

Embracing Nature

How Businesses Can Engage with
New Environmental Imperatives

KEY TAKEAWAYS

- 1** The consequences of environmental degradation on businesses are already apparent. Not only do extreme biodiversity loss, widespread pollution, and the overconsumption of natural resources present direct challenges for key industries, they also exacerbate critical challenges associated with climate change, societal health, supply chain reliability, and food security.

- 2** Governments have come to recognize the urgency of building a nature-positive agenda. In the near term, this will make for considerable policy and regulatory unpredictability as conflicting stakeholder pressures settle into a coherent approach and new solutions emerge.

- 3** Businesses should get ahead of the curve by assessing their risks and determining strategic responses. This includes reviewing the double materiality of risks — understanding how their assets and operations impact nature and how in turn they depend on it. New data, analytical tools, and technologies will be required for complex nature-related risk assessments and growing disclosure expectations.

- 4** It is crucial that businesses embrace complexities and uncertainties by integrating nature into their risk governance systems. Preparing a risk strategy that leverages innovations in risk management is an important first step. This will enable companies not only to build resilience, but also to capitalize on new growth opportunities and navigate new trends in markets and financing.

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1. Integrate nature into corporate risk governance

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3. Leverage innovations in risk management

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Introduction

Large-scale environmental degradation has been one of the unintended consequences of the unprecedented population growth and industrial advancement that the world has witnessed since the early 1800s. Human activity is putting significant pressure on nature through the overexploitation of natural resources, soaring pollution, and a deep decline in biodiversity. This in turn poses huge risk to society, with more than half the world's economic output (an estimated \$44 trillion) either highly or moderately dependent on the environment.¹

Nature loss is not a recent issue, but the scale of the challenge has reached unprecedented levels. In particular, the complex interactions between environmental decline and climate change threaten to bring us ever closer to dangerous tipping points, with unpredictable, irreversible, and catastrophic ramifications. Many of the ecosystem services on which humanity relies are impacted by climate change, while efforts to avoid even more dangerous levels of global warming rely heavily on well-functioning ecosystems to absorb carbon.

Sustaining economic development and meeting the needs of growing population without damaging the environment is a critical challenge for businesses and society and is at the core of the United Nations' Sustainable Development Goals. This is particularly important as nature loss exacerbates many critical issues associated with societal health, supply chain reliability, and food security that are experienced across economies and societies.

In response, global commitments to prevent and reverse environmental degradation are increasing in number and ambition. Nature loss is recognized as being of strategic importance to national resilience by a growing list of countries, with key sectors such as agriculture, utilities, mining, and industrials already negatively impacted. Collapsing biodiversity, land degradation, pollution, and natural resource depletion are also increasingly on the agenda of central banks and regulators, which are signaling

a paradigm shift in risk management and reporting through the inclusion of nature as one of the pillars of ESG disclosures and by starting to consider environmental degradation as a potential source of systemic risk for economic and financial systems.

For businesses, these global issues translate into direct and indirect risks, affecting business models, value chains, investment portfolios, market strategies, and stakeholder relations. The imperative is to increase resilience and help reverse nature loss. At the moment, however, despite their significance, nature-related risks are rarely accounted for by businesses, as firms are often at an early stage in understanding the complex interdependencies between ecosystems and their assets and operations. Additionally, enterprise risk management strategies are often afflicted by short-termism, but incorporating nature requires working on medium- and long-term horizons.

Responding to the challenges posed by environmental decline can strengthen business resilience and unlock new opportunities, ranging from resource efficiency to better access to capital and insurance. First-movers may gain competitive advantage over their peers, but a high proportion of companies will need to reorient their strategy to navigate an ever-changing risk and regulatory landscape. It is also essential for organizations to become familiar with new terms and concepts. Without this, they will find it hard to successfully harness innovative frameworks, data, and technologies and rethink their processes and enterprise risk management strategy.

Embracing Nature provides an overview of nature-related risks and opportunities and how they might evolve. It highlights how these are already material to businesses and describes new tools and frameworks for assessment and reporting. It discusses recent market and regulatory developments and presents four strategies for how organizations can incorporate nature in their agenda.

Glossary: The language of nature

Biocapacity	The ability of ecosystems to regenerate the biological resources required for human activity
Biodiversity	The variety of living organisms such as animals, plants, fungi, and bacteria that are found on the planet
Carbon sequestration	The process of removing and storing atmospheric carbon dioxide with the objective of preventing further increases in its concentration
Circular economy	A model of production and consumption that decouples economic activities from depletion and degradation of natural resources
Double materiality	The notion that both nature's impacts on a company and the company's impacts on nature are material and should be disclosed
Dependencies, nature	Ecosystem services that an organization relies on for their business processes to function
Ecological footprint	A measure of the amount of biologically productive land and sea area required to support an entity's consumption
Ecosystem	A community of organisms interacting with each other, with the physical environment, and with the climate
Ecosystem services	The benefits to humans provided by the natural environment, which can be categorized into four types: provision (benefits from the supply of materials such as food and fuel), regulation (benefits from the balancing of ecosystem processes), support (benefits from the production of all other ecosystem services, such as genetic diversity maintenance), and culture (non-material benefits such as spiritual well-being and aesthetic pleasure)
Environmental degradation	The loss or deterioration of nature due to pollution, overexploitation of natural resources, or damage to biodiversity
ESG	A set of criteria for organization to measure non-financial performance across the environmental, social, and governance dimensions
Green finance	Financial flows (from banking, investment, insurance, etc.) geared towards environmental priorities
Green swan	Coined by the Bank for International Settlements, the term refers to nature-related "financially disruptive events that could be behind the next systemic financial crisis" which cannot be assessed by extrapolating historical data. The term has been used mostly in the context of climate change and the risks of triggering a systemic financial crisis with cascading global environmental, geopolitical, economic, and social consequences
Impacts, nature	The negative consequences that organizations have on the environment
Nature	Defined by the Taskforce on Nature-related Financial Disclosures (TNFD) as composed of the four realms of Land, Ocean, Freshwater, and Atmosphere. Biodiversity is an essential component of nature and present across the four realms
Nature-based solutions	Measures that leverage natural systems or processes to protect, manage, and restore ecosystems while providing socioeconomic co-benefits such as improved water management or climate change adaptation
Natural capital	The collection of renewable and non-renewable natural assets providing resources and services to people and economic systems
Natural capital accounting	The calculation of the total stocks and flows of natural capital in an ecosystem, country, or region
Nature loss	See Environmental degradation
Nature-positive	The alignment with the objectives of restoration and regeneration of nature in pursuit of a healthier environment
Opportunities, nature-related	Activities that can create positive outcomes for organizations while avoiding or reducing impact on nature or contributing to its restoration
Risks, nature-related	The potential threats to an organization linked to its, and other organizations', dependencies on nature and nature impacts

Sources: Bank for International Settlements, Ellen MacArthur Foundation, Food and Agriculture Organization of the United Nations, Global Footprint Network, MSCI, Organisation for Economic Co-operation and Development, Taskforce on Nature-related Financial Disclosures, The Grantham Research Institute on Climate Change and the Environment (London School of Economics), United Nations Environment Programme, World Economic Forum



Understanding nature-related risks and opportunities

Preventing environmental degradation while building resilience to nature-related risks requires businesses to understand the complex interactions between natural ecosystems and their assets, operations, value chains, and stakeholders. New science-based frameworks are emerging to help organizations assess, report, and act on nature-related risks and opportunities.

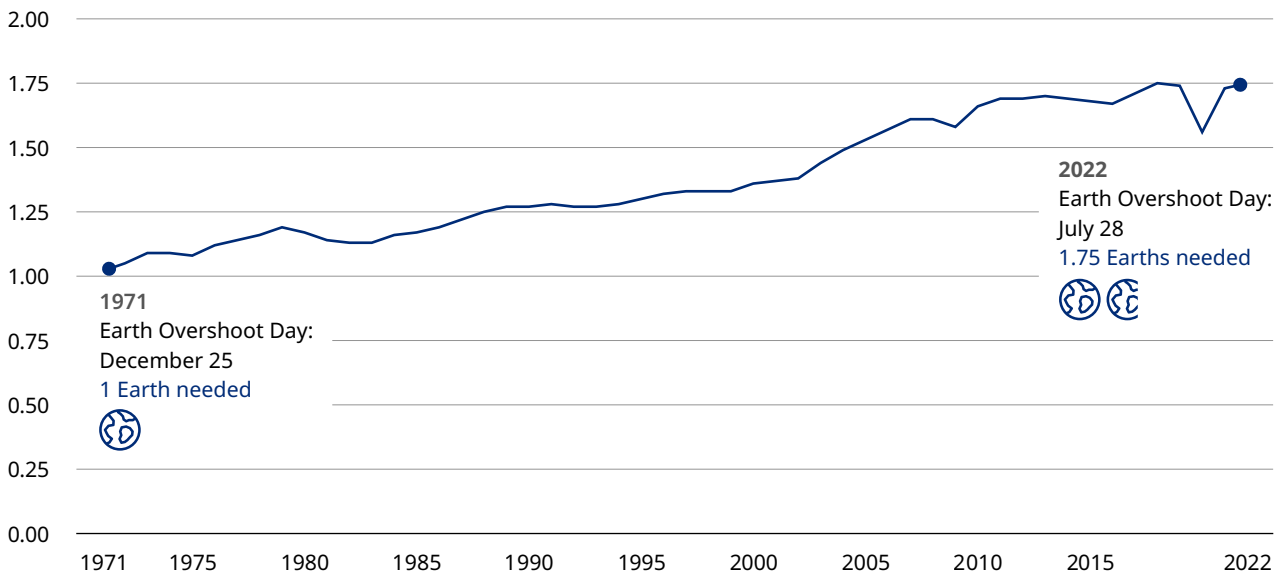
Depending on a fragile environment

A healthy environment is essential for equitable and sustainable economic growth. Businesses and broader society rely on nature to provide a vast range of ecosystem services such as pollination and the purification of air and water. Forests serve as sources of timber and productive soils and play an important role in climate regulation by storing large amounts of carbon dioxide.² Coastal wetlands are critical for flood protection, erosion control, and commercial fisheries.³ The overexploitation of natural resources, pollution, and biodiversity loss pose a growing risk to these ecosystem services. As an example, half of the planet's coral reefs have been lost since the 1950s,⁴ exacerbating the risk of coastal flooding. In the US, losing one meter of coral reef height would lead to

a 62% increase in population and a 90% increase in property affected by coastal flooding, with a \$5.3 billion increase in damage.⁵

The trend of biodiversity loss and environmental degradation is worsening. As consumption continues to grow, humanity's ecological footprint is rapidly increasing and has long surpassed our planet's capacity to regenerate resources, also known as biocapacity. Earth Overshoot Day⁶ — which every year marks the day on which the global ecological footprint exceeds Earth's biocapacity — arrives earlier every year (with the exception of 2020, due to the COVID-19 pandemic): It reached July 28 in 2022, indicating that humanity's use of ecological resources and services is about 75% higher than our planet's capacity to regenerate them (see Exhibit 1).

Exhibit 1: Earth Overshoot Day



Source: Global Footprint Network

This highlights the limits of a linear economy, underpinned by the transformation of raw material into consumable goods and ultimately waste products. Trends such as accelerating electronic waste production, fast fashion, and single-use plastics are driving nature loss, resulting in rapid spread of microplastics in soils, oceans, the atmosphere, and living organisms.

Nine planetary boundaries have been identified by scientists, defining limits within which socioeconomic systems can operate safely. Four of them (biosphere integrity, biogeochemical flows, land-system change, and climate change) have already been trespassed or are at risk of being overstepped.⁷

Nature as a global risk multiplier

Leaders in business, government, and civil society surveyed by the World Economic Forum for the 2022 edition of the *Global Risks Report* ranked “Biodiversity loss and ecosystem collapse” and “Human-made environmental damage” as the third and seventh among the top 10 risks the world will face in the coming decade.⁸ They also identified nature loss as a risk multiplier interfacing with many critical issues such as climate, health, supply chain resilience, agriculture, and food security.

There are grave concerns about the many feedback loops between nature loss and a changing climate (see Exhibit 2). In the second half of the 21st century, climate change is expected to be a leading driver of nature loss.⁹ The rising concentration of greenhouse gases in the atmosphere is directly and indirectly damaging ecosystems, which further accelerates climate change. An example of this is the impact of climate change on natural carbon sequestration: Wildfire seasons have already lengthened globally and

academic research in the US has found that wildfires have depleted almost all forest carbon credits, posing a key challenge for the net-zero strategies that rely on them.¹⁰ The interlinked challenges of environmental degradation and the climate crisis may lead to the crossing of dangerous tipping points, with potentially devastating consequences.¹¹ Such “green swan” events may not only trigger a systemic financial crisis, but also spur cascading global environmental, geopolitical, economic, and social consequences.¹²

Conversely, protecting the natural environment plays a vital role in mitigating climate change and adapting to its impacts. A nature-positive economy and nature-based solutions will be essential for the transition to net-zero. Reforestation, for instance, reduces atmospheric concentrations of carbon dioxide, while restorative agriculture practices such as crop rotation and managed grazing enable improved carbon storage in soils. Functioning ecosystems can mitigate climate risks and boost societal resilience, for example through natural flood storage and by having a cooling effect during heatwaves.

Exhibit 2: How nature loss and climate change reinforce each other



NATURE LOSS INTENSIFIES CLIMATE CHANGE RISKS

Deforestation releases carbon dioxide into the atmosphere, reduces global carbon sequestration capacity, and worsens the impact of extreme weather events such as flooding and heat waves.

Biodiversity loss, especially of plant and soil organisms, catalyzes desertification, reducing surface moisture and global carbon sequestration capacity.

The destruction of mangrove forests, wetlands, and other habitats caused by economic activities increases the impact of coastal flooding generated by climate change.

The loss of coral reefs exposes many coastlines to higher risk of sea surge flooding and erosion.



CLIMATE CHANGE ACCELERATES NATURE LOSS

Increasing incidence of extreme weather events such as droughts and wildfires compound forest loss and desertification.

Global warming reduces biodiversity, for example by altering habitats, increasing disease spread, and accelerating ocean acidification.

Sea level rise increases the vulnerability of coastal ecosystems to storm surges and flooding, accelerates coastal erosion and sedimentation runoff, and causes soil salinization.

The increasing concentration of carbon dioxide in the oceans and rising water temperatures result in coral reefs dying off.

Sources: Arctic Institute, Climate Policy Initiative, Intergovernmental Panel on Climate Change, Millennium Ecosystem Assessment, World Wide Fund for Nature, European Sustainable Phosphorus Platform, US Environmental Protection Agency

A taxonomy of nature-related risk and opportunities

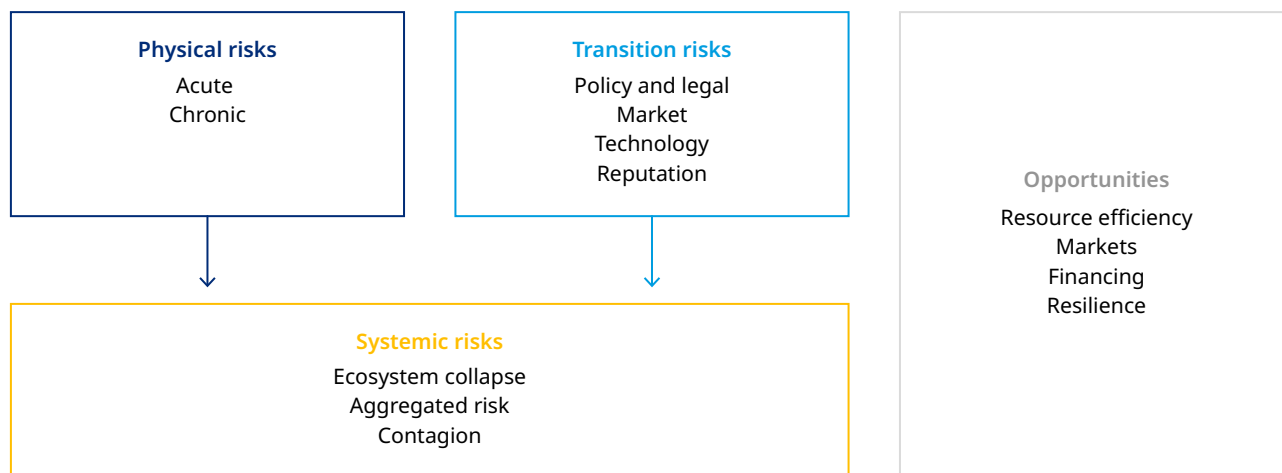
Environmental degradation translates into direct and indirect risks for corporates and financial institutions, with implications for business models, value chains, investment portfolios, market strategies, and stakeholder relations. Established in 2021, the Taskforce on Nature-related Financial Disclosures (TNFD) is currently developing a cross-industry framework for corporates and financial institutions to assess, report, and act on nature loss.¹³ A key component of this framework is a taxonomy of risks and opportunities (see Exhibit 3).

- **Physical risks** are caused by sudden natural degradation events and the chronic depletion of natural capital, such as declining soil quality and water stress. Physical risks can manifest in ways that are the result of acute events, long-term trends, or both.
- **Transition risks** come from shifts in policy, regulations, markets, and technology that are driven by efforts to reverse environmental degradation. Such changes can also lead to reputational and legal consequences that affect

relationships with investors, customers, workforce, communities, and other stakeholders.

- **Systemic risks** arise from cascading effects of physical and transition risks that impact broader natural and socioeconomic systems. Ecosystem collapses may unfold when environmental tipping points are reached and lead to the large-scale loss of ecosystem services, affecting entire regions or sectors. Aggregated risks emerge as a consequence of risks affecting multiple components of a financial or corporate portfolio. Additionally, contagion events may occur when a loss of ecosystem services causes difficulties at one or more financial institutions and spreads through the entire financial system.
- **Opportunities** arise when businesses incorporate nature into operations and enterprise risk management strategies. Businesses can increase corporate resilience, make advances towards achieving their net-zero targets, decrease costs by adopting resource-efficient processes, and avoid litigation and clean-up costs. Aligning financial interests with nature-positive outcomes can enhance their reputation among consumers, workforce, and investors. Additionally, it can also enable access to innovative technologies and financing options.

Exhibit 3: TNFD classification of risks and opportunities



Source: Taskforce on Nature-related Financial Disclosures







Note: The TNFD framework is still in development and may be subject to changes

Industry hotspots

No industry or geography is completely immune to nature-related risks. Indeed, there is compelling evidence that environmental degradation is already causing businesses losses in sectors that are heavily reliant on natural capital such as agriculture, energy, utilities, and industrials (see Exhibit 4). Impacts can also be indirect, with exposures emerging from the loss of ecosystem services thousands of miles

away from a company's assets and operations. For example, deforestation has been linked to one-third of outbreaks of diseases such as the Zika, Nipah, and Ebola viruses,¹⁴ while fertilizer-induced marine pollution in the US was linked to price increases of seafood products.¹⁵ Air pollution in India has been found to affect logistics, with key commercial centers facing delays in shipping and cargo handling and almost 15% of flights being disrupted due to low visibility in winter months.¹⁶

Exhibit 4: Examples of nature loss industry hotspots

SECTOR	EXAMPLES
 Agriculture Declining natural capital could place \$11.2 trillion of invested capital worldwide in agricultural assets at risk of stranding.	<ul style="list-style-type: none"> Falling population of bees and reduced pollination threaten 60% of global crop yields, accounting for an estimated \$577 billion of agricultural output. Groundwater depletion in India will decrease cropping intensity by 20% nationwide and up to 68% in the most affected regions. This may impact commodity prices and availability globally.
 Mining/extractives With almost half of all operational major sites located in forests and more than a million abandoned mines globally, the mining industry faces significant liability and reputational risks.	<ul style="list-style-type: none"> More than 90% of global iron ore production takes place in areas that face high biodiversity loss risks and water stress, posing significant regulatory and legal pressure on the industry. A Brazilian mining company was fined \$7 billion in response to the collapse of a tailings dam in 2019 that led to 270 fatalities, spread toxic waste, and polluted rivers.
 Energy In addition to risks associated with its large greenhouse gas footprint, the sector also has liability and reputational risks as the leading contributor to particulate matter, sulphur oxide, and nitrogen oxide emissions — three pollutants largely responsible for air pollution impacts.	<ul style="list-style-type: none"> A leading power company in the US spent \$85 million to reduce air pollution and faced \$1.75 million in fines under a settlement following violations of clean air laws. An oil spill in 2010 took nearly a decade to clean up and cost the responsible company more than \$60 billion in legal settlements.
 Pharmaceuticals Firms risk product shortages and increasing costs if the overharvesting of natural resources is compounded by biodiversity loss and water scarcity.	<ul style="list-style-type: none"> More than half of approved drugs are derived from molecules found in nature. Cancer drugs, in particular, rely on marine organisms that are at risk from ocean pollution. Pollution from pharmaceutical products threatens the world's riverine ecosystems and the health of those exposed to contaminated waters, with rising reputational and liability risks.
 Industrials/electronics Firms are reliant on water supply for production processes and face considerable scrutiny regarding the waste they generate.	<ul style="list-style-type: none"> Severe drought forced a leading semiconductor chipmaker to spend close to \$25 million for water trucks to address shortages in 2021. An American retail giant paid almost \$30 million in fines for the improper disposal of electronic waste that was hazardous to the environment.
 Financial/insurance Financial institutions face nature-related vulnerabilities through their underwriting and investment decisions. Activities detrimental to nature can lead to stranded assets and reputational and liability risks.	<ul style="list-style-type: none"> Financial institutions are significantly exposed to water scarcity and declining water quality, with \$13.5 billion in assets stranded due to water issues. A 2021 analysis by a Dutch bank found that 36% of investments by Dutch financial institutions were either highly or very highly dependent on one or more ecosystem services at risk from pollution.

Sources: Allianz, BBC, Bloomberg, CDP, CNN, Coelho et al (2011), De Nederlandsche Bank, European Business and Biodiversity Campaign, Forbes, International Energy Agency, Jain et al (2021), Reddy and Anbumozhi (2017), Securis, The World Bank, US Environmental Protection Agency, US National Oceanic and Atmospheric Administration, University of Cambridge, World Resources Institute



An emerging nature-positive paradigm?

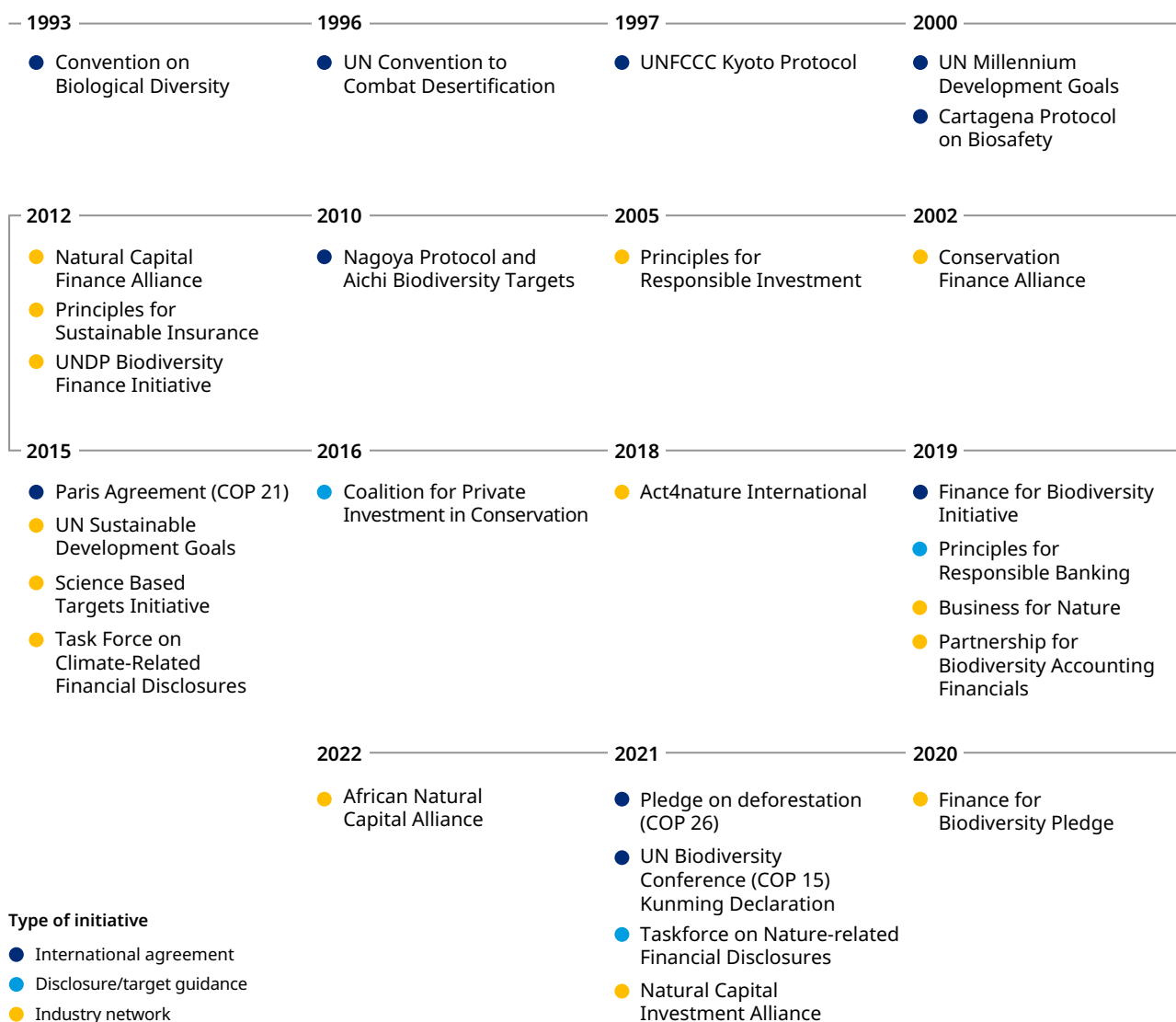
Evolving regulations, market trends, and technological innovation signal that a paradigm shift toward nature-positive outcomes is on the horizon. The TNFD framework is emerging as a cross-industry standard for organizations to assess, report, and act on nature-related risks and opportunities.

A shifting political and regulatory landscape

The deteriorating state of the environment has led to a rapid increase in the number of policies, regulations, international agreements, and industry initiatives framed around the transition to a nature-positive economy where environmental decline is not only halted but reversed (see Exhibit 5). Many countries have introduced regulations to protect biodiversity and ecosystems in line with the United Nations' Sustainable Development Goals, in particular

goals 14 (life below water) and 15 (life on land). In 2021, the 26th United Nations Climate Change Conference (COP26) led to a landmark pledge from more than a hundred nations to end deforestation by 2030,¹⁷ and the first part of the 15th Conference of the Parties to the Convention on Biological Diversity (CBD COP15) saw 100 countries sign the Kunming Declaration to reverse biodiversity loss and to protect 30 percent of the world's oceans and land by 2030.¹⁸ The treaty will be reviewed during the second part of COP15 in Montreal, Canada, in December 2022.

Exhibit 5: Selected nature-related initiatives



Source: Marsh McLennan Advantage analysis

In August 2022, the US government announced plans to develop a framework for businesses to reflect the value of natural assets on their balance sheets,¹⁹ while the 2020 European Green Deal specifically lists restoring nature as one its key ambitions for increasing the EU's competitiveness and efficiency.²⁰ These developments come on the back of decades of regulation and technological advancements that have led to some changes but have made little progress towards reversing the global trend of deteriorating ecosystems. Successes such as the phasing out of ozone-depleting aerosols, the improvement of water quality in many European rivers, and local air quality gains due to stricter regulations were counterbalanced by weak action on other issues and widespread lack of compliance from businesses.

To help overcome inertia, there have been efforts to strengthen regulation such as the European Commission proposal to tighten its environmental crime directive by introducing new criminal offenses and stricter sanctions, and to improve the enforcement capabilities of national authorities.²¹ Indeed, several countries including New Zealand, Mexico, and Chile have granted nature legal standing, acknowledging that the environment has rights that need to be protected.

While a policy and regulatory focus on nature loss is on the rise, the speed of implementation of proposed measures and the effectiveness of enforcement vary across countries and sectors. In the near term, this will make for considerable policy and regulatory unpredictability, with organizations often facing challenges related to a lack of clear and quantifiable targets. In a recent landmark initiative, the 2020 Convention on Biological Diversity's Global Biodiversity Framework set the two goals of no net loss of biodiversity by 2030 and net of gain by 2050,²² but national translation into workable indicators remains patchy as countries work towards establishing biodiversity and ecosystem targets on which to measure public policy and economic activities.

Industry initiatives such as Finance for Biodiversity and Partnership for Biodiversity Accounting have emerged as important platforms for linking the public

and private sectors, and have triggered a range of commitments, pledges, and collaborations to address nature loss. These tend to be cross-sectoral networks that are focused on facilitating knowledge exchange and engagement, including with scientists and organizations involved in conservation. While largely voluntary, these initiatives have become focal points in driving corporate commitments on nature, indicating a growing commercial appetite for new solutions.

Trends in markets and financing

There are signs of a shift of capital flows towards nature, with a range of innovative approaches being piloted by corporates, investors, and the public sector.²³ Markets were for a long time oblivious of nature-related risks and opportunities. Investments going into nature-focused activities are still low when compared to climate finance flows, which reached \$632 billion a year in 2020 — far outstripping the \$133 billion invested in 2019 in nature-focused projects.²⁴

However, nature has been emerging as a new focus of the broader finance and corporate ESG communities, drawing increasing attention from impact investors that are actively looking to demonstrate the positive social, economic, and environmental impact of their investments. A recent survey found that more than half of investors plan to have a core focus on biodiversity in their strategy in the next two years.²⁵ As regulatory and stakeholder pressures start to cause market shifts, organizations can test new business models and benefit from novel financing opportunities linked to nature objectives.

Innovative investment models are emerging, such as those of venture funds specifically focused on biodiversity and banks with funds targeted for natural capital.²⁶ New financial instruments are being developed, for example aimed at regenerating coral reefs and mangroves for coastal storm protection. A global bank recently announced the launch of a blue impact bond targeting nature-based mitigation activities in coastal areas of Australia,²⁷ whereas the Republic of Seychelles launched the world's first

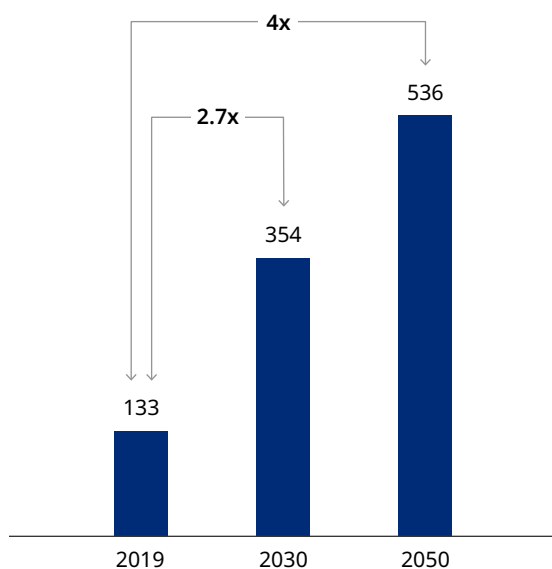
sovereign blue bond to support sustainable marine and fisheries projects in the country.²⁸ The District of Columbia Water and Sewer Authority issued a green water bond to secure funding for the delivery of green infrastructure to improve water quality in Washington, D.C.²⁹

Markets are slowly starting to respond to environmental challenges and, as more ambitious targets are declared, the need for investments aligned with nature-positive outcomes will grow. According to estimates from the United Nations Environment Programme, investments in nature will need to grow substantially to meet biodiversity and land degradation targets, with 80% of the total need attributed to the cost of reforestation (see Exhibit 6).³⁰

Private finance will have a critical role to play in the scaling up of nature-positive financial flows. In 2019, private capital accounted for just 14% of total investment in nature-based solutions but the majority (56%) of climate finance flows. A growing understanding of the interplay between business and nature will likely be accompanied by increasing interest from private investors.

Exhibit 6: Nature-based solutions investment gap, 2019 vs. 2030 and 2050

Annual investments (\$ billions 2019/year)



Source: United Nations Environment Programme

Improved analytics and an emerging standard for assessment and reporting

One persistent challenge for organizations has been the paucity of data and tools providing insight on the threats of environmental degradation, especially at the supply chain level. Organizations are now starting to overcome this hurdle thanks to technological innovation. This has emerged as an enabler of risk quantification and reporting, enhancing the quality of assessments and improving their transparency. New technologies such as satellite sensors can be used to monitor depletion, and help track biodiversity loss. This, combined with new data sets and scientific insights, represents great opportunities for helping businesses incorporate nature-based analytics in their operations and enterprise risk management strategies. One important trend is the integration of nature-related risks into the physical risk models that are currently being used to understand climate change impacts. This will be essential to inform understanding of the role that nature plays to mitigate climate risks and to quantify and monitor their impacts on nature.

Building on the old adage that what gets measured gets managed, various tools have been developed to assess and help reduce environmental impacts (see Exhibit 7 on the next page). Further developments are to be expected in the near future thanks to stronger collaboration focusing on data quality, availability, and accessibility. However, this is still unexplored territory for many corporates, regulators, and policymakers, and there is a growing need for clear definitions, metrics, and processes.

A key development in this regard is TNFD, which is rapidly emerging as the standard for disclosures of nature-related risks and opportunities. The framework may adopt a double materiality lens: Organizations not only need to assess how they impact the environment, but also how they may be affected by nature loss. Both can be viewed as valuable information for businesses and their stakeholders, including investors.³¹ While the notion of double materiality is increasingly recognized in Europe, it is still debated elsewhere, including in the US.³²

Exhibit 7: Examples of tools to quantify nature-related risks



Business exposures to nature

The United Nations Environment Programme Finance Initiative's **ENCORE tool** provides information on nature impacts and dependencies for 11 sectors and 167 sub-industries as described by the Global Industry Classification Standard (GICS).



Impacts on biodiversity

The IBAT Alliance's **Integrated Biodiversity Assessment Tool**, Capitals Coalition's **Global Biodiversity Score**, and the Government of the Netherlands' **Biodiversity Footprint for Financial Institutions (BFFI)** can be used by organizations to quantify the consequences of their operations on biodiversity, with BFFI focusing on impacts of financial institutions.



Water risks

WWF's **Water Risk Filter** and World Resources Institute's **Aqueduct Water Risk Atlas** help map, assess, and respond to water risks globally, while **Global Forest Watch** provides near-real-time data on deforestation that can be used for sustainable sourcing of commodities.

Sources: Capitals Coalition, Global Forest Watch, Government of the Netherlands, IBAT Alliance, United Nations Environment Programme Finance Initiative, World Resources Institute, World Wide Fund for Nature

Despite recent progress in the definition of practices to assess, report, and act on risks and opportunities, nature-related disclosures are still in their infancy. TNFD recently released v0.2 of its beta framework providing important details on impact and dependency metrics as well as guidance for specific sectors,³³ but businesses will have to wait until September 2023 for the official launch. More work will be needed by the Taskforce during the coming months for testing and harmonization with the many other assessment and reporting frameworks already in place (Exhibit 8 on the next page).

Nature disclosure trends may evolve in a similar way to those for climate disclosures. In 2017, the Task Force on Climate-Related Financial Disclosures (TCFD)³⁴

released recommendations to help companies assess and report on climate risks and opportunities, and by the beginning of 2022 the framework had been adopted by more than 3,000 organizations in 92 countries, with a combined market capitalization exceeding \$27 trillion.³⁵ The United Kingdom has announced measures to make climate disclosures mandatory for premium listed companies, while New Zealand has done the same for banks, insurers, and asset managers.³⁶ The US Securities and Exchange Commission has also been working on similar measures for publicly traded companies.³⁷ The adoption of TNFD may follow a similar trajectory. However, the degree of complexity around nature and ecosystems makes this a very challenging undertaking for corporates, regulators, and policymakers.

Exhibit 8: Frameworks complementing TNFD

Task Force on Climate-Related Financial Disclosures (TCFD)	A framework launched in 2015 by the Financial Stability Board for corporates and financial institutions to disclose their climate-related risks and opportunities
CDP	An international non-profit maintaining a framework for companies, investors, and governments to disclose their climate change, forest, and water impacts
Global Reporting Initiative (GRI)	A set of global ESG reporting standards including environmental impacts
Sustainability Accounting Standards Board (SASB)	A collection of industry-specific ESG accounting standards for reporting to investors
International Organization for Standardization's ISO 26000	International guidelines on socially responsible corporate behavior and disclosures
Science Based Targets Network (SBTN)	A consortium of non-profit and other organizations with the goal of developing science-based targets for nature and climate
Accounting for Nature	An environmental accounting framework to align investment and management of natural capital with sustainable objectives
Partnership for Biodiversity Accounting Financials (PBAF)	A framework of principles for banks, asset managers, and pension funds to identify and assess the biodiversity impacts and dependencies of their portfolio
Capitals Coalition's Natural Capital Protocol	Guidelines for businesses to quantify direct and indirect impacts and dependencies on natural capital
European Commission's Align Project	An initiative set up to develop a coherent set of recommendations on biodiversity measurement and valuation
Natural Capital Finance Alliance	An alliance of financial institutions developing guidelines and tools that will supplement the Natural Capital Protocol and help investors, lenders, and insurers assess nature-related risks and opportunities in their portfolios
International Sustainability Standards Board (ISSB)	A body set up at COP26 to establish shared standards for business sustainability disclosures with investors and capital markets
United Nations' System of Environmental Economic Accounting (SEEA)	A framework that integrates economic and environmental data to provide a more comprehensive and multipurpose view of the interrelationships between the economy and the environment and the stocks and changes in stocks of environmental assets

Source: Marsh McLennan Advantage analysis



Business imperatives for nature-related risk strategies

Pressure is increasing for corporates and financial institutions to act as responsible stewards of the environment and build resilience to nature loss. Businesses can prepare by incorporating nature into their governance framework, leveraging innovations in assessment tools and risk management, and identifying emerging market and financing opportunities.

Navigating nature-related risks in business

Rapid changes in regulations and policies, shifting societal expectations, and increasing sustainability screening from investors and other stakeholders are pressing businesses to factor nature into their work and to transition their impact from environmental harm to restoration.³⁸ Although considerable uncertainty remains regarding regulatory and market trends, the increasing importance of climate as a disclosure imperative over the past decade foreshadows a similar trajectory for nature. With climate, businesses have gradually acknowledged the importance of having a comprehensive strategy to support access to capital, operational resilience, brand positioning, and talent management.

Accelerating environmental degradation is increasing the urgency for businesses to shift towards nature-positive outcomes, but organizations are often unsure on how to adapt their governance and processes and what strategies to embark on. Businesses can work to incorporate nature in their agenda and capitalize on new opportunities by building on the following strategies.

1. Integrate nature into corporate risk governance

Firms should rethink the way they measure their environmental performance and expand the scope of their enterprise risk management strategies to include nature. Setting science-based, nature-linked metrics can help in tracking progress consistently, meeting emerging disclosure requirements, communicating with stakeholders, and determining incentives for boards. Leadership buy-in is critical to prepare for nature-related risks and opportunities and to set out ambitions and targets.

As investors and regulators push for more transparency, it is critical for businesses to gain a better understanding of their exposures to nature-related risks. Although many corporates and financial institutions have already started to

invest in sustainability teams to raise their ESG profile, environmental objectives often focus exclusively on achieving climate targets through decarbonization efforts.

Nature-related risks can propagate through value chains and geographies and are often significantly shaped by an organization's stakeholders. A thorough understanding of companies' dependencies and impacts on the environment requires collaboration between leadership and multiple business functions. The work of risk managers and sustainability experts needs to be supported by supply chain and procurement specialists, human resource personnel, and public affairs officers — and may benefit from coordination with external stakeholders. Growing expectations from customers, business partners, regulators, policymakers, and communities are further compelling businesses to adapt their strategies to help reduce nature impacts. Organizations can leverage these relationships to help challenge themselves about potential blind spots and vulnerabilities. They will likely find that nature-related risk resilience efforts align well with broader ESG ambitions and resilience strategies. Identifying and clearly communicating to internal and external stakeholders the wider benefits of nature-positive practices such as nature-based solutions can help drive this process.

Building resilience to nature-related risks also requires businesses to strengthen their due diligence and monitoring processes. Nature loss is a complex area, and well-meaning policies and corporate initiatives can have unintended reputational consequences by being perceived as greenwashing — a legitimate risk in the absence of clear standards as to what preventing and reversing nature loss entail. Similarly, organizations need to be aware of possible liabilities arising from environmental degradation. Preparing for new compliance and due diligence requirements such as the European Union's Corporate Due Diligence Law will help firms to better prepare for the future. Conducting value chain audits, engaging with other industry participants to understand evolving policies and regulations, and building in-house expertise can help ensure that enterprise risk management practices are up to standard.

2. Manage complexities in assessment and align reporting with emerging standards

Organizations need to use nature-related risk analytics and gradually integrate them into risk governance processes. Adapting operations and risk management practices requires organizations to understand their impacts and dependencies on nature and to measure stocks and flows of natural capital associated with their operations. For this, it will be crucial to track developments related to assessment standards and train relevant personnel.

Participating in market initiatives and industry forums can accelerate company learnings and minimize disruption associated with embedding nature into enterprise risk management strategies. For instance, early involvement with TNFD offers businesses the opportunity to understand how to leverage already available data sets and tools to quantify nature-related risks, identify solution gaps, and plan investments to address them.

Businesses with the ambition of contributing to the definition of assessment and reporting standards also have the opportunity of joining the TNFD Forum, a consultative group with more than 550 members among corporates, financial institutions, business organizations, research institutions, and public sector and intergovernmental organizations. Participants can build a competitive advantage by becoming early movers in the space of nature-related disclosures, learning how to navigate the various initiatives emerged in recent years, and enjoying the benefits brought by knowledge sharing on emerging practices regarding risk management, market standards, and reporting. With its Nature-related Data Catalyst initiative, TNFD also provides a platform for data providers to engage with the framework and make information more readily available.

3. Leverage innovations in risk management

Organizations can build resilience to nature-related risks by identifying and adopting risk management solutions, including risk transfer. Examples are standard environmental liability cover and new products that provide coverage for events typically not included by traditional policies, such as releases of pollutants and forest fires,³⁹ and innovative forms of property insurance that protect natural assets.

Businesses can also deploy parametric solutions that have been developed to manage risks associated with ecosystem disruption, with pay-outs often tied to the abundance of a particular natural asset. Such policies are for example being sold to redress crop yield losses caused by diseases and pests,⁴⁰ and to protect coral reefs with the objective of avoiding coastal erosion and ensuing economic losses.⁴¹ Other examples are insurance solutions for mangroves, or parametric wildfire catastrophe bonds, which not only offer cover for natural capital but can also provide incentives for active risk reduction. As the pace of innovation is increasing, corporates should engage with insurers and their risk advisers to tailor these solutions to their needs.

With insurers beginning to see more negative impacts of nature loss in their underwriting and investment portfolios, companies that engage in efforts to incorporate nature into their risk strategies can take advantage of products with better policy conditions.⁴²

As climate change and environmental degradation exacerbate the impacts of extreme events such as floods, droughts, and wildfires, nature-based solutions can play an important role in mitigating risks by protecting and restoring ecosystems while offering a broad range of socioeconomic co-benefits.⁴³ For example, the presence of wetlands in the East Coast of the US reduced the economic losses by Superstorm Sandy in 2013 by more than half a billion dollars.⁴⁴

This opens up the possibility of simultaneously reducing disaster risk and addressing environmental decline by investing in and working with nature. Examples are nature-based flood risk management measures such as renaturation of rivers, or forests as protection from avalanches. Insurance schemes that recognize the value of ecosystem services can create incentives for their protection, and encourage companies to consider the deployment of nature-based solutions as an alternative to traditional measures such as flood walls. Engaging with insurers and utilizing risk tools can help to address this. Businesses can quantify the risk reduction benefits of nature-based solutions with tools such as catastrophe models, and develop strong business cases for using nature to manage risks.

4. Identify new market and financing opportunities

Business leaders need to consider how nature-related risks impact their access markets and finance and tailor their strategies accordingly. As financial institutions begin to incorporate nature metrics in their decision-making and risk management practices, they will often steer their balance sheets away from companies harming the environment. Others are actively seeking nature-based opportunities for ESG or impact investment. Although this shift to a nature-positive economy brings revenue opportunities from new products and services, it also comes with significant uncertainties and short-term implementation pains. As new nature-positive market solutions emerge, corporates need to develop a good understanding not just of their financial prospects, but also of their ecosystem benefits and requirements.

For example, the choice of plant and animal species and the quality of management practices influence the biodiversity benefits of reforestation projects. It is thus imperative for senior leaders, and those developing nature-positive strategies, to understand the requirements, risks, and dynamics of these markets and to evaluate how to access capital for their company's transition to environmental sustainability. This may require upskilling in-house capabilities to embed nature-related considerations into strategies (such as funding, product innovation, go-to-market) or engaging with specialist third-party organizations. This is particularly important at this early stage of market development: Defining a good business case carries an inevitable measure of uncertainty when evaluating benefits of solutions that have not yet been proven at scale.

Engaging with a diverse set of stakeholders such as philanthropy groups and conservation organizations can help companies overcome these initial hurdles and help devise nature-positive business strategies. Cultivating working relationships with industry participants and financial institutions that have a long-time interest in nature-linked projects can increase financing and partnership opportunities.

Organizations can also leverage momentum on key legislative and policy efforts to capture additional opportunities. The European Green Deal, for instance, will open new pathways for businesses, including for nature-based solutions. Growing recognition of blended finance and public-private partnerships in the climate resilience arena can also translate to similar arrangements.⁴⁵

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