PROTECTING & PROMOTING NATURAL SYSTEMS:

A CRUCIAL STEP FORWARD FOR BUSINESS & COMMUNITY

Authors

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"The living fabric of the world ... is slipping through our fingers without our showing much sign of caring."

— Pontifical Academy of Sciences, 2017

According to the World Economic Forum, nature positive approaches are a US $10 trillion opportunity.[1] Currently, approximately $44 trillion of economic value generation — more than half of the world's total GDP — is moderately or highly dependent on nature. Businesses worldwide are starting to value nature positive approaches, recognizing their need to work with nature rather than against it. Business service companies are also taking note of the combined impacts and risks of development, encroachment, and climate change on nature and natural processes. For example, partnering with WWF, Deloitte has created Climate and Sustainability Centers in all service regions to explore the criteria and functions associated with nature positive business.[2]

Nature positive is a term used to describe:

> A world where nature — species and ecosystems — is being restored and is regenerating rather than declining. A nature positive economy is one in which businesses, governments and others take action at scale to minimize and remove the drivers and pressures fuelling the degradation of nature, to actively improve the state of nature itself and to boost nature's contribution to society.[3]

Nature positive approaches are rapidly being recognized as cost-effective strategies that promote the ecological processes and services on which we all depend.

CLIMATE CHANGE: THE BIGGEST RISK TO BUSINESS

Climate change is the greatest risk to business, according to Mark Carney, former governor of the Bank of England and UN Special Envoy on Climate Action.[4] As climate impacts ramp up (and hazards like floods, drought, heat, and extreme weather become more frequent and severe), service and supply chain disruptions, costly damages from disasters near and far, and resulting political unrest are expected to jeopardize economic stability.[5]

BUSINESSES WORLDWIDE ARE STARTING TO VALUE NATURE POSITIVE APPROACHES, RECOGNIZING THEIR NEED TO WORK WITH NATURE RATHER THAN AGAINST IT

In Canada, the average costs of weather-related disasters and catastrophic losses are rising each year.[6] In 2021, insured losses from climate disasters totaled CDN $2.1 billion (US $1.5 billion).[7] When accounting for indirect losses, estimates were closer to CDN $9.2 billion (US $7 billion). These numbers are projected to rise by CDN $5 billion (US $3.75 billion) per year by 2030 and will continue to accelerate if immediate adaptation (risk reduction) and mitigation (emissions reduction) actions are not taken.[8]

The cost of not responding or adapting is projected to become 10 to 15 times higher over time; acting now would help avoid costs associated with loss, disaster, and recovery.[9] This reality is forcing communities and businesses to anticipate and

respond to the projected risks of climate change. Investments in nature-based solutions are increasingly viewed as an adaptive, low-cost way to build climate resilience at scale.

Investing in nature is not new; conservation and restoration programs have long been viewed as goodwill opportunities by public and private sectors to protect biodiversity, but with ad hoc impact. Global carbon offset markets have proven a popular tool for businesses to counter their carbon footprints, while investing in the carbon sequestration and storage potential of forests, soil, and other natural assets.

Realizing the offset potential is a challenge that will require an estimated increased investment of $10–$100 billion by 2030.[10] The generally accepted social cost of carbon is $100 per ton of carbon dioxide in the atmosphere, yet voluntary carbon prices are around $10 per ton.[11]

Narrowly defining the value of nature as either a biodiversity or carbon strategy misses the more comprehensive value of these ecosystems and their services.

PROMOTING RESILIENCE: WORKING WITH NATURE

Nature-based solutions are defined as:

> Actions to protect, sustainably manage, and restore natural and modified ecosystems that address societal challenges effectively and adaptively, simultaneously benefiting people and nature.[12]

They range in scale from the protection and expansion of natural assets, such as urban forests, streams, and foreshores, to site-specific green infrastructure solutions, such as tree planting, rain gardens, de-paving, and green roofs.

Figure 1 illustrates how supporting and enhancing local ecological processes and services leads to additional benefits (or co-benefits), such as clean water and air, biodiversity, health and well-being, and supports more livable and resilient communities. Natural assets and green infrastructure are increasingly important as ways to buffer communities and businesses against climate risks, such as frequent and severe heat, droughts, and floods. The goal of nature-based solutions is to identify "soft" solutions that work with nature rather than against it.

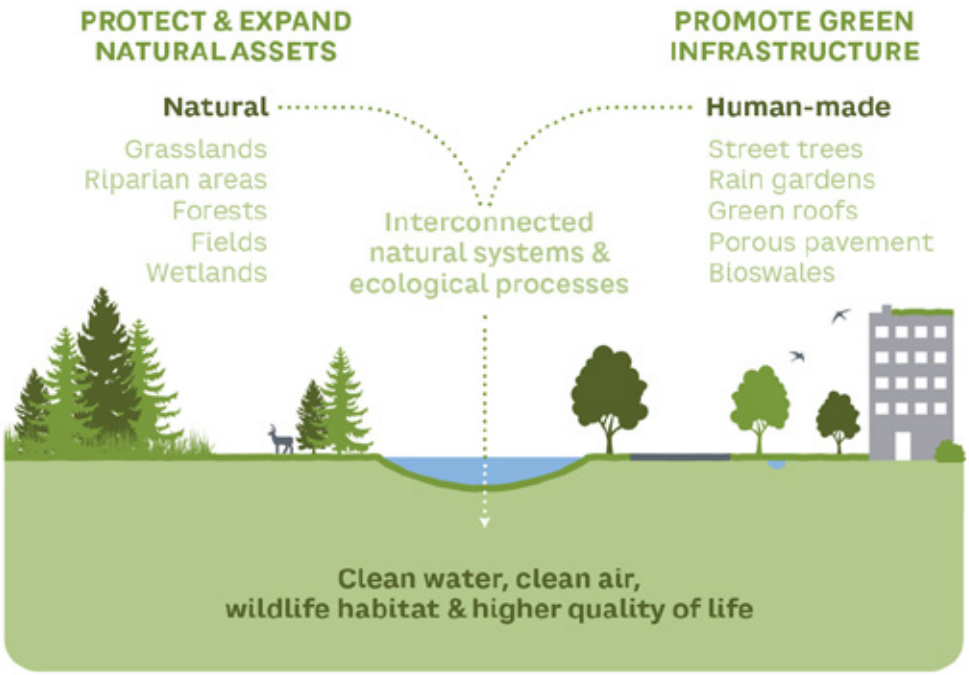

Figure 1. Nature-based solutions support and enhance the ecosystem processes and services that benefit everyone at the landscape scale, ranging from protecting, restoring, and expanding natural assets to promoting green infrastructure (adapted from: Metro Vancouver)

The destruction of natural areas and assets continues to result in irreparable and costly losses.[13] Typically, natural assets like forests have only been valued for their raw extraction potential; the services provided by intact ecosystems have held no value in governmental or business accounting.

Research is now painting a different picture. One study found that fully protecting old-growth forest around Port Renfrew, British Columbia, Canada, would contribute an additional CDN $40 million (US $31 million) of value in ecosystem services and net economic benefits, compared to extractive business as usual.[14] That figure doesn't include economic benefits related to tourism and carbon sequestration.

Similarly, the Canadian Province of Nova Scotia recently estimated that the loss of wetlands to development equals about CDN $2 billion (US $1.5 billion) annually in lost services like water purification, groundwater recharge, and erosion protection.[15] Emerging trends to account for these services are shifting the value of nature and natural systems from zero to significant.[16]

Natural assets like forests, riparian areas, and wetlands are fundamental for ecological processes that sustain ecosystem function, such as water cycles and biodiversity, while providing community-related services like water retention, aquifer replenishment, stormwater protection, and temperature moderation.

Gibsons, a small town on Canada's Pacific Coast, protected and expanded naturalized stormwater ponds and wetlands instead of paying CDN $4 million (US $3 million) of taxpayer money in expanded stormwater infrastructure. Working with private landowners to build incentives, the town paid CDN $815,000 (US $613,000) to restore the ponds, saving construction, operations, and maintenance costs while gaining flood protection and an expanded park system that benefits the community.[17]

Understanding the scale and extent of natural assets, their conditions, and the services they provide helps researchers and communities understand how to enhance and advance the ecological processes in both urban and rural areas, under changing conditions over time. In Singapore, rain gardens, green roofs, and permeable pavements are used to create a "sponge city" that captures and absorbs rainfall, decreasing the burden on aging stormwater infrastructure (especially in light of more frequent precipitation events) and minimizing flood-related events.[18]

NATURAL ASSETS SUCH AS FORESTS, RIPARIAN AREAS, AND WETLANDS ARE FUNDAMENTAL FOR ECOLOGICAL PROCESSES THAT SUSTAIN ECOSYSTEM FUNCTION

Similarly, Vancouver's Rain City Strategy uses nature-based solutions to capture (infiltrate, evapotranspirate, and/or reuse) and clean a minimum of 90% of Vancouver's average annual rainfall volume and to manage urban rainwater runoff from 40% of impervious areas in the city by 2050.[19] Nature-based solutions like planting 150,000 trees between 2010 and 2020, increasing the urban forest canopy to 22% by 2050, restoring or enhancing 25 hectares (ha) of natural areas by 2020, and protecting biodiversity hot spots have the potential to boost Vancouver's resilience to more severe precipitation and heat events.

Shared financing for resilience in services like wastewater and rainwater management is critical for building business and community resilience over time. Planning processes and financial instruments are elevating the role of businesses and property owners in investing in these types of solutions.

Below are some examples of high-level indicators being used in Canadian municipalities and businesses to target and track the uptake of nature-based solutions, with more coherent progress indicators forthcoming:

- Proportion of permeable surfaces per ha
- Percentage of urban tree canopy/land cover per ha
- Percentage of greenspace/shade area per ha
- Number of supported stream protection/restoration projects

- Volume of stormwater diverted by natural assets and/or green stormwater infrastructure
- Number of climate-adaptive trees planted
- Proportion of budget allocated to and total investment in nature-based solutions across all corporate operations
- Amount of funds budgeted for nature-based maintenance efforts
- Number of site plans and subdivisions that incorporate nature-based solutions in their design
- Number of changes in property maintenance criteria that promote nature-based solutions
- Ranking of watershed health (through report card or monitoring)
- Number of external partnerships and public-private financing relationships

3 FORWARD-LOOKING APPROACHES

Financiers have estimated that a $4.1 trillion financing gap exists and needs to be closed by 2050 if we are to protect and restore remaining ecosystems and buffer our communities against the impacts of climate change.[20]

An all-hands-on-deck approach is needed to coordinate actions and investments that support ecosystems and sustainable service delivery to benefit all. As beneficiaries of the services provided by nature, both public and private sectors must invest heavily in the nature positive transformation.

Businesses play a pivotal role in the transition to nature positive solutions by changing norms and practices in accounting and investing. We recommend three forward-looking approaches for decision making and investment planning to help leaders apply nature as a strategy for building direct and indirect business resilience over time.

1. PRIORITIZE STRATEGIES THAT MINIMIZE CLIMATE HAZARDS

Applying regional climate projections and identifying and prioritizing anticipated impacts (e.g., temperature and precipitation changes), hazards (e.g., heat, drought, flooding, extreme weather), and risks (e.g., likelihood and consequence scenarios) helps build and support an empirically driven understanding of the future. This information helps communities and businesses anticipate key vulnerabilities and climate risks for infrastructure, people, and ecosystems. Including this information in decisions will help leaders better anticipate projected disruptions, losses, and potential disasters and proactively respond to minimize existing vulnerabilities and future risks.

This type of future-oriented decision making builds the case for protecting and promoting healthy ecosystems, ecological processes and services, and preventing irreplaceable loss.

2. PRIORITIZE LOW-CARBON, RESILIENT STRATEGIES

Every business, industry, and sector must be responsible for internalizing best-available climate data into all planning and investment decisions. Minimizing future climate impacts requires buffering against projected impacts (as noted above) and reducing greenhouse gas emissions. The goal is to manage the avoidable risks of climate change and avoid the unmanageable risks of runaway climate change.

Contradictions can occur when adaptation and mitigation planning is done in silos. Adaptation strategies can exacerbate emissions (e.g., higher dikes, more pumping stations, increased use of air conditioning), and emissions-reduction strategies may not adequately account for changing conditions and projected climate impacts over time (e.g., heat thresholds of materials, building efficient infrastructure and buildings in flood- or erosion-prone areas), which may shorten the lifespan of both the project and the investment.

Planning for adaptation and mitigation is critical to prevent contradiction. Done well, it can encourage many social, economic, environmental, and cultural benefits (e.g., cost savings, equity, biodiversity), leading to greater sustainable development. Nature-based solutions can and should be used to address risk reduction, carbon storage, biodiversity, sustainable service delivery, and other goals simultaneously.

3. VALUE & INVEST IN NATURE-BASED SOLUTIONS

Shifting the calculus of nature from zero value to a suite of significant ecological, cultural, and service values is critical. The business case for protecting and expanding natural assets and promoting green infrastructure is typically amplified once the value of water, stormwater, flood, drought, heat, and erosion management services are tabulated, and more so once hazard-avoidance benefits are calculated based on projected climate changes over time.

Adding in the values of carbon storage/sequestration and the avoided losses for biodiversity, air and water quality, along with other metrics, including reduced heating and cooling loads and improved health and well-being, we begin to see how this rapidly increases the value of nature.[21]

Working with nature rather than against it — and valuing benefits in a holistic, coherent manner — not only enhances the business case for protection and ecosystem enhancement through nature-based solutions; it also multiplies the advantages for businesses and regions and the communities that rely on them.[22]

> **MINIMIZING FUTURE CLIMATE IMPACTS REQUIRES BUFFERING AGAINST PROJECTED IMPACTS AND REDUCING GREENHOUSE GAS EMISSIONS**

SYSTEMIC & PROACTIVE NATURE POSITIVE ACCOUNTING

Financial markets are waking up to the need for sustainable investing. According to a 2019 HSBC report, sustainable investment assets stood at $30.7 trillion in 2018 (a 34% increase over two years) and represented some 35% of all professionally managed assets, with projections of rapid increase.[23] The report also shows that more than 90% of insurers and investors see the trend toward sustainability as either very important or important, with two-thirds stating they plan to increase their allocations. Frameworks and metrics that aim to bring greater empirical coherence to nature positive endeavors are rapidly emerging.

There is a lot of activity in this area. For instance, in March 2021, the European Commission set up Aligning Accounting Approaches for Nature, which aims to develop standardized natural-asset accounting practices for businesses, including a standardized approach to biodiversity measurement.[24] In addition, the Taskforce on Nature-related Financial Disclosures (TNFD) is set to launch a framework in 2023 that will set out best-practice guidance in valuation and reporting.[25]

The Natural Solutions Initiative (NSI) launched by ACT (Action on Climate Team) at Simon Fraser University in Vancouver aims to advance a more coherent solutions framework that synthesizes the multiple values and metrics provided by nature-based solutions across multiple objectives.[26] The NSI framework will be tested, evaluated, and refined with key stakeholders: parcel, campus/neighborhood, community, and bioregion. The goal is to contribute empirical and practical understandings of the multiple values and tradeoffs that nature positive approaches provide to both human and nonhuman communities.

These frameworks are just the beginning of rapidly emerging research and practice areas. As communities and businesses take stock of what they have around them, and strategize about how to shield against projected climate hazards and risks, key priorities will become clear: bolster the natural systems and services on which we all depend.

Governance and partnership, policy, and financing innovations are needed to advance these resilience-building solutions and accelerate a much-needed sustainability transition on local and global scales.

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