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Unearthing Value

How nature can play a critical role in pro-growth agendas

Why we wrote this

RBC launched the Climate Action Institute in 2023 to support Canadians in our collective journey to net-zero, with a commitment to inform, engage and act on all aspects of the climate challenge. Protecting, conserving, and growing natural assets is a critical part of the journey to net-zero.

Nature is a foundational asset in growing our economy. This is a timely issue as advanced economies like Canada, the U.K., and the U.S., push forward nation-building policy agendas and projects. But there's a problem: Nature and the people who steward it–including Indigenous communities, farmers, fisherpersons, and fosterers–are often left off the balance sheet. This is the issue that the RBC Climate Action Institute and Nature United, the Canadian affiliate of The Nature Conservancy, dig into in this report.

Key Takeaways

Natural capital remains an underused economic engine. The GDP of Canada's nature-based sectors, including forestry, agriculture, mining and fisheries, grew 0.3% slower, year-over-year, compared to the rest of the economy over the past quarter century. A similar trend is observed in the United States and the United Kingdom.

Ignoring nature threatens prosperity. More than half of the world's economy, roughly $78 trillion, depends on nature, from food to tourism to construction. Canada, the U.S. and the U.K. are looking to build back their economies, but the nature base in which their economies rely on for long-term growth is depleting and its true value is not accounted.

There is a generational opportunity to leverage natural capital wealth through nation-building agendas. Countries that track and grow natural capital alongside GDP can unlock growth and attract global investors hunting for investable natural capital projects. With finance mobilizing to close the nature finance gap, demand is rising—and an estimated $580 billion is required annually by 2030. That will increase to nearly $940 billion by 2050.

Private capital is critical to closing this gap—and scaling. Governments currently account for 82% ($222 billion) of nature finance. That's because the private sector needs stronger policy signals and assurance that their investments will generate returns.

Nature's place in finance and environmental markets is growing but remains underrepresented. Nature is a small segment of sustainability finance. In 2025, nature-based carbon offsets have represented 13% of voluntary carbon credits but hold more than half of the annual potential of carbon credit creation.

Policy integration, AI, and…yes, accounting can get nature on the balance sheet and growth agenda. For Canada, a timely test for all three is the implementation of the Critical Minerals Strategy and emerging major mining projects. It starts with including Indigenous values and knowledge systems in natural capital accounting frameworks.

From invisible to indispensable: Nature's battle to be recognized in the economy

Building, consuming, and exporting more to boost GDP inevitably strains the forests, soils, and waters that make all growth possible. But pro-growth agendas also present a generational opportunity–to treat nature not as a cost to manage but as an asset to build, value, and leverage.

More than $78 trillion[a] of the global economy–roughly half of total GDP–is highly to moderately dependent on nature.[1] Yet, national GDPs count nature only after it is extracted–fish, grain, timber–while mostly ignoring ecosystem services from nature. This includes carbon storage in agricultural soils, water filtration in healthy peatlands, and cultural and biodiversity benefits of intact forests. Valued at more than $200 trillion, ecosystem services remain largely invisible in economic accounts, leaving both a major source of growth and a growing source of risk unrecognized.[2]

Accounting nature's true value has been an agenda item for global leaders at nature and climate change meetings for more than 30 years. When Brazil last hosted the world at the 1992 Earth Summit in Rio, leaders signed the first global agreements on climate and biodiversity. This Fall, at COP30, leaders are gathering again in Brazil and have the chance to finally put nature at the center of economic strategy.

Securing finance for nature continues to be a challenge. The vast majority is coming from governments, as industry has largely steered clear due, in part, to uncertainty around investment returns. Global public and private nature finance amounts to roughly $270 billion per year. To close the nature finance gap by 2030 more than $580 billion is required annually. That climbs to about $940 billion a year by 2050.[3]

A marriage between nature and pro-growth policy agendas provides an unprecedented opportunity to leverage nature as an investable asset. Building natural capital wealth provides a pathway to reboot nature-based sectors, including agriculture and forestry, and boost nature's role in the built economy, including green infrastructure in housing developments. Investing in nature also mitigates economic losses, including the $3.3 trillion at risk, globally, if ecosystem services such as wild pollination or marine fisheries collapse due to over extraction.[4]

Canada, the U.S. and the U.K. have all set pro-growth agendas and offer three policy and economic models for nature integration. Roughly 7% of Canada's GDP is from a nature-based sector–agriculture, mining, forestry and fisheries. Collectively, these sectors' GDP growth has been 0.3% slower than the rest of the economy over the past quarter century.[5] In the U.S., the Federal Reserve estimates that extreme weather events can negatively impact the country's GDP by 0.5% annually.[6] And natural protection, like coastal wetlands, are disappearing to developments, intensifying the impacts. If current trends persist, the U.K.'s management of its natural capital could cause GDP to shrink by roughly 5% by 2030.[7]

Nature is now both a reportable risk and an investable asset class. Yet, implementation is uneven. More than 90 countries, including Canada and Australia, have adopted natural capital accounting frameworks aligned with the United Nation's System of Environmental-Economic Accounting (SEEA). But a gap remains in fully integrating natural capital into national GDP accounts and using natural capital accounting to guide large-scale investments. In the private sector, some regions–like the European Union–mandate sustainability reporting and encourage alignment with nature-related finance frameworks, such as the Taskforce on Nature-related Financial Disclosures (TNFD).

While the landscape of nature accounting and finance standards remains messy, these examples show that the policy and reporting scaffolding to treat nature as a cash-flow–relevant asset exists. Now, it's time to streamline nature governance, improve accessibility for companies and governments by applying disruptive technologies like AI, and integrate it into pro-growth policy.

Three models for nature in pro-growth policy

The Canadian model: Rich in resources, searching for new growth drivers

Canada is abundant in natural assets—home to 25% of the world's wetland, 24% of boreal forests, and 30% of the world's freshwater—and, as noted above, roughly 7% of the country's GDP directly depends on their stability and productivity and this dependency trickles down the supply chain.[8]

Canada's approach to integrating nature into economic growth is driven by funding and finance packages, target setting including the 2030 Nature Strategy, and the expansion of national parks and ecological corridors. These investments and commitments are enabling progress on conservation and nature protection. Yet, existing policy measures fall short in capitalizing on nature accounting frameworks to return that value to the people on the ground at scale.

Canada's challenge with integrating nature into its pro-growth policy is balancing its natural resource dependent growth with its commitment to United Nations Declaration on the Rights of Indigenous Peoples, while also upholding its legislated climate commitments. A complex landscape to navigate. But a necessary one to ensure Canada's nation-building projects do not undermine Indigenous peoples' rights and knowledge systems, nor hollow out one if its greatest assets in nature.

The U.K. model: A natural resource-strapped country with outsized ambitions for use

The U.K. is one of the most nature depleted countries in the world with only half of its native wildlife intact.[9] The country's economy is primarily driven by service sectors like finance and real estate, while nature-based sectors account for roughly 2% of the economy.[10] But, the country's intense competition for natural assets and the rate of their depletion has ignited momentum for nature finance domestically. This momentum includes a call for recommendations on how the government can help expand the private sector's role in nature recovery under the U.K. Government's pro-growth strategy, *Plan for Change*.

A key component of the Plan for Change is the country's ambitions to build 1.5 million homes and fast-track planning decisions on at least 150 major economic infrastructure projects, including the establishment of AI Growth Zones for data centres. Through the U.K.'s biodiversity net gain (BNG) and nutrient neutrality policies, a market-based opportunity for landowners and stewards to build up natural assets is integrated into these developments.[11] This demonstrates that nature-focused U.K. policy is increasing and aligned with pro-growth policies.

But the country is still expected to fall short in both addressing GDP loses from natural capital depletion and achieving targets, such as conserving 30% of its biodiversity by 2030.[12] The U.K. presents a challenge of nature restoration at scale, amidst intensifying and competing interests in natural assets. The water and land demands of housing, agriculture, and AI data centres expansion stresses the need for greater natural capital planning that informs nature positive economic growth options, beyond offsetting impacts.[13]

The U.S. model: An economic giant veering off course in valuing nature

Roughly 3% of the U.S.'s GDP is from nature-based sectors. And more than 10% of its GDP is highly exposed to nature, including industries that are down the supply chain of nature-based sectors, like food manufacturing.[14] And yet, more than 40% of its natural ecosystems are said to be at risk of collapsing.[15] In 2023, the Statistics for Environmental-Economic Decisions (SEED) program–informed by the SEEA framework–quantified the value of U.S. natural assets. This exercise valued private land at $43 trillion, about 30% of the U.S.'s net wealth. This positioned the federal government to make informed investments in conservation programs and green infrastructure developments, including the $1.3 billion delivered under the Inflation Reduction Act for urban greening.[16]

Under the Trump Administration, there has been a shift from accounting renewable natural assets to extracting non renewables. This is most notable under the *Unleashing American Energy* executive order, which revokes guidance to federal agencies to consider ecosystem services like a wetland's contribution to flood management in project reviews. Newly proposed amendments to the One Big Beautiful Bill Act could also jeopardize a more than 100-year-old revenue-sharing agreement between the federal government and rural communities in forest management. This longstanding agreement returns 25% of the federal government's profits from commercial logging to rural communities–where the logging takes place but doesn't generate local property tax–to invest in local infrastructure. The amendments to the Act could redirect those funds back to the federal government and raise the minimum logging requirements.

Sidelining national efforts that account natural assets alongside GDP risks overlooking a source of economic growth and risk. The polarizing nature of U.S. federal politics calls for a rebranding of natural assets and their management that can withstand changes in administration. Most pressing is a communication strategy that stresses nature's value within the federal administrations focus on a production-based economy.

Mobilizing capital to embed nature's value in the economy

Finance and funding: The tidal wave for stimulating growth

- **Funds**

  Dedicated investment funds that finance projects aimed at conserving, restoring, or sustainably managing natural capital.

- **Grants**

  Non-repayable funds given to support nature-related activities.

- **Subsidies**

  Financial incentives or support to encourage environmentally beneficial activities (e.g., tax breaks, or reduced fees)

- **Bonds**

  A fixed income debt instrument where proceeds from investors are specifically used for nature-based projects.

- **Loans**

  Borrowed funds for nature projects that must be repaid with interest or improved lending conditions.

- **Debt-for-nature swaps**

  A deal where part of a country's foreign debt is forgiven in exchange for commitments to fund conservation projects.

Funds and financing can open the floodgates in creating a role for nature-based solutions in the economy. However, governments are largely footing the bill–providing 82% of nature finance flows, globally[17] –making it difficult to raise the funds required for transformational projects.

Project Finance for Permanence (PFP) in Canada is a breakthrough conservation finance model for matching long-term government, private, and community funding. The first PFP in Canada, Great Bear Rainforest, born from a community well-being crisis in First Nations and conflict over logging, is now repositioning nature as a source of prosperity and enabling Indigenous-led conservation and economic development opportunities. Since the inception of the Great Bear Rainforest PFP in 2007, more than $444 million has been invested.[18]

Building upon the momentum of the Great Bear Rainforest PFP, Coast Funds is now also overseeing the delivery of funds under the Great Bear Sea PFP. This PFP has an initial $335 million in funding, securing long-term Indigenous-led financing for Indigenous-led stewardship and development.[19]

Expanding conservation financing

Debt products for nature-based solutions can provide upfront capital, but projects must deliver competitive returns for investors and financers. Debt-for-nature swapping, for example, often engages development banks to help keep the cost of borrowing down and provide greater assurance to private investors. The debt-swapping market has more than doubled in the past year, totaling $3.6 billion.[20] However, some nature finance experts say the structure for debt-for-nature swapping has expanded beyond its original purpose. They suggest that involving development banks and agencies in building natural capital helps build financing needed for projects as it reduces risks for other investors. However, the country receiving the funds should also consider how the debt swapping impacts their ability to control how their natural capital wealth is managed. For example, the U.S. International Development Finance Corporation (DFC), a government agency, orchestrated a debt-swap that provides the U.S. with privileged access to new natural resource investment projects to develop

Case Study

Projects for permanence and prosperity: Long-term finance as a catalyst for a new economic model

Where: Great Bear Rainforest and Haida Gwaii, British Columbia, Canada

Long-term conservation finance steered by First Nations' vision for economic development and conservation is multiplying the magnitude and durability of opportunities for communities, businesses, and nature conservation.

Driver: A crisis in First Nations community well-being and an economy heavily reliant on extractive industries in B.C. in the 1980s and 1990s, underpinned the growing conflict over natural resource management and limited economic and community development opportunities resulting in First Nations with unemployment rates as high as 80%.[37] This unsustainable model came to a head in the 1990s. The First Nations-led movement, including War of the Woods, the historic Clayoquot Sound Protests in 1993, and with support from environmentalist groups, demanded protection of First Nation's territories and access to economic opportunities. This movement led to the B.C. government initiating a strategic land-use planning process. This was a key step in making way for transformational change where prior piecemeal attempts had failed to improve community well-being, and economic and environmental conditions.

Resulting from the demand for change, was the creation of Coast Funds in 2007, a conservation finance institute with a mandate to implement portions of the Great Bear Rainforest Agreements. Coast Funds was created out of mutual recognition by First Nations, environmental groups, industry, and government that community well-being is critical to a sustainable economy and responsible management of natural resources.

Mechanism for change: First Nations and environmental organizations raised $60 million in private funds in 2006 to create the Coast Conservation Endowment Fund, with $4 million of those funds going towards conservation planning and operational start-up costs. One year later, the provincial and federal governments came to the table with match funding, and the Coast Economic Development Fund was born. These two funds, initially amounting to $120 million, are governed by the Coast Fund's board of directors, which are appointed by First Nations, the B.C. Government and philanthropic foundations. The board oversees the funds' finances and investments in Nations, who bring forward projects for the board to review.

The governance structure of the board has evolved as the foundations have consolidated their governance roles and relinquished their voting rights to elevate the influence of First Nations in steering the direction of Coast Funds, giving them equal control with Crown governments. This shift in governance advances the vision of Indigenous-led economic development and stewardship being led by Indigenous Nations.

In the making: First Nations have invested more than $120 million from Coasts Funds and leveraged $324 million of their own funds and additional funding sources. The $444 million has been invested across economic sectors, including tourism, manufacturing, forestry, and aquaculture.

Complementary to funds from Coast Funds, Nations are generating carbon credit sales under the Atmospheric Benefit Sharing Agreement between two regional Indigenous organizations, their respective First Nations member Nations, and the provincial government. These agreements lay out the framework for sharing carbon benefits like offset credits associated with the Great Bear Rainforest agreements that avoid deforestation.

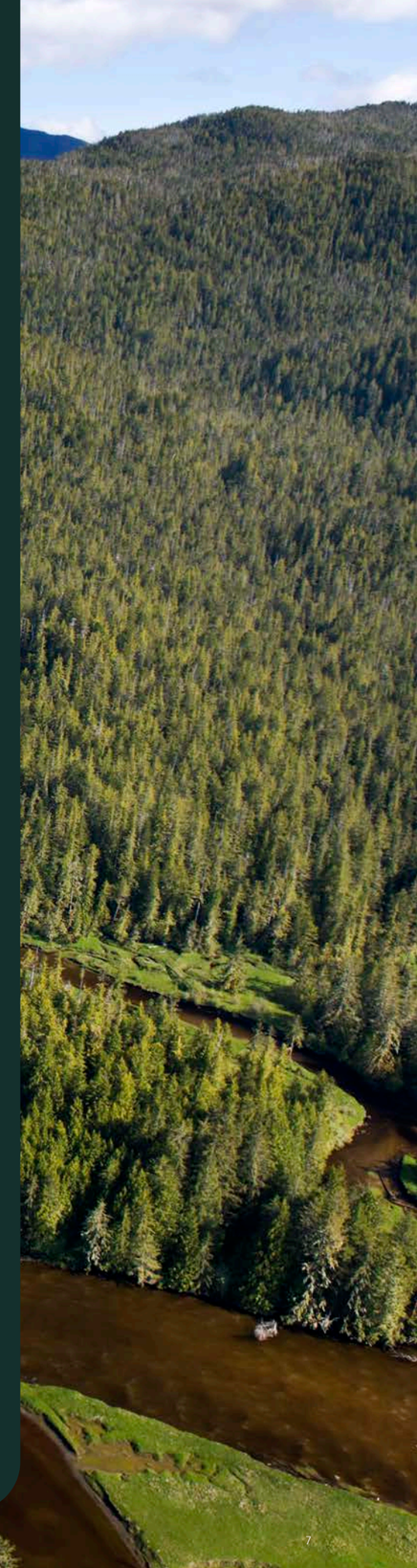
Taan Forest, a Haida-owned forestry company, is one example of stacking funds and supporting carbon credit creation to advance sustainable forestry businesses. The company leveraged dollars from Coast Funds to develop an industrial park that enabled Haida entrepreneurs to participate in the value-add forestry sector.[38] Taan Forest provides economic opportunities while protecting the Nation's environmental and cultural assets by securing the forestry tenure for 60% of forestry operations on Haida Gwaii.[39]

Impact: Coast Funds has been a catalyst for Indigenous-led-and-owned economic development initiatives, which includes the growth or establishment of 144 businesses, the creation of more than 1,400 jobs, including 850 fulltime roles, with salaries totaling more than $70 million.[40] Recognizing the Nations' forestry stewardship and its role in climate action under the Atmospheric Benefit Sharing Agreement, the B.C. government has purchased more than $56.5 million in carbon credits from the Great Bear Carbon Credit Limited Partnership and $6.8 million from the Nanwakolas Offset Limited Partnership.[41]

On-the-ground, First Nations have led more than 444 habitat restoration and research initiatives benefiting species with cultural and economic significance, including salmon, kelp and trees. Taan Forest's practices are aligned with Forest Steward Council Certification, Rainforest Alliance Certification, and the conservation standards of the Haida nations Land Use Order, enabling their sustainable forestry practices to be recognized by their supply chain. The latter ensures sensitive habitats are protected, including bear dens, bird nesting areas and reducing the allowable cut for logging, enhancing habitat protection and restoration.[42]

Lessons: Funding allocation criteria focused on scale can lead to inequity. The original Great Bear Rainforest funding allocation model incentivized higher levels of conservation by providing more benefits to First Nations that committed to large-scale biodiversity protection through the protection of intact forest ecosystems. As a result, First Nations with the largest conservation area and populations received the largest allocations, while First Nations' whose lands had already been intensely logged, and those with smaller populations, received less. Recognizing this challenge, First Nations decided on the funding allocation formula for the Great Bear Sea PFP to ensure equity and account for nuances in scale and impact. Through the Great Bear Sea PFPs, all participating First Nations receive a baseline of support to advance their economic development and stewardship goals.

Photos: Andrew S Wright



Case Study

Managing Risks: The new frontier of nature-based climate investments

Where: Saskatchewan, Canada

Nature is an asset and a risk. Insurers and those managing working lands like grasslands for livestock grazing face this reality every day. Investing in long-term projects that restore depleted lands and their natural ecosystem functions provides a gateway for nature to contribute to economic resilience.

Driver: Roughly 75% of Canada's native grasslands are gone.[43] Canadian grasslands stitch together the prairie provinces, store two to three billion tonnes of carbon, and are home to a dwindling number of ranchers, livestock herds, and native species that now make up one of the world's most endangered ecosystems.[44] Grassland loss is driven by land use conversion for cropland production, resource extraction from mining and energy production, and urban sprawl. While these activities contribute to growing Canada's economy, the loss of grasslands intensifies resource depletion and environmental risks, including droughts.[45] Extreme weather, wildfires and the impact on natural and built assets is a material risk for the economy and a growing cost for insurance companies. The summer of 2024 was the most destructive and expensive season in Canada from extreme weather, with weather event losses totaling $7.7 billon.[46]

Mechanism for change: Restoration does not happen overnight, which is a deterrent for investors who want immediate results. But with some foresight and common ground, The Nature Conservancy of Canada (NCC) and Aviva engaged in a 7-year partnership to restore grasslands across nearly 450 acres in Saskatchewan. Restoration investments are typically short term (1-3 yrs) and focused on immediate outcomes, not allowing for a multi-phase approach that restoration often requires to be durable. Aviva's investment breaks that cycle.

To strengthen the partnership, government recognition of the grassland restoration projects is helping boost its appeal. Environment and Climate Change Canada is piloting a Conservation Exchange, providing companies with certificates that recognize their investment in high-integrity nature-based projects that have proven to deliver real biodiversity impacts. This exchange is a new approach to attract capital to build natural assets and provides companies with the opportunity to obtain government issued biodiversity certificates that acknowledge their investment, making associated sustainability claims more rigorous. NCC's grassland restoration projects, supported by Aviva in Saskatchewan, are part of the Conservation Exchange pilot.

In the making: Native seed production in Canada is limited by a lack of capital investment and long-term contracts, making it difficult for local growers to scale grassland restoration. To address this, the partnership with Aviva allowed NCC to establish a multi-year agreement with a native seed grower, Skinner Native Seeds. The upfront investment from Aviva reduced financial risk for Skinner Native Seeds and supported a scale up in production, improving restoration outcomes for grasslands and strengthening the resilience of Saskatchewan's native seed industry.

Impact: The benefits are multi-dimensional but grounded in restoring productive working landscapes that combine opportunities to support conservation and agriculture production.

Through the Conservation Exchange pilot expert evaluation, the projects received positive scores, overall, for species and ecosystem restoration and improved probability of persistence for focal species, which serve as a proxy for broader biodiversity status. At the Old Man on His Back grassland restoration site in Saskatchewan, habitat for Species at Risk and grazing capacity is being expanded by increasing available native vegetation. To enable this restoration project and to increase seed production, Skinner Native Seeds estimates wildflower seed production at their facilities will increase by up to 200 lbs, in 2027, leading to the expansion of roughly 40 species of native wildflower to support biodiversity and climate-resilience in the prairies.

Government recognition of these biodiversity benefits adds credibility and transparency, allowing companies and the public to understand the scale of the impact and the species and ecosystems expected to benefit.

Lessons: Nature restoration project developers looking to scale investment need to master communicating outcomes in a way that resonates with investors. They also need to play a role in educating investors on the importance of time in delivering meaningful and long-lasting impacts on the ground. This communication and education starts with knowing the audience. Understanding investors' objectives in nature-based solutions–including mitigating risks, ESG claims, and meeting climate targets–is paramount in designing nature restoration projects that meet shared objectives among communities, conservationist, companies, and governments.

Photos: Nature Conservancy of Canada

Ukraine's nature-based sectors. Involving development banks and agencies helps build financing needed for natural capital projects as it reduces risks for other investors. Yet, the country receiving the funds should also consider how the debt swapping impacts their ability to control how their natural capital wealth is managed.

Green and sustainability-linked bonds and loans have also grown into significant debt products, with nearly $15 trillion in value to-date.[21] Yet, nature focused debt remains a relatively small slice of total bond funds allocated. Over the past year, less than 10% of proceeds from green and sustainability-linked bonds explicitly went towards nature-based projects. While nature-based projects mature in their ability to guarantee returns for investors, the government and impact investor's roles in scaling debt products for nature remain critical.

Beyond funding and finance, governments can also use their authority to recognize high-integrity nature-based projects to attract private dollars. Environment and Climate Change Canada, for instance, is piloting a Conservation Exchange. In the pilot, the federal government is testing an approach that recognizes the proven benefits of conservation projects funded by companies through government approved biodiversity certificates.[22] Building from a long-term funding relationship, insurance firm Aviva and the Nature Conservancy of Canada are leveraging the Conservation Exchange pilot to deliver value through nature's role in risk management and revitalizing working lands, like range pastures on restored native grasslands.

Streamlining policies to optimize public investment

While governments are driving investment in solutions, they may also be undercutting progress. The United Nations Environment Program finds that public finance flows to

nature-based solutions are less than one-tenth of public spending on environmentally harmful subsidies. This issue is especially of concern in agriculture. Farmers in Canada, for instance, can receive funds for sustainable practices under the On-Farm Climate Action Fund, supporting the adoption of cover crops and improved fertilizer practices. And they can access government subsidized crop insurance, which some farmers are finding can incentivize growing crops on marginal land that would otherwise be uneconomical.[23] [24] Similar examples can be found in the U.S. under the Federal Crop Insurance Program. Some states are taking steps to address the mismatch between government safety nets and supports for sustainable agriculture by offering programs such as insurance premium discounts for farmers who adopt sustainable practices, like the Iowa Department of Agriculture & Land Stewardship's Crop Insurance Discount Program for cover crop adoption.

Governments and the private sector have also struggled to expand market-based incentives for nature-based projects. Some farmers are taking note and using government grants to kickstart grassroot initiatives that give them control over how the value of ecosystem services is integrated into their business and recognized in the marketplace. The Prince Edward Island Federation of Agriculture, for example, learned early in their GHG mitigation journey the importance of robust data collection and monitoring of soil carbon to tap into carbon markets. Spurred by local leadership, the federation is helping position farmers to align practices with carbon offset protocols and build algorithms and data standards to unlock carbon value and improve efficiency.

To close the nature finance gap by 2030 more than $580 billion is required annually. That climbs to about $940 billion a year by 2050

Case Study

Precision profits: Digital agriculture as a driving force for economic and environmental efficiency

Where: Prince Edward Island, Canada

With sights on carbon credits, Prince Edward Island farmers learned that the efficiencies they gained from practices that reduce GHG emissions were indeed the real economic opportunity.

Driver: A desire to incentivize farmers for their climate action was the impetus for P.E.I. Federation of Agriculture (PEIFA) in building soil carbon and GHG emissions measurement infrastructure required to connect farmers to carbon markets, while maintaining ownership of their data.

Farmers can be leaders in advancing climate solutions. Responsible management of inputs like nitrogen fertilizer that are essential tools in growing healthy crops and yields is a key part of farmers' role in driving climate action. Potato production represents most of the agricultural land use on P.E.I., roughly 86,500 acres, and potatoes are a nutrient dense crop to grow, presenting an opportunity to explore how efficiencies in fertilizer use can be incentivized through carbon credits that reward reductions of net GHG emissions.

Mechanism for change: A mix of government funding and provincial leadership spearheaded by the P.E.I. Federation of Agriculture, and the launch of the offset protocol for improved agricultural land management on VERRA's voluntary offset carbon registry, together, created the right conditions for the federation's Agriculture Internet of Things (AgIoT) to come to life. AgIoT is a farmer-owned, scalable, data-agnostic, and real-time monitoring platform.

Money, project leadership, and a protocol that outlines the standard on how to enhance soil carbon and reduce GHG emissions are all necessary pieces to producing carbon credits. But, for nature-based projects, like this, arguably the hardest part is the data collection. This is why AgIoT, a technology solution for farmers by farmers, was created.

In the making: To access carbon markets, projects need baseline measurements, from which farmers adopt best management practices like precision nitrogen application or cover crops to show progress. The P.E.I. Federation of Agriculture developed the 'P.E.I. Low Carbon Cropping Initiative' with 4,800 acres now enrolled, forming an offset market-compliant project with the goal of registering the project on a carbon market. At the start of the project, the federation and its farmers had an 'Aha moment': farms did not have the existing capacity to collect data at a level required for accessing carbon markets. As a result, they set out to automate farmers' engagement with AgIoT as much as possible.

AgIoT automates data collection and processing, with the goal of reducing the burden on farmers to manage and maintain their data. In-field sensors provide real-time data collection that automatically uploads to the cloud and is accessible to the user through the AgIoT dashboard. AgIoT's soil carbon and GHG algorithms are estimating agriculture carbon in soils and GHG emissions with real farmer data to determine impacts on net GHG emissions AgIoT platform.

Impact: In 2024, a semi-automated software version of AgIoT algorithms was used to model pilot farms participating in the Low Carbon Cropping Initiative. It analyzed crop history submissions, recent soil cores, and a process-based model for GHG emissions and soil carbon estimation. The results from the pilot farms showed that the farms' GHG emissions reduction are between 50 kilograms and 150 kilograms of carbon dioxide equivalent per hectare. The piloted practices including precision nitrogen fertilizer management also showed that farmers could save $50 to $120 per hectare on inputs. A direct result of optimizing a production system to drive positive economic and environmental outcomes.

If these modelled efficiencies were applied to the 86,500 acres of annual potato production, it could result in reducing the equivalent of 1,750 to 5,250 tonnes of carbon dioxide per year. That's just from improving farmers' data resolution to inform greater efficiencies.

Lessons: Carbon markets for nature-based projects is not for the faint at heart. It's costly. It's time consuming. And it's complicated to measure, monitor, report and verify net GHG reductions from biological systems over time because there are many variables to consider that are out of a human's control. But when you have the right mix of technical skills on-the-ground to build and apply data solutions like AgIoT, pursing carbon credits can be a pathway to unlock new innovations and efficiencies for farmers.

A farm operation that can collect the necessary data for accessing carbon markets will have a tremendous opportunity to improve decision making and profitability, which is more valuable than the actual carbon credit.

Case Study

From bust to bogs: How restoration projects attract patient investors for the long haul

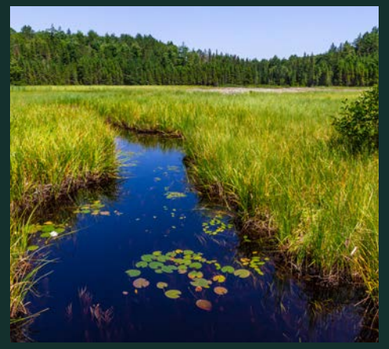
Where: Cairngorms National Park, Scotland

Presenting the risks and returns to investors positioned this restoration project to attract patient investments and in return benefit from long-term contracts that reduce their project costs and uncertainty.

Driver: Scotland's peatlands cover a fifth of the country's land mass and store roughly 1.6-billion tonnes of carbon. Peatlands also play a critical role in water filtration and flows, influencing the water supply for neighbouring cities like Dundee and Aberdeen.[47] But more than 80% of the country's peatlands are depleted.[48] This depletion is caused by a combination of factors, including drainage for peat extraction, livestock grazing, and planting of non-native species like some conifers tree plantations. Today, degraded peatlands account for more than 3.5% of the U.K.'s emissions, as well as increasing flood risk and habitat loss.

The Cairngorms Peatland Restoration Project, one of the largest of its kind in Scotland, is an award-winning collaboration between landowners, the Cairngorms National Park Authority, Palladium, an impact consultancy, and Revere, the coordinator of the collaboration. The project blends public funding and private finance to share risk in peatland restoration and enable durability in nature finance solutions. More than 1,700 acres of peatland restoration is under way in Cairngorms National Park, across nine sites.

Mechanism for change: TThe project combines government funding via Peatland ACTION, a government program, with private finance through the sale of carbon offset credits verified by the Peatland Code–a voluntary certification standard for peatland restoration projects in the U.K. The Peatland Code ensures that projects



are credible, providing assurance to investors through independent validation and verification.

Carbon benefits from nature-based projects can take years to verify. As a result, revenue from carbon credit sales can be slow to materialize. This presented a challenge: find long-term investors that understand nature-based carbon and are willing to wait on their returns. Santander U.K. and Respira, an impact investor, met the challenge and provided partial funding, which facilitated an agreement with a British law firm that purchased some of the project's Pending Issuance Units (PIUs) verified under the Peatland Code. Such patient investors were key to funding the upfront project costs.

At the start of the project, the collaborators agreed to allocate 10% of the project's profits to a local community trust. A commitment that reflects rural Scotland's community values and the collaborators' responsibility to the local economy.

In the making: Restoration begins with an assessment of the peatland's health, including measuring the depth of peat and the extent of degradation. A key indicator of success in peatland restoration is raising the water table. When peatlands dry out, they are more likely to degrade and emit GHGs, damaging the rich ecosystems that they support.

Approaches to raising the water table include blocking man-made drains or 'grips' and restoring erosion features by creating 'bunds' like an embankment or dam, and reprofiling or revegetating areas of bare peat. The Peatland Code provides a methodology for calculating the GHG emissions impact of these approaches by assessing the pre- and post-restoration condition of the peatland.

Impact: The restoration projects across the nine sites are delivering carbon avoidance over a 30-year project term, amounting to the equivalent of more than 44,000 tonnes of carbon dioxide removed from the atmosphere. The project is also enhancing natural habitats conserving wildlife species such as golden plover, red grouse, meadow pipit, and curlew. Healthy peatlands also naturally filter water, reducing pollutant and nutrient levels.

The project collaborators have also worked with the Scottish Land Commission and the Scottish Government to develop economic benefits beyond financial returns from carbon credits, such as employment opportunities for contractors. This provides immediate, tangible benefits for local communities while the 10% financial commitment will be invested in the community over the long-term.

Lessons: Current carbon market prices and government funds are insufficient in covering project costs alone. Attracting equity finance requires establishing offtake agreements that provide investors with the right assurances that make them feel confident in the project's risk management and long-term viability.

In addition to greater value in dollars spent on restoration over long-term projects, longer-term subcontracts bring more certainty to the project's budget and allow the team to more accurately forecast and price the carbon credits it sells to companies. Having a stable cost base means it is easier to calculate the revenues needed to make the project profitable.

Harnessing markets to promote nature and raise revenue

- **Offset markets**

  Trading system where those wanting to offset their environmental impacts compensate others for creating environmental benefits elsewhere.

- **Inset schemes**

  Reducing or compensating environmental impacts within a company's own value chain. A company invests in nature and climate-positive projects directly linked to its suppliers, operations, or distribution.

- **Premiums**

  Paying extra for sustainable products or services to cover the higher cost of low-carbon or nature-friendly options. Consumers or buyers along the supply chain pay a higher price or give preferential treatment for sustainable production or nature protection.

- **Market access**

  Gaining entry to markets by meeting specific sustainability standards or certifications.

Marketplaces for ecosystem services cover a growing range of outcomes, including water quality trading schemes in the U.S., emerging biodiversity markets, like those in Australia, and compliance carbon markets in the EU. Yet, market activity is primarily focused on producing credits from greenhouse gas (GHG) emission reductions, removals and avoidances through compliance and voluntary carbon schemes. Cumulatively, $15.3 billion in credits have been traded on the voluntary offset carbon market. Peaking in 2021 at $2.6 billion, there has been a steady fall in market activity with 2024 being a 5-year low with traded credits valued at $727 million.[25] This decline can be attributed to compounding factors including the market going through a maturity phase with the onboarding of additional integrity and assurance guardrails, and macroeconomic volatility since the coronavirus pandemic.

Despite the market downturn, nature is banking on a maturing carbon market to drive finance.

The voluntary offset market is still going through a transition phase, focused on raising the quality of credits on the market and aligning with compliance market standards. An early sign from the voluntary offset market reset is a higher demand for quality, nature-based projects that produce GHG removal credits. It's an opportunity for nature-based projects that actively pull carbon dioxide from the atmosphere through active management and restoration of carbon sinks, including wetlands, croplands, forests, grasslands, and sea bottoms. Recent developments in nature-based offset protocols provide the frameworks needed to produce GHG removal credits that are in demand.

Blue carbon, for example, has the potential to remove three gigatons of carbon from the atmosphere per year, equivalent to more than 3% of global emissions.[26] With the development of blue carbon protocols like the Tidal Wetland and Seagrass Restoration on VERRA's carbon offset registry, communities and landowners restoring seagrasses can see returns from their conservation efforts in the marketplace. A seagrass restoration project in the eastern coastal bays of Virginia that includes researchers, conservationists, the local community, and the Commonwealth of Virginia serves as a proof of concept for how to bring a blue carbon project to the marketplace, including the amendment of laws, as the state owns the coastal sea bottom.

While nature-based protocols have allowed for increased market access, nature-based carbon offsets account for only 13% of voluntary carbon credits issued in 2025 to-date but hold more than 50% of annual carbon credit potential.[27]

Patient investors are key to big nature returns

Bringing quality nature-based projects to market takes time. The long-term nature of ecological changes and the inherent difficulty in attributing specific, measurable biodiversity

Case Study

Seeding Change: A playbook for scaling nature restoration

Where: Eastern shores of Virginia, United States

With sights on carbon credits, Prince Edward Island farmers learned that the efficiencies they gained from practices that reduce GHG emissions were indeed the real economic

Driver: The Virginia Coast Reserve is the longest expanse of coastal wilderness along the East Coast: 75 miles long and covering 133,000 acres of conserved and protected land. Stakeholders of the coastline, like The Nature Conservancy who own and actively manage more than 40,000 of these acres, are contributing to the natural ecosystem and local economy in more ways than one–boosting biodiversity of finfish and shellfish and protecting and restoring natural barriers that protect communities from extreme weather events like hurricanes. But there was a missing piece in this growing, vibrant ecosystem.

For more than 70 years, eelgrass, an aquatic grass that grows in shallow bays, was thought to have been eliminated along the coastal bays of Virginia due to a pathogen outbreak and the Storm of 1933. But in 1999, a small patch was found, indicating that a source of seeds was drifting, likely from Chincoteague Bay, and generated optimism that eelgrass recovery was possible.[49]

Eelgrass restoration has multiple benefits, including supporting commercial and recreational fisheries by acting as a nursery for fish and shellfish, preventing erosion of shorelines, and carbon sequestration.Planting eelgrass and the associated carbon sequestered in the sea bottom through eelgrass roots is called "blue carbon," and can remain in the sea bottom for thousands of years, making it one of nature's longest-term solutions to climate change.

Mechanism for change: The approach to scaling eelgrass restoration in Virginia is a model for how to collaborate on a complex nature-based project. The Nature Conservancy, Virginia Institute of Marine Science, The University of Virginia, and the Commonwealth of Virginia all contribute in different ways—reseeding, community engagement, measurement and monitoring, and policy changes.

This project is also a proof of concept for how to bring blue carbon projects to carbon markets. While producing carbon credits was not the driving force for this collaboration to flourish, it did present an opportunity to help the team finance their restoration efforts into the future. But positioning the eelgrass restoration project to produce carbon credits for sale required protocols to be developed and policies to change.

It started with the creation of the offset protocol, Tidal Wetland and Seagrass Restoration, on Verra's carbon offset registry in 2015. This enabled the project to follow a standardized approach to measure, report and verify the impacts of the reseeded eelgrass on carbon removals. The second missing piece was positioning the Commonwealth of Virginia to own and sell carbon credits from nature restoration projects, which was a practice that was not recognized in its legislation. The Commonwealth of Virginia owns all subaquatic bottomlands in the state, and with that comes the legal right to the carbon stored there. Amendments to laws, has enabled the state to participate in carbon projects and requires any revenue resulting from the sale of carbon credits to be invested back into the project—to be used to implement additional monitoring and research or to cover administrative costs.

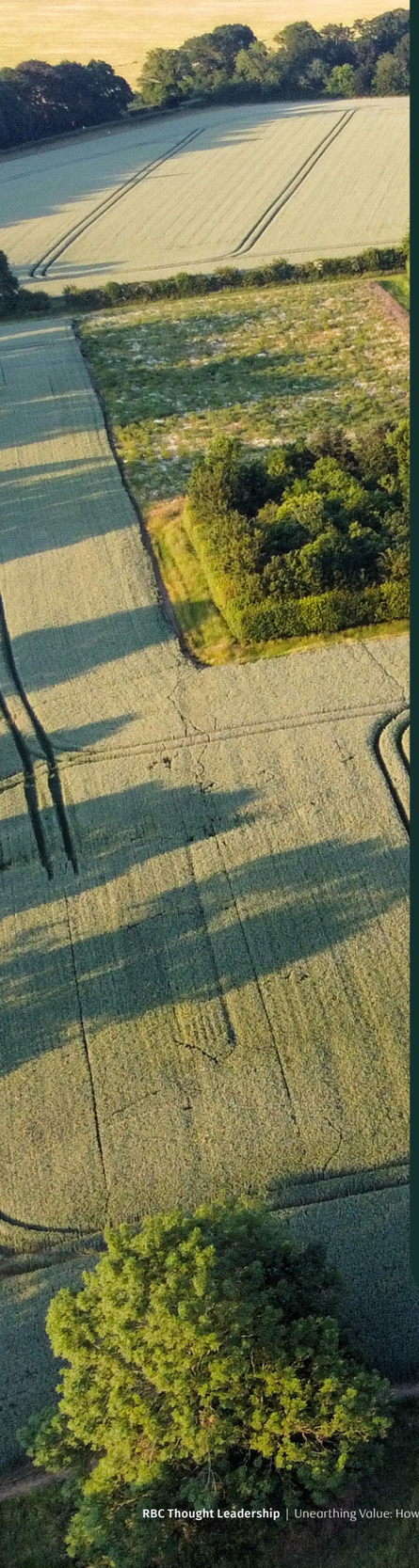
In the making: Direct seeding of eelgrass is producing credits in the restoration project, further expanding seagrass coverage in the region. The Virginia Institute of Marine Science leads the restoration practices and The Nature Conservancy engages the community who have played a pivotal role in collecting more than 72 million seeds. These seeds have been spread onto 700 acres to help accelerate the natural spread of eelgrass, which now covers 10,000 acres in South, Spider Crab, Hog Island and Cobb Island bays. The area enrolled in the carbon market project, meeting the offset protocol criteria, is roughly 3,000 acres – including restored eelgrass and available sea bottom for restoration to expand

Impact: The project is expected to deliver the equivalent of more than 42,000 tons of carbon dioxide (CO2e) captured from the atmosphere over 30 years, raising $1.4 million for continued research and management of the eelgrass restoration in coastal Virginia.

The project's economic benefits go well beyond carbon credits. Bay scallops were abundant in the coastal area in the early 1930s, supporting commercial fishing. But the disappearance of eelgrass resulted in the loss of the bay scallop's preferred habitat. Successful restoration of eelgrass could pave the way for the potential restoration of scallops–a nature-built pathway for reintroducing recreational and commercial fishing. While the shellfish aquaculture industry has raised concerns that eelgrass expansion may compete with shellfish for bottom areas, new research and inclusive land use planning approaches are ensuring both conservation and the clam industry can thrive.

Lessons: Developing carbon credits through an established marketplace can take years, underlining that they are a strong option to contribute to blended finance but are often not the driving force for a successful project. Ultimately, the project should provide benefits to communities, nature and businesses through means beyond carbon credits to foster durability in nature-based solution projects.

Photos: The Nature Conservancy



Case Study

A new model for farming: Diversifying revenue by capitalizing on the infrastructure boom

Where: Wendling Beck, Norfolk County, United Kingdom

Ambition to build 300,000 homes per year in the U.K. and a complementary biodiversity offset scheme presents a new way for farmers to generate income and build resilience on their land.

Driver: Water stress in Norfolk County is mounting. By 2045, the county could run a deficit of 472-million liters of water per day.[50] This is being driven by the county's over-licensing and extraction of water from the region's waterways, a growing population, and the effects of climate change, as well as water pollution. Water stress presents real challenges to economic growth from yield losses on farms to the availability of water required for built infrastructure, manufacturing, and human consumption.

Compounding the need to mitigate environmental stressors such as water availability, U.K. farmers increasingly are challenged by economic strain. The EU's Common Agricultural Policy funding will be phased out in the U.K. by 2028, and onboarding of area-specific subsidies is underway. Furthermore, increasing volatility and frequency of disruptive events from droughts to tariffs can uproot farming businesses–driving demand for more diversified and durable revenue streams beyond agri-food commodity markets.

Mechanism for change: Farmers are known for helping their neighbours and community. But managing private land is often an individual endeavor. Four farmers from Wendling Beck are challenging this norm by working with conservation organizations and the local water utility company to lead landscape-scale adoption of nature-based solutions, delivering positive outcomes for water, biodiversity, climate and the farmers' businesses.

Grants kickstarted the feasibility phase of the Wendling Beck farmers' adoption of nature-based solutions. This helped mitigate the risks for the farmers if new practices such as rehabilitating marginal land did not net out positively. Now, the farmers' efforts in rehabilitating landscapes and maintaining practices are enabled through private finance, ecotourism, and environmental marketplaces. Biodiversity net gain (BNG) units are a key source of revenue under the new scheme introduced in 2024, which requires developers to deliver at least a 10% net increase in biodiversity compared to pre-development conditions.

In the making: Over 2,000 acres are being rehabilitated with diverse activities on the land, including food production, wildlife habitat, flood management and water quality improvements. These activities are the result of farmers adopting nature-based solutions, including species-rich grassland restoration. Wendling Beck farmers continue to generate revenue through farming black currents and raising livestock on grasslands, stacked with revenue from environmental credits.

To ensure there is evidence backing the rigor of the credits sold by the farmers, counterfactual baseline measurements were set and ongoing monitoring is conducted to ensure impacts are accounted. Species count, water quality and carbon sequestration are all being monitored through remote sensing, surveys, and eDNA barcoding.

Impact: Ultimately the Wendling Beck farmers have redesigned their business model, diversifying beyond revenue generation from food production to also profit from their contribution to building natural capital in the U.K. The project's financial model conservatively uses CAD$47,000 per biodiversity unit, resulting in a financial projection of $131 million over 30+ years in revenue for the Wendling Beck farmers. They have nearly $10 million under contract already. These credits cover 1,500 acres of the habitat creation. The project is also reverting 400 acres of land back to its natural habitat for nutrient credits for housing developments under the Nutrient Neutrality scheme. The scheme requires housing developers to offset and mitigate the net impact of nutrient runoff from new housing developments in protected water habitats through the purchase of credits. The creation of nutrient neutrality credits by the Wendling Beck farmers enables the construction of roughly 2,000 homes in Norfolk.[51]

Lessons: Developing a vision map and fostering alignment among stakeholders has been essential to the project's success as the number of stakeholders grows. Nature finance projects often involve stakeholders from different sectors with different objectives. Developing a shared vision can advance a common purpose, communicate how components of a project feed into the broader objectives, and foster continuity as new stakeholders come on-board at varying stages of the project.

The Wendling Beck model is scalable and nature finance streams are stackable, but it requires bridging the gap between agricultural production and environmental conservation know-how to develop practical solutions for working farms. Farmers engaged in the Wendling Beck project are now enabling other regions to do the same through a farmer-led consulting firm.

Photos: The Wendling Beck Project

outcomes to a single intervention adds to the complexity and cost.

Carbon offset creation from nature-based projects, for instance, can take decades to verify. This presented those involved in a peatland restoration project in Scotland's highlands with a challenge: find investors who are willing to wait patiently for their returns. One way is to seek advanced market commitments from buyers through pending credit returns for carbon removals or biodiversity benefits that have higher value in the marketplace but take longer to generate, compared to renewable energy projects that can often generate credits the day they are turned on. A recent precedent is the Symbiosis Coalition, made up of Microsoft, Google, Salesforce, Meta and McKinsey & Company. These large-scale organizations provide assurance to more risk-averse investors.

Recognizing that farmers, foresters, and fisherpersons, cannot take on all the risk in investing in building natural capital, a growing movement has started to advance sustainable farming practices through supply-chain funding and incentives. Investments are coming from buyers including PepsiCo to input providers like fertilizer companies Nutrien and Yara through a variety of mechanisms including inset programs, payment for practices and green premiums, totaling more than $1.6 billion publicly committed by companies to-date.[28]

Raising the bar on sustainable supply chains

Green premiums—the higher prices paid for products that meet sustainability standards—and favorable market access conditions tied to sustainability criteria play a powerful role in encouraging sustainable practices. But a key question remains: Who will pay the premium? Often, it's assumed it will be the end buyer, but in practice, end buyers need a market signal for paying the premium. As a result, premiums in the marketplace are

sporadic. Most recently, farmers growing biofuel feedstocks like canola, soybeans and corn are seeing green premiums emerge in the marketplace to prove the sustainability of their production to access markets like the EU and U.S.

Green premiums are often underpinned by certifications that more broadly encourage responsible management of resources and community well-being and set standards for associated practices. Globally, these certifications are growing in market share with 19% of all wild marine catch engaged with Marine Stewardship Council (MSC) and roughly 200,000-million hectares of global forests certified under Forest Stewardship Council (FSC).[29] [30]

While these certifications have been critiqued for their rigor, they are proving to advance and track practice implementation on-the-ground. For example, mammal monitoring in Gabon and the Republic of Congo shows there is greater diversity in species in FSC-certified forests compared to uncertified forests.[31] Such certifications remain one of the few approaches available at scale that drive market standardization around sustainable use of natural assets and enable supply chain recognition and incentivization.

These industry-based certifications often operate outside of government, but governments are also stimulating markets for nature. In the U.K., under the Biodiversity Net Gain scheme, biodiversity credit payments totaled more than $360,000 in the first year of operation (2024 to 2025). [32] A market-mechanism that creates value for those managing natural assets like farmers, outside of development zones, as well as incentivizing developers to integrate nature within their new builds. Wendling Beck, a collaboration led by four farmers in Norfolk County, U.K., is demonstrating how farmers can capitalize on revenue opportunities in environmental markets, while also producing food.

Case Study

Optimizing returns: Farmers advancing impact and profitability through water stewardship

Where: Southern Manitoba, Canada

Farmers are transforming their role in conservation through water stewardship action on their farms. Farmers in southern Manitoba are demonstrating how their practices produce positive environmental outcomes in their watershed and benefied their bottom line.

Driver: Lake Winnipeg, the 10th largest freshwater lake in the world, has deteriorated over the past 50 years due to runoff of nutrients from agriculture, urban developments, and municipal and industrial waste. This has resulted in algae blooms, hinders industrial water use, and restricts recreational enjoyment of the lake.[52] This is costly to the Canadian economy and businesses that rely on the stability in water quality and quantity, notably farmers in the Lake Winnipeg basin.

Mechanism for change: A collective of Prairie-based organizations, agri-businesses, and four farms covering more than 45,000 acres came together to design a project to demonstrate how water stewardship practices are good for business.[53] An applied research project is helping this collective understand how water stewardship plans and implementation helps create value for farmers, empowering them to tell data-driven stories about their contribution to positive environmental outcomes.

While funding was not the reason farmers joined the collective–it was curiosity in what the impacts of water stewardship would have on their farms and communicating those impacts–companies in the collective are working with participating farmers to test incentive models including a mix of carbon credits and practice incentive payments. Nutrien, a Canadian fertilizer company, is working with two of the participating farms through their Sustainable Nitrogen Outcomes program. The program generates an outcomes-based payment from GHG emission reductions produced through farmers' improved management of nitrogen fertilizers.[54]

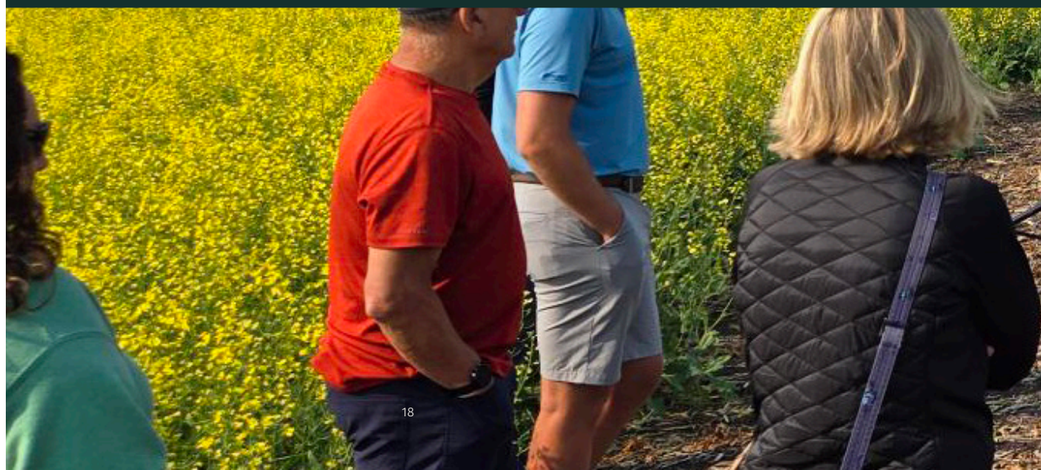
In the making: The farmers are implementing practices from their water stewardship plans and working with a research team to value the return on investment for profit, productivity and the environment. Water stewardship practices were categorized and assessed under two strategies. The first involves practices specifically deployed on croplands, which includes changes in tillage, adoption of precision agriculture technologies, and crop rotations. The second focuses on the enhancement of non-cultivated natural lands on the farm property, such as restoration of marginal farmland, or enhancements to wetlands, hedgerows, and green spaces. Assessed outcomes from practices adopted in 2023 and 2024 by the four farms, include improved air quality, better soil health, and enhanced biodiversity, which were organized based on public and private good.

Impact: Farmers generated, on average, $6,900 per acre of value for the public through ecosystem services such as pollination habitat, soil health, and water regulation. The value returned to farmers, based on carbon market values in the region, was $33 per acre.

There is also a social impact. Water stewardship awareness amongst the farming community has seen tremendous uptake and interest through knowledge sharing events and farm tours. This project is also inspiring similar landscape-based efforts, driven by water stewardship, in other regions.

Lessons: Governments play a key role in a farmers' ecosystem of support, providing funding, extension, and standardization. However, government timelines and priorities are not always aligned with those of farmers and companies. Nonetheless, not ensuring government was part of the collective in an active role became a barrier to scaling its impact. Their absence also resulted in missed opportunities in aligning farmers' water stewardship plans with government programming. The collective is actively working to engage government and capitalize on opportunities from collaboration.

Photos: Mike Nemeth



Unlocking nature's potential through business models

- **Triple-bottom line**

  A business framework that measures success across three dimensions: People (social), Planet (environmental), and Profit (economic).

  Companies integrate social and environmental performance into their strategies alongside financial performance, often tracking metrics for each dimension.

- **Sustainable products and services**

  Business models that design, produce, and deliver goods/services with minimal negative environmental and social impact, often with positive contributions.

  Products/services are designed for reduced resource use, circularity, ethical sourcing, and/or social benefit, marketed as sustainable options.

Over the past year, nature has climbed the priority list for corporate ESG reporting. A Stanford University Business School survey of investors found that sustainability of supply chains and natural capital are 3rd and 4th on the priority list of environmental factors they consider when it comes to a company's ESG reporting.[33] Climate action remains the top consideration in environment and in the top three topics of investor ESG engagement across the three pillars of ESG. That's an important consideration since nature and climate issues are interconnected, especially for nature-based sectors like forestry where investors' key interests for ESG engagement with companies is risk mitigation.[34]

This growing focus on nature is a response from investor demand and recognition of the risks if natural capital is not managed responsibly by businesses. Over 27 pension funds at COP16 UN Biodiversity Summit in Colombia in 2024 called out government inaction, demanding greater regulations and standards to tackle the nature crisis. Black Rock publicly stated that sustaining nature–water, soil carbon, and biodiversity–is a foundational asset class. Goldman Sachs launched a Biodiversity Bond Fund with the goal of raising more than $700 million. Norway's Government Pension Fund Global, which manages $2.1 trillion in assets, released an assessment of nature-related risks across approximately 90% of its portfolio.[35]

Community driven business models that work

A growing number of investors are on the hunt for companies that can demonstrate durability in their relationship with and use of natural assets. Companies that reduce their ecosystem impact intensity and land and carbon footprint also perform better. Annualized over 5-years, the S&P 500 Biodiversity Index slight outperforms the S&P 500 Index by 0.26%.[b]

Rethinking conventional business models for companies and industries reliant on natural assets is an opportunity to reposition nature's strategic role in a growing economy. But buy-in and evidence at the ground-level is essential. A Canadian Prairies-based collective of farmers, conservation organizations, and corporates are working together to understand if water stewardship plans in the Lake Winnipeg Basin is good for business. Driven by curiosity, this group is creating a model for evaluating farmer returns on investments and profit margins with nature accounting integrated, which is replicable and scalable to any farming region.

In a triple bottom line business model, multiple revenue streams can help alleviate friction between environment, community resilience, and economic growth objectives. An enabling finance and policy environment helps, too. An ecosystem-based management plan that mapped the multiple environmental, community and economic objectives of forest management, positioned the Cheakamus Community Forest surrounding Whistler, B.C., to build a resilient business model that balances revenue from ecosystem services and logging.

Bottom line: How accounting, policy and AI can boost investment further

Nature accounting: Getting it on the books

Used properly, nature accounting can result in smarter projects, resilient supply chains, reduced disaster losses, and pipelines of investable natural assets–turning ecosystems into wealth drivers. But frameworks like the UN's SEEA that already exist need more use cases to demonstrate its value informing investments.

In Canada, the Critical Minerals Strategy and major projects that fall within could be a litmus test for implementing SEEA in project assessments and plans to mobilize capital. However, inclusion of Indigenous lands, values, and knowledge in SEEA framework is critical in closing the gap between Free, Prior, and Informed Consent (FPIC) and nature accounting metrics. Indigenous rights and knowledge must be at the core of nature accounting—so economic growth builds natural capital wealth and respects those who steward it.

Embedding natural capital values in impact assessments and broader pro-growth agendas like the U.K.'s Plan for Change could ensure that new developments unlock investment for green infrastructure and proceed where water use demands can be met. Nature accounting in the Thames Valley, one of the U.K.'s most water-stressed regions, could transform how housing and infrastructure projects are assessed. Leveraging nature as an asset in development and land-use decision making can reframe local authorities and developers' approach in weighing the economic costs and trade-offs of water management and broaden the suite of options, including grey, green and hybrid options.

Finally, consider the Chesapeake Bay watershed, covering six states along eastern shores of the U.S., which faces some of the highest nutrient pollution in the country from industry, agriculture and urban runoff, causing degraded water quality, habitat loss, and economic impacts on fisheries and recreation.[36] Integrating natural capital values into infrastructure and land-use planning would enable targeted investments in green infrastructure and ecosystem services. It also presents an opportunity for farmers in the region to replicate the approach taken by the farmers in the Lake Winnipeg Basin Project case study to drive investment in agricultural-based water stewardship.

Policy integration: Net-new is not necessary to move money and rules toward nature-positive growth

Integrating government funding with plans to build supply of carbon offset projects in compliance offset markets is one key area for policy integration to grow, while ensuring projects adhere to additionality principles. In Canada, offset protocols for forestry and agriculture are emerging on the Federal GHG Offset System, yet farmers, as demonstrated by the Prince Edward Island Federation of Agriculture's case study, are generally ill-equipped to meet data quality and record keeping requirements of carbon offset projects. Leveraging existing funding programs, like the nearly $500 million Agricultural Clean Technology program is an opportunity to address this challenge. Supporting farmers in navigating how their investments in hardware and software can help them collect the necessary data to access carbon incentives could help build the supply of nature-based offset projects on the Federal GHG Offset System and improve funding program outcomes.

The explicit inclusion and prioritization of nature-based sectors and green infrastructure projects in government-led growth funds is another launch pad for integrating nature into pro-growth agendas. The forthcoming United States Sovereign Wealth Fund, the nearly-$50 billion National Wealth Fund in the U.K., and the $15-billion Canada Growth Fund are places

Case Study

Diversified prosperity: A community approach to land tenure makes way for multiple revenues and beneficiaries

Where: Whistler, British Columbia, Canada

From conflict to community driven economic development, B.C.'s Community Forest Agreements opened a pathway for community-led logging that is delivering on a triple bottom line business model that is generating profit from ecosystem services like carbon sequestration, tourism and logging.

Driver: Conflict over forest management and ownership has been a longstanding issue in B.C. In response to greater calls for First Nations and local community control over forests, the province introduced area-based forest licenses called Community Forest Agreements (CFA) in 1998. This allowed for a new type of tenure in forestry management that aligns with local communities' values and vision for development.

Mechanism for change: Community Forest Agreements take place on provincial Crown land in B.C., where Crown land covers roughly 94% of the land base. Licenses are issued by the province to communities that develop a management plan, including commitments to make a broader social, economic and resource use impact. These management plans are critical to the success of CFAs and empower communities to build a business model that generates social, economic, cultural, and environmental benefits, ensuring that local values and priorities shape how forests are stewarded. Community Forest Agreements are also long-term—25-to-99-year agreements—granting communities the exclusive right to harvest timber and manage botanical forest products within a fixed area.

Today, there are 62 CFAs, covering about 5% of annual harvest volumes in B.C. on public lands.[55] Roughly half of these CFAs are led by Indigenous

Photos: Heather Beresford

Nations or Nations working in partnership with non-Indigenous communities to oversee activities under the CFA. One example, the Cheakamus Community Forest (CCF), is a three-way equal partnership including Lil'wat Nation, Squamish Nation and the Resort Municipality of Whistler. The Cheakamus Community Forest covers 81,589 acres and manages its tenure under an Ecosystem-based Management (EBM) Plan that focuses on delivering ecosystem function, cultural values, wildfire risk mitigation and recreation/tourism values, as it plans its harvesting operations.

In the making: The Cheakamus Community Forest's Ecosystem-based Management Plan led to developing a carbon offset program, as forest conservation and protection was a priority for the community under the plan. The Ecosystem-based Management Plan informed the community's forestry management approach, which includes reduced harvest levels, extended rotation ages, expanded reserves, and enhanced old-growth and wildlife habitat protection compared to standard forestry practices. Because of these practices and the establishment of an atmospheric benefit sharing agreement, the Cheakamus Community Forest operates the only community forest carbon offset project in B.C., generating revenue to fund their stewardship and climate initiatives.

The Cheakamus Community Forest surrounds the Whistler resort, one of the top tourist destinations in the province, positioning the community to build tourism experiences throughout the managed forest. But it also adds a greater responsibility to undertake large-scale wildfire risk reduction to protect Whistler's wildland–urban interface. Recently, the Cheakamus Community Forest completed a climate change risk assessment and identified areas subject to wildfire and drought risks, which they are using to inform strategic forestry operations plans to create a diverse, climate resilient forest.

Impact: The community forest tenure contributes $1-2 million annually through timber harvesting to the Sea-to-Sky economy, supports Indigenous employment and capacity-building, and ensures transparent, community-driven governance through significant community engagement and information sharing agreements.

Since its inception in 2009, the Cheakamus Community Forest has demonstrated its environmental impact through Improved Forest Management as defined by the B.C. Forest Carbon Offset Protocol, by avoiding an estimated 10,000–15,000 tonnes of carbon dioxide emissions, annually, generating over 150,000 carbon credits to-date, which equates to about $100,000 per year from carbon sales to reinvest in forest stewardship.[56]

Lessons: In a triple bottom line business model, frictions between environment, community resilience and economic growth can lead to the development of multiple revenue streams that contribute to building natural capital. The Ecosystem-based Management Plan was foundational in identifying how to create win-win opportunities for the community and set the stage for the carbon project. For others to do the same, enabling policy that positions other community forests to generate profit from their work in producing ecosystem services like GHG mitigation is required. This is an opportunity to explore under the B.C. Minister of Forests recent mandate to expand the community forest tenure system.

to start in prioritizing investable nature-based and natural capital wealth projects.

Finally, improving the community resilience and potentially reduce costs in the housing development boom is an imminent policy integration opportunity. The U.K. is driving action through the biodiversity net gain scheme–an opportunity to crowd in greater private capital. In Canada, there is an opportunity to use the National Adaptation Strategy to mainstream nature-based projects in municipal housing programs tied to federal funds including, the Canada Housing Infrastructure Fund (CHIF). The CHIF has committed to investing CAD$6 billion over 10 years in housing development water and wastewater management.

Embracing disruptive technology: Enable AI to streamline nature governance and build natural capital

Nature accounting and governance is deeply complex. There are numerous protocols, frameworks and standards for measuring, monitoring, accounting, reporting, and verifying natural assets and their ecosystem services. Since this governance network of standards and framework is critical to ensure rigor in nature accounting, there is a need to simplify it to ease adoption. Learning from countries like Estonia, a leader in implementing AI to transform public administration, is an opportunity for the nature and conservation sector to advance the implementation of nature standards and frameworks like SEEA.

Nature-based projects that assess outcomes and monitor progress can also leverage AI to automatically process satellite imagery, remote sensing, sensors, and public datasets to monitor ecosystems in near real time, reducing manual data collection costs and improving accuracy. Of course, the cost of powering AI can't be ignored. AI data centres are a growing competitor in the demand for land, water and energy. It is a strategic imperative, especially among countries with depleting natural

"Beyond funding and finance, governments can also use their authority to recognize high-integrity nature-based projects to attract private dollars"

resources like the U.K., to leverage natural capital in determining where it is possible to build a clean fleet of AI data centres. In addition to location, design features are critical in mitigate natural resource use, like rainwater harvesting or net-positive watering, which can return clean water back to neighbouring landscapes. To ease pressure on land, the use of heat offtake can also position AI data centres to have a dual purpose in, for example, greenhouse food production.

Pro-growth agendas need to do more than extract for wealth, they need to build natural assets that sustain wealth today and for the future. Nations that do so can shift control and value of natural wealth to those who steward it. Global finance is already moving, and investors are on the hunt for impactful natural capital projects that generate returns. Countries that account and build their natural capital wealth can be home to this investment. This opportunity requires a shift in government and business approaches, treating natural capital, not as a regulatory box to tick or a nice to have, but as foundational for growth – the wealth beneath wealth.

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Footnotes

[a]Values are in Canadian dollars unless specified.

[b]The Biodiversity Index Launch Date is Feb 05, 2024. The index Backward Data Assumption Date is Jun 22, 2020.

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