011319). [Link](#)

forests be clear-cut and planted. Offset project plans, verification, and validation are divided into three regions: Haida Gwaii, North and Central-mid Coast, and South Central Coast.

The project is administered through the Great Bear Carbon Credit Corporation<sup>44</sup>. This corporation, in which all member Coast Nations hold shares, allows for centralized administration, sales, and revenue sharing between all partners.

Under this agreement the project can generate up to 1 MtCO<sub>2e</sub> in offsets per year and direct 65-80% of the revenues to forest and marine stewardship. As of 2022 the project generated \$60 million in sales, which directly supported the establishment of seven new stewardship departments in partner Nations and 140 jobs related to stewardship.

As of 2020, approximately \$25 million (1.9 MtCO<sub>2e</sub>) in offsets remained unsold. Other than the BC government who buys offsets as part of their commitment to carbon-neutral government, there has been just moderate interest from buyers on international markets. Currently, BC is a voluntary offset market so polluters within the province may choose to purchase offsets but are not required to do so. Buyers on international markets are somewhat hesitant to purchase Great Bear carbon offsets because they are certified under FCOP1, which is proprietary to BC, rather than an internationally recognized standard (e.g., the Verified Carbon Standard). However, interest in offsets continues to increase especially as BC develops its new standard, Canada develops a national standard, and as general societal awareness of carbon offsets increases.

## **Forest Carbon Offsets Outside British Columbia**

### **Canadian Federal Offset Protocol**

Canada's federal government is in early stages of developing federal carbon offset protocols. They recently released a draft protocol on Improved Forest Management on Private Land<sup>9</sup>, which would allow proponents to generate carbon offsets from forest management under federal [Greenhouse Gas Offset Credit System](#)<sup>48</sup> regulations. Like the BC FCOP2, this protocol is compliant with the ISO 14064-2 standard<sup>23</sup>. This protocol applies to First Nations reserve lands and privately held lands, but not to public land. It explicitly calls for the proponent to address the impacts of proposed management activities on natural disturbances including wildfire and allows for deforestation to create fuel breaks where the action is justifiable. Projects that are Indigenous-led and include FireSmart areas are eligible for discounts on reversal accounts, which appears to be an incentive for First Nations to implement FireSmart treatments on reserves. This protocol is not yet finalized but appears to be a promising avenue for Indigenous-led catastrophic wildfire risk reduction.

The Improved Forest Management on Private Land protocol is under public consultation as of August 2023.

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<sup>48</sup> [website] Government of Canada: Canada's Greenhouse Gas Offset Credit System: Regulations. [Link](#)

## Cultural Fire Credits in Australia

The Firesticks Alliance and Aboriginal Carbon Foundation collaborated to establish the Cultural Fire Credit program<sup>49,50</sup>. The main objective in establishing this program was to create a self-funding mechanism for Aboriginal communities to practice cultural burning and cultural revitalization. Cultural burning also provides a wide variety of environmental and social benefits in addition to cultural benefits. Any interested Aboriginal community may participate in the Cultural Burning Credit program. They may also receive support and mentorship from the well established [Firesticks Alliance](#), who are an Indigenous organization that aim to support Indigenous-led cultural burning in Australia. Cultural Fire Credits can be purchased through the Catalyst Markets trading platform<sup>51</sup>.

## International Carbon Standards and Markets

Carbon markets may be primary (government run) or secondary (non-government). The BC Carbon Registry is available to international clients, but primarily sells to the provincial government. A variety of international secondary carbon markets have emerged in the 2000's. These markets host the certification, sale, and retirement of offsets certified under proprietary standards. As such standards emerge there has also been a push to develop internationally consistent and recognizable standards for carbon offset certification, such as the ISO 14060 family<sup>52</sup> and the International Carbon Reduction and Offsetting Accreditation<sup>53</sup>.

It is important for project proponents to seek certification under a standard that applies to their jurisdiction, has protocols that suit their plans and has an interested client base who will be likely to purchase their offsets. Voluntary markets allow interested parties to purchase offsets if they desire, and compliance markets serve clients who are required to offset their emissions by law in their jurisdiction. Table 1 includes examples of widely used and well reputed international carbon markets relevant to BC.

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<sup>49</sup> [website] Firesticks Alliance: Cultural Fire Credit. [Link](#)

<sup>50</sup> [website] Aboriginal Carbon Foundation: Cultural Fire Credit. [Link](#)

<sup>51</sup> [website] Catalyst Markets: Cultural Fire Credit Project. [Link](#)

<sup>52</sup> [website] Blue Carbon Projects: ISO 14060 Family. [Link](#)

<sup>53</sup> [website] ICROA: Accrediting Best Practice in Carbon Offsetting. [Link](#)

*Table 1 – Select international carbon standards are markets that are widely used, have a good reputation, and have protocols for forest carbon projects. The Nature Conservancy of Canada used the Verified Carbon Standard for their Darkwoods carbon offset project<sup>54</sup>. Yunesit’in First Nation and the Gathering Voices Society are considering the Climate Action Reserve - Climate Forward Initiative’s ‘Reduced Emissions from Megafires’ standard<sup>10</sup>.*

<b>Certification Name</b>	<b>Credits Issued</b>	<b>Market</b>	<b>Voluntary</b>	<b>Compliance</b>
<i>Verified Carbon Standard (aka. VERRA Standard)<sup>55</sup></i>	1,148M (as of 2023)	<a href="#">VERRA Registry</a>	Yes	
<i>Climate Action Reserve<sup>56</sup></i>	170M (as of 2021)	<a href="#">Climate Action Reserve</a>	Yes	California, Washington
<i>Gold Standard<sup>57</sup></i>	151M (as of 2020)	<a href="#">Gold Standard Registry</a>	Yes	

## **Indigenous Fire Stewardship**

Many Indigenous peoples in what is now called British Columbia across most other parts of the world traditionally included fire in land stewardship practices. Indigenous fire stewardship practices, also known as cultural burning, typically produced benefits for lands, waters, wildlife and people in physical, cultural and spiritual was. In dry forest ecosystems in British Columbia, Indigenous fire stewardship was most commonly in the form of low intensity burns during spring or fall when conditions were cooler and moister than during the wildfire season. People with experience and knowledge conducted burns under appropriate conditions, and the practice was shared between generations through storytelling and sharing the experience of burning.

Indigenous fire stewardship is different from prescribed fire, also known as controlled fire. Prescribed fire is a tool to consume wildfire fuels, and is conducted with sufficient wildfire suppression resources on hand to action a fire if it should escape pre-determined boundaries. The most common objective for prescribed fires is to reduce wildfire risk. Prescribed fires require extensive scientific knowledge, training, certification and planning, and is recognized by government institutions and insurance agencies as a safe practice.

Indigenous fire stewardship and prescribed fire are both intentional fire use, but they differ in their objectives, underlying knowledge systems and acceptance by government bodies. These present concerns from and barriers to more widespread application of Indigenous fire stewardship, which is a priority for Xení Gwet’in First Nation forest stewardship.

<sup>54</sup> [website] Nature Conservancy of Canada: Carbon: Frequently Asked Questions. [Link](#)

<sup>55</sup> [website] VERRA: Verified Carbon Standard. [Link](#)

<sup>56</sup> [website] Climate Action Reserve. [Link](#)

<sup>57</sup> [website] Gold Standard: Carbon Offsetting Guide. [Link](#)

## First Nation and Partner Burn Case Studies in British Columbia

Case studies of First Nations and partner burns in British Columbia are described below (see Figure 6 & Table 2). Most burns were prescribed fires conducted with the BC Wildfire Service as part of the Cultural Burning and Prescribed Fire program<sup>58</sup>, and momentum is building towards more burns over larger areas. These case studies highlight the potential for First Nations to work with partners to apply fire to the land for a variety of benefits including catastrophic wildfire mitigation.

*Table 2 – First Nation and partner burns in British Columbia. Note that 2023 was reviewed extensively, and select cases were reviewed from previous years.*

Location	First Nation	Date	Area (ha)	Objectives	Sources
<i>2023 Prescribed burns in partnership between a First Nation and BCWS</i>					
Medicine Creek Tsinstikeptum IR 12 (Gallagher's Canyon)	Westbank First Nation	April 5, 2023	18	Grassland restoration & maintenance	59, 60, 61, 62
ʔaąam Community Lands (Kootenay IR 1)	ʔaąam	April 28, 2023	1,200	Habitat restoration, berry & plant production, grassland maintenance & wildfire risk reduction	63, 64, 65, 66, 67, 68, 69

<sup>58</sup> [website] Cultural Burning & Prescribed Fire. [Link](#)

<sup>59</sup> King, J. 2023/04/05. Prescribed burn with cultural significance in Kelowna. Global News. [Link](#)

<sup>60</sup> King, J. 2023/04/05. Indigenous-led prescribed burn with cultural significance in Kelowna, B.C. Global News. [Link](#)

<sup>61</sup> Webster, B. 2023/04/05. Smoke visible in Kelowna during Westbank First Nation prescribed burn. Kelowna Capital News. [Link](#)

<sup>62</sup> Reeve, M. 2023/04/03. Prescribed burn planned for south of Black Mountain. Castanet. [Link](#)

<sup>63</sup> Crawley, T. 2023/05/08. Fire on the landscape: ʔaąam prescribed burn puts Ktunaxa knowledge into practice. Revelstoke Review. [Link](#)

<sup>64</sup> Columbia Basin Trust. 2021/12/05. Reviving an ecosystem with ancestral techniques. e-know.ca. [Link](#)

<sup>65</sup> [Tweet] Gray, RW. 2023/05/24. [Link](#)

<sup>66</sup> [announcement] ʔaąam Prescribed Burn - Open House. [Link](#)

<sup>67</sup> Henderson, W. 2023/04/25. Prescribed burn planned to begin near Aq'am Friday. 102.9 Rewind Radio. [Link](#)

<sup>68</sup> BC Wildfire Service. 2023/04/25. Ecosystem restoration burn planned near ʔaąam. [Link](#)

<sup>69</sup> Stueck, W. 2023/05/28. How a B.C. Indigenous community is reintroducing traditional fire knowledge and practices to manage land vulnerable to wildfires. The Globe and Mail. [Link](#)

Location	First Nation	Date	Area (ha)	Objectives	Sources
NW of Boston Bar Airport	Boothroyd Indian Band	May 8, 2023	45	Invasive plant removal & promote culturally significant plants	70, 71
Williams Lake Community Forest	Williams Lake First Nation	April 21, 2023	75	Reduce forest density & increase fire resilience	72, 73, 74, 75
'within the community of T̓ideldel' and along Hwy 20	T̓ideldel First Nation (& TNG / Yunesit'in?)	April 24, 2023	119	Wildfire risk & fuels reduction	76, 77
Chu Chua	Simpchw First Nation	March 27, 2023	22	Wildfire risk reduction	78, 79
Lytton area, on and off reserve	Lytton First Nation & Skuppah Indian Band	March 10 - April 11, 2023	104 total	4 burns; fuel reduction, ecosystem restoration, support traditional fire use	80
Fox Mountain, Williams Lake	Williams Lake First Nation	Piles: March 24 - Nov 30, 2023; Burn: April 12-28, 2023	Thin/Pile: 9.7; Burn: 24	Reduce wildfire hazard, restore overly dense Douglas-fir forest & grow capacity and knowledge for cultural and prescribed burning	81, 82

<sup>70</sup> Moodley, K. 2023/05/08. Boothroyd Indian Band conducting cultural burn northwest from Boston Bar Airport May 8. Hope Standard. [Link](#)

<sup>71</sup> BC Wildfire Service. 2023/05/09. Boothroyd Indian Band to conduct cultural burn. [Link](#)

<sup>72</sup> BC Wildfire Service. 2023/04/20. Prescribed burn planned for Williams Lake Community Forest. [Link](#)

<sup>73</sup> 2023/04/19. Prescribed burn planned for Williams Lake Community Forest. The Williams Lake Tribune. [Link](#)

<sup>74</sup> Lamb-Yorski, M. 2023/04/27. Prescribed burn taking place in Williams Lake Community Forest Thursday, April 27. The Williams Lake Tribune. [Link](#)

<sup>75</sup> Matthews, P. 2023/04/21. Prescribed Burn Scheduled for Williams Lake Community Forest. My Cariboo Now. [Link](#)

<sup>76</sup> BC Wildfire Service. 2023/04/24. Prescribed burn planned for T̓ideldel. [Link](#)

<sup>77</sup> Schulze, A. 2023/05/27. Prescribed burns planned for Highway 20 through April. CFJC Today. [Link](#)

<sup>78</sup> BC Wildfire Service. 2023/03/23. Prescribed burn scheduled for Chu Chua. [Link](#)

<sup>79</sup> Kaisar, V. 2023/03/21. BC Wildfire Service to conduct 22 hectare prescribed burn in Chu Chua next week. Radio NL. [Link](#)

<sup>80</sup> BC Wildfire Service. 2023/03/10. Prescribed burns scheduled for Lytton Area. [Link](#)

<sup>81</sup> BC Wildfire Service. 2023/03/06. Wildfire Risk Reduction burn planned near Fox Mountain. [Link](#)

<sup>82</sup> BC Wildfire Service. 2023/04/13. Prescribed burn planned for Fox Mountain. [Link](#)

Location	First Nation	Date	Area (ha)	Objectives	Sources
Botanio Park & Stampede Grounds, Williams Lake	Williams Lake First Nation	April 4 - April 21, 2023	9.5	Reduce wildfire risk within city limits, reduce invasive plants & promote native plants	83
Ellis Creek & Penticton Creek	Penticton Indian Band	March 15, 2023	146.5	Reduce WUI fuel load for community safety	84
Skuppah 2 IR & Inklyuhkinatko IR	Skuppah Indian Band	February 16, 2023	4.5	Wildfire risk reduction & supporting traditional fire use	85
Highway 20 between Lee's Corner lookout and Chilanko Forks	Tsilhqot'in Nation (TNG?)	April 3 - April 30, 2023	n/a	Reduce fuel hazard & protect infrastructure w/o	86
West boundary of Yunesit'in IR	Yunesit'in First Nation	April 20 - May 5, 2023	30	Grassland restoration & "opportunity for BCWS staff to work with the community of Yunesit'in"	87
<i>2022 Prescribed burns in partnership between a First Nation and BCWS (notable cases)</i>					
Owl Creek Drainage	Lil'wat Nation	July 20, 2022	13.9	Increase berry production, silviculture, harvest / traditional teaching opportunities, protection of environmental / cultural values & wildfire risk reduction	88, 89

<sup>83</sup> BC Wildfire Service. 2023/03/29. Prescribed burn for Boitanio Park and Stampede Park Grounds. [Link](#)

<sup>84</sup> BC Wildfire Service. 2023/02/23. Prescribed burn scheduled near Penticton. [Link](#)

<sup>85</sup> BC Wildfire Service. 2023/02/15. Prescribed burn scheduled for Skuppah Indian Band. [Link](#)

<sup>86</sup> BC Wildfire Service. 2023/03/27. Prescribed burn for wildfire reduction along Highway 20. [Link](#)

<sup>87</sup> BC Wildfire Service. 2023/04/19. Prescribed burn planned near Yunesit'in. [Link](#)

<sup>88</sup> BC Wildfire Service. 2022/07/04. Prescribed burn scheduled near Pemberton. [Link](#)

<sup>89</sup> BC Wildfire Service. 2022/07/20. Prescribed burn continues near Pemberton. [Link](#)

Location	First Nation	Date	Area (ha)	Objectives	Sources
Esk'etemc Community Forest	Esk'etemc First Nation	Sept 14, 2022	57	Reduce shrubs and suppressed trees, create fuels mosaic & grassland maintenance	90, 91
THLB, Munro FSR	Penticton Indian Band, Okanagan Nation Alliance, Gorman Brothers Ltd. & Okanagan Shuswap Resource District	Oct 17, 2022	170	Wildfire risk reduction, silviculture, protect and enhance ecological and cultural values, fibre recovery	92, 93, 94, 95
River Valley, near Mt Currie	Lí Íwat Nation	April 23, 2022	80-100, max 119	Wildfire risk reduction, grassland restoration and maintenance, reduce tree and shrub cover, demonstrate prescribed burning to Lil'wat citizens, protection of log cabins	96

### Case Study: ʔaq'am - Spring 2023

Sources: 63-69

Landscape restoration project involving pre-treatment then prescribed fire lead by the ʔaq'am Lands Department. Partners included the Columbia Basin Trust, Robert Gray, Colleen Ross, BC Wildfire Service, the City of Cranbrook, City of Kimberley and possibly others. Project goals were diverse, including habitat restoration (e.g., flammulated owl, Lewis' woodpecker & little brown bat),

<sup>90</sup> BC Wildfire Service. 2022/09/12. Wildfire risk reduction burn planned for Esk'etemc Community Forest. [Link](#)

<sup>91</sup> [website] Plan H: "Caretakers of Esk'etemculucw:" How Esk'etemc sustainable resource and environmental management practices lay in their deep connection to the land. [Link](#)

<sup>92</sup> BC Wildfire Service. 2022/10/11. Prescribed burn scheduled near Peachland. [Link](#)

<sup>93</sup> [website] Sylix Okanagan Nation Alliance: Munro Prescribed Burns. [Link](#)

<sup>94</sup> Bonnett, N. 2022/03/16. Munro Prescribed Burn. [Link](#)

<sup>95</sup> Gibson, R. 2022/10/18. Controlled burn underway outside of Peachland. Castanet. [Link](#)

<sup>96</sup> Lí Íwat Nation. 2022. Lí Íwat Nation River Valley Prescribed Fire Project. [Link](#)



enhanced berry production, grassland maintenance, wildfire fuels abatement and reduction of catastrophic wildfire risk over an area of 1,300 ha. Site preparation work included logging and cleanup efforts. Notably, this project was substantially larger than other First Nation/BC Wildfire Service partner burns and was successful, thus hopefully it will serve as an example of potential for future projects.

*“And it’s done differently; as an Indigenous community, really taking that ownership and stewardship over our land and working towards implementing the practices that is right for our community and then obviously reaching out to our neighbours and working together on that.” - Michelle Shortridge, Director of Operations and Community Services with ʔaąam*

A prescribed burn on April 28, 2023 was the culmination of the 5 year project. 1,200 hectares were burned on ʔaąam Community Lands (Kootenay IR1). Post-fire monitoring was conducted by Guardians in areas affected by bark beetle infestation.

### **Case Study: Munro FSR - Penticton Indian Band - Fall 2022**

Video: [Munro Prescribed Fire Case Study - Cultural and Prescribed Fire - 2023](#)

Sources: 92-95

Wildfire risk reduction project involving notable partnership between First Nations (Penticton Indian Band & Okanagan Nation Alliance), Gorman Brothers (a forest industry partner) and BC Wildfire Service (among other government agencies). 170 hectares of forest were burned with ecocultural and industrial objectives. Almost 10,000 m<sup>3</sup> of fibre has been harvested during the project (7,000 m<sup>3</sup> merchantable & 2,400 m<sup>3</sup> pulp). The project also contributed to a landscape-level fuel break by connecting the burn perimeter of two recent wildfires (2017 & 2018). Partners view this project as being successful and hold it as a positive example of First Nation / industry / government partnership.

### **Case Study: Owl Creek Drainage - Lil’wat Nation - Summer 2022**

Video: [Owl Creek Cultural Burn Case Study - Cultural and Prescribed Fire - 2022](#)

Sources: 88, 89, 96

Forest restoration project involving pre-treatment (clearcut) then prescribed fire (broadcast) lead by Lí Íwat Forestry Ventures and supported by the Salish Nation Unit Crew. Two blocks were treated then burned separately (5.2 and 8.7 ha). Burns were low intensity surface fires. Notably, these burns were conducted in July, which is unusually late in the season for ideal prescribed burn conditions and were delayed because 2022 was unusually wet and cool, and also the blocks are within mid-high elevation montane forests that reach burn conditions later in the season. Part of this project involves assessing the impact of the burn on berry production by comparing burned and unburned plots from within the same blocks.

## Case Study Themes & Lessons Learned

The majority of burns in BC were in partnership between BC Wildfire Service and one or more First Nations. The BC Wildfire Service has invested more in such partnerships in recent years<sup>58</sup> to fulfill recommendations made in the [Abbott & Chapman \(2018\)](#) report<sup>97</sup>.

Of these burns, most were exclusively in grasslands. Some that burned in forests, which were pre-treated (e.g., by thinning from below & surface fuel abatement) to produce safe burning conditions. Note that pre-treatment incurs additional costs per hectare (e.g., ʔaʔam 2023 at approx \$1,300/ha and part of the area was left untreated for cost).

The most common objective was wildfire risk reduction, and cultural significance was explicitly considered in some way in most cases.

Language around cultural exchange varied significantly between burns. Often this is phrased as ‘demonstrate prescribed burning to First Nations citizens’, which implies that BCWS was driving much of the decision making around burn planning and objectives. Language was very distinct in the case of Tsilhqot’in: “...opportunity for BCWS staff to work with the community of Yunesit’in”, which implies a stronger cultural foundation for the overall partnership and burn plan.

Burns were often on reserve lands, but are increasingly on public lands near reserves to address areas of interest or concern within broader traditional territories. Sometimes these areas targeted specific silvicultural objectives within the Timber Harvest Land Base. There are fewer restrictions on burns on private or reserve lands. Burns on private or reserve lands do not necessarily require BC Wildfire Service participation, but BC Wildfire Service’s fire suppression mandate includes all lands within the province so their role should be considered even on private and reserve lands. This role may include permitting in some cases, or suppression should a fire escape, which is rare.

Burns on Tsilhqot’in lands are the only burns in BC (to my knowledge) that explicitly consider the carbon as part of the planning and burning process.

*Watch to learn more on Indigenous & Partner Burns:*

- [Cultural and Prescribed Fire video library including case studies](#)
- [A Conversation with Firekeepers - SitePartners - 2022](#)
- [Cultural Burning - Shackan Indian Band - FNESS - 2020](#)
- [First Nations Emergency Services Society Video Resources](#)
- [The Possibilities of Regeneration - Kiss the Ground - 2023](#)

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<sup>97</sup> Abbott, G., & Chapman, M. 2018/04. Addressing the New Normal: 21<sup>st</sup> Century Disaster Management in British Columbia. Report and findings of the BC Flood and Wildfire Review: An independent review examining the 2017 flood and wildfire seasons. [Link](#)

## Concerns & Barriers to Indigenous fire stewardship

With increasing calls to expand the application of Indigenous fire stewardship as a method of wildfire risk reduction<sup>58,98</sup>, concerns have emerged about how to do so in a good way. Barriers also exist that impede First Nations in BC from proceeding with cultural burns. These have been detailed thoroughly in reports<sup>99,100,101,102</sup> and academic publications<sup>103,104</sup> and are briefly summarized below. Recommendations to address these concerns and barriers can be found in the source materials. This summary applies to dry forests of western North America, including BC.

### Wildfire Risk

- Abundant dry forest fuels from a century of fire suppression likely require pre-treatment before fire can safely be applied on the land
- Risk of fire ‘escape’ beyond planned area or intensity resulting in damage to homes or environment, despite risk of escape being low especially for low intensity cultural burns
- Health impacts from smoke emissions, especially on vulnerable populations, despite intentional fires often releasing less smoke under more predictable conditions

### Indigenous Sovereignty

- Settler government fire suppression policies and cultural oppression (e.g., residential schools) have disconnected Indigenous people from their traditional territories and fire stewardship traditions in many areas, even on unceded lands
- Self-determination empowers Indigenous people to steward their traditional territories, and many are receiving pressure to share traditional cultural burning practices with outside organizations to meet those organizations’ objectives, which could run counter to community self-determination
- A general misunderstanding of the differences between Indigenous fire stewardship and prescribed fire contributes to miscommunication about the nature and purpose of different intentional fire stewardship practices, including where, when, and by whom they should be applied

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<sup>98</sup> 2023/06. Forest and Fire Management in BC: Towards Landscape Resilience, Special Report 61. BC Forest Practices Board. [Link](#)

<sup>99</sup> Copes-Gerbitz, K., & Comeau, V. 2023/05. Pathways to Cooperative Community Wildfire Response with First Nations. Report to the BC Wildfire Service, First Nations Emergency Services Society, and Indigenous Services Canada. [Link](#)

<sup>100</sup> Clark, SA., Miller, A., & Hankins, DL. 2022. Good Fire: Current Barriers to the Expansion of Cultural Burning and Prescribed Fire in California and Recommended Solutions. Report to the Karuk Tribe. [Link](#)

<sup>101</sup> Clarke, L., Shapiro, E., & Sandborn, KCC. 2023/03. Reducing Wildfire Damage by Encouraging Prescribed and Cultural Burning. Report to the Canadian Pyrodiversity Association. Environmental Law Centre, University of Victoria. [Link](#)

<sup>102</sup> Dickson-Hoyle, S., & John, C. 2021/11. Secwépemc leadership and lessons learned from the collective story of wildfire recovery. Secwepemcúlcw Restoration and Stewardship Society. [Link](#)

<sup>103</sup> Hoffman, KM., *et al.* 2022. The right to burn: barriers and opportunities for Indigenous-led fire stewardship in Canada. FACETS. 7: 464-481. DOI: [10.1139/facets-2021-0062](https://doi.org/10.1139/facets-2021-0062)

<sup>104</sup> Lewis, M., *et al.* 2018. Return to Flame: Reasons for Burning in Lytton First Nation, British Columbia. Journal of Forestry. 116 (2) 143-150. DOI: [10.1093/jofore/fvx007](https://doi.org/10.1093/jofore/fvx007)

## **Wildfire Agency and Public Culture**

- Wildfire agencies that are becoming tasked with prescribed fire (e.g., BC Wildfire Service & CalFire) are fire suppression agencies first, and internal trainings and employee incentive structures favour performance in wildfire suppression over intentional fire use, so progress on intentional fire use is slow
- Large public buy-in for fire prevention (e.g., Smokey the Bear), though public perception is shifting more towards accepting prescribed and cultural burns
- Greater tolerance for prescribed and cultural burns on private property than public lands

## **Bureaucratic and Scientific Requirements**

- Current regulations require extensive planning and scientific expertise to conduct sanctioned prescribed or cultural burns, which require considerable institutional capacity to prepare and administer which can be a barrier to entry for Indigenous communities
- Partnerships between government prescribed fire agencies and Indigenous communities tend to favour agency scientific knowledge and apply highly cautious approaches involving substantial fire suppression equipment even for very low risk low intensity fires, which may be counter to Indigenous self-determination on cultural burning traditions

## **Liability**

- Prescribed and cultural burn practitioners in jurisdictions without a ‘gross negligence’ standard for liability risk incurring personal liability if there is harm from their burns, which reduces people’s willingness to conduct burns
- Liability laws and regulations for fire practitioners are untested in some jurisdictions, leaving uncertainty about practitioner responsibilities and protections, which also reduces people’s willingness to conduct burns

## **Certification**

- Required certifications to become a fire practitioner are often highly scientific and may be difficult to obtain because of restrictions on availability in some jurisdictions (e.g., the BC Wildfire Service will only certify internal candidates as Burn Boss)
- The scientific nature of existing certifications is not inherently compatible with the Indigenous knowledge that cultural burning traditions are rooted in and does not necessarily align with Indigenous law, which raises the question of whether cultural fire practitioners should become certified under existing standards
- If cultural burning certifications were to become available, it is not clear whether settler or Indigenous government would be responsible for certifying candidates, which raises the question of whether settler governments would be qualified to certify cultural burn practitioners or if Indigenous governments would need to certify citizens by a formal process

## Training

- As mentioned above, fire practitioner training opportunities are limited and often reserved for government employees or fire suppression personnel
- Training opportunities are in development (see below), and have not yet been widely recognized by certifying and permitting agencies
- Training opportunities tend to favour scientific knowledge and prescribed burn methods over Indigenous knowledge and cultural burning traditions

*Select TRES and cultural fire training courses and resources:*

- *Alberta* | WTRES Banff, spring 2023 | [Link](#)
- *United States* | The Nature Conservancy: Prescribed Fire Training Exchanges | [Link](#)
- *United States* | The Nature Conservancy: TRES Toolkit | [Link](#)
- *Washington State* | Washington Prescribed Fire Council: Burn & Learn | [Link](#)
- *California* | Yurok Cultural Fire Management Council bi-annual TRES | [Link](#)
- *California* | Karuk Indigenous Women+ Training Exchange (fall 2023) | [Link](#)
- *Australia* | Jigija Indigenous Fire Training Program | [Link](#)

## **Bringing Indigenous Fire Stewardship & Forest Carbon Offsets Together**

In the carbon offset and fire stewardship case studies, recently proposed forest carbon offset protocols and interest in more intentional fire use in dry forests there is visible momentum building towards intentional fire stewardship. In British Columbia, there has been an upswing in partnered burns involving First Nations and the BC Wildfire Service, which expands the provincial capacity to do such burns and the public awareness of their benefits. BC's FCOP2<sup>8</sup>, Canada's proposed Improved Forest Management on Private Land offset protocol<sup>9</sup>, and the Climate Action Reserve - Climate Forward Initiative's Reduced Emissions from Megafires protocol<sup>10</sup> all provide potential avenues to generate carbon offset revenues directly from and to support careful forest stewardship. Indigenous communities like Xeni Gwet'in may use this momentum to advance forest restoration goals according to their laws, traditions, and priorities.

Some barriers exist to proceeding with Indigenous cultural burning and carbon offset protocols. BC's FCOP2 and Canada's Improved Forest Management on Private Land protocols have not yet been made policy so their benefits are currently speculative. For Title lands in the Caretaker Area, it is not clear whether Xeni Gwet'in will need to negotiate an ABSA<sup>12</sup> with the BC government<sup>29</sup>. Proposed protocols do not recognize the distinction between prescribed and cultural burning, which impose high costs on cultural burning projects and may reduce the economic viability to generate offsets using cultural burning<sup>26</sup>. Questions of liability, sovereignty, and self-determination remain around Xeni Gwet'in cultural burning. Care should be taken when designing cultural burning and carbon offset projects to preserve the integrity of Xeni Gwet'in values, priorities, and law when interfacing with external settler organizations. If successful, such projects would likely represent a charismatic forest restoration program.