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Climate Governance Initiative

WORLD ECONOMIC FORUM

The Chairperson's Guide to Valuing Nature

WHITE PAPER

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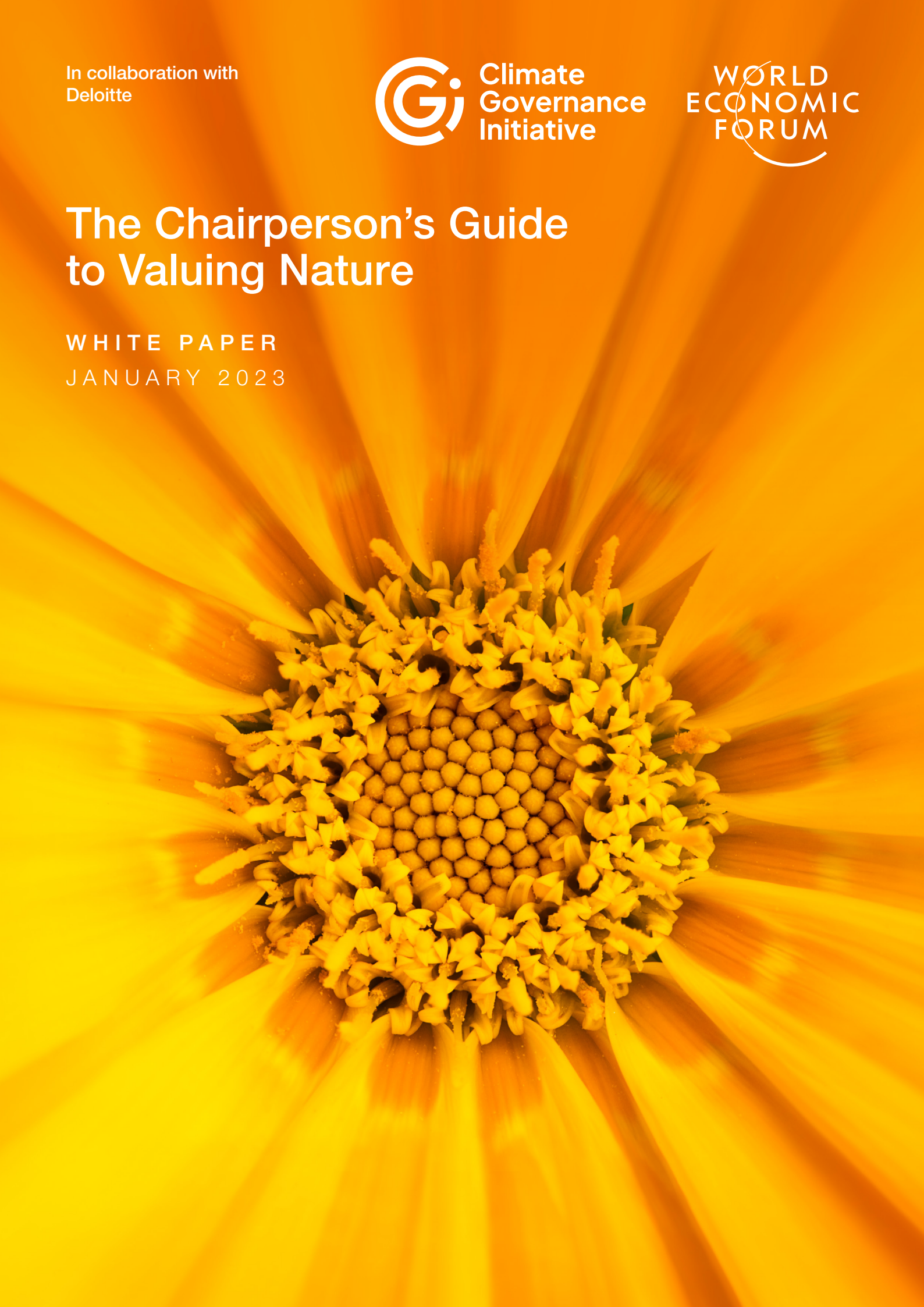

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Foreword

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Without question, nature is the foundation of our societies, economies and human existence. From the bees that pollinate the food we grow, to the precious metals within the wires connecting us, to the very air we breathe and water we drink, nature is the source that sustains us and keeps our workforces happy, healthy and productive.

Despite this reliance, business has historically undervalued and overlooked nature – in its interaction with land, ocean, atmosphere, freshwater and living things – leading to its degradation.

Nature loss is already impacting business and the risks are likely only going to increase. These risks include rising commodity prices, job losses and resource shortages, in addition to systemic threats to human survival such as global health, peace, trade, economic development and equality.

We have a window of opportunity before us to stop and reverse the degradation of nature. As stewards of the future of business, chairpersons and board members will be critical to steering their organizations towards a future where recognizing the true value of nature is core to business strategy.

By embedding the value of nature as core to good governance, board members from every industry, sector and geography also have opportunities that may have previously been overlooked: opportunities to oversee the exploration of new products, new markets, new business models and new revenue streams while mitigating the increasingly significant risks that are otherwise associated with nature loss.

While this may seem like a daunting task – and potentially an addition to the existing challenge of emissions reductions – it is just another step on the same journey, a journey that has already started for most businesses through environmental, social and governance (ESG) strategies and net-zero targets. Perfection is not the goal here. It is more important to get started, understand the issue, develop a plan you can share with stakeholders and then build nature into your governance framework while recognizing it is core to your future business success.

We are proud to prepare this guide to support boardrooms globally on this journey.

Executive summary

Many board members have been on a steep learning curve to understand the impacts of climate on business.

They now need to expand their efforts to include the **impact of business on nature** and **nature on business** and the **critical role of nature in achieving climate goals**.

All businesses rely on nature, either directly or indirectly. Approximately half of the world's gross domestic product (GDP) depends moderately or highly on nature and without which it would not be possible to sustain the other half of GDP.[1] For some businesses, this connection with nature is obvious; for example, the agriculture industry's reliance on pollination and soil quality. For others, the connection to nature appears less direct but may include inputs into manufacturing or through a workforce reliant on access to clean air and water.

Despite this dependency, a lack of knowledge and recognition of nature has led to **poor business decisions with respect to the natural world**.

Earth's ecosystems are deteriorating rapidly. Beyond a moral imperative, this poses serious risks to businesses, such as:

- Reduced revenue and increased costs due to a reduced supply of quality natural resource inputs;
- A reduction in workforce size and productivity due to the health impacts of nature loss;
- Increased insurance costs and risk of asset repricing or stranding due to irreversible damage to natural assets; and
- Loss of nature undermining the ability to reach climate goals.

Further, as stakeholders become aware of the growing risk to nature, expectations will rise for businesses to disclose nature-related interdependencies and provide long-term risk mitigation and adaptation plans.

Chairpersons need to guide the conversation to ensure that board members understand the risks and opportunities to successfully – and responsibly – steward the business through the transition.

By recognizing the need to value and protect nature as core to business purpose, board members can help create greater value for all stakeholders, while reinforcing their organization's physical and commercial resilience.

To accelerate the recovery of nature, businesses can:

Avoid and reduce the business impact on nature by implementing regenerative practices or improving resource efficiency. This can be done within the direct operational sphere of the business or indirectly through the value chain.

Restore and regenerate nature by investing in restoration and regeneration programmes and collaborating to develop nature-based solutions.

Stakeholders are demanding a plan for how a company values its interactions with nature. The board should consider leading this plan and integrating it into purpose and strategy.

FIGURE 1 | **The foundations for businesses to establish and meet their nature-positive goals**

Source:
World Economic Forum

> **Businesses must act diligently in mainstreaming the integration of nature within their business strategy, investment decisions and operations.**
>
> Elizabeth Mrema, Executive Secretary, Convention on Biological Diversity

1 Reintroducing nature

All economic output stems from nature.

1.1 The role of nature in business

Approximately half of the world's gross domestic product (GDP) depends moderately or highly on nature and without which it would not be possible to sustain the other half of GDP.[2] For example, manufactured capital requires access to natural resources such as precious metals for batteries; access to talent relies on healthy employees with access to sunlight, food and clean air and water.

Broadly defined as "the natural world, with an emphasis on the diversity of living organisms (including people) and their interactions among themselves and with their environment,"[3] – nature is critical to business prosperity.

Yet nature has remained largely absent from the business agenda.

This lack of recognition of nature in business decision-making has led to the degradation of nature, posing risks to all businesses. Failure to act could lead to further extensive and irreversible nature loss, causing widespread systemic risks and shocks to the economy. The consequences for businesses could be substantial, including rising commodity prices, job losses, resource shortages and the inability to achieve net-zero targets.[4]

Yet through crisis is opportunity. Recognizing the value of nature can help reduce operating and finance costs, identify new revenue opportunities and access numerous indirect benefits by contributing to broader societal commitments.

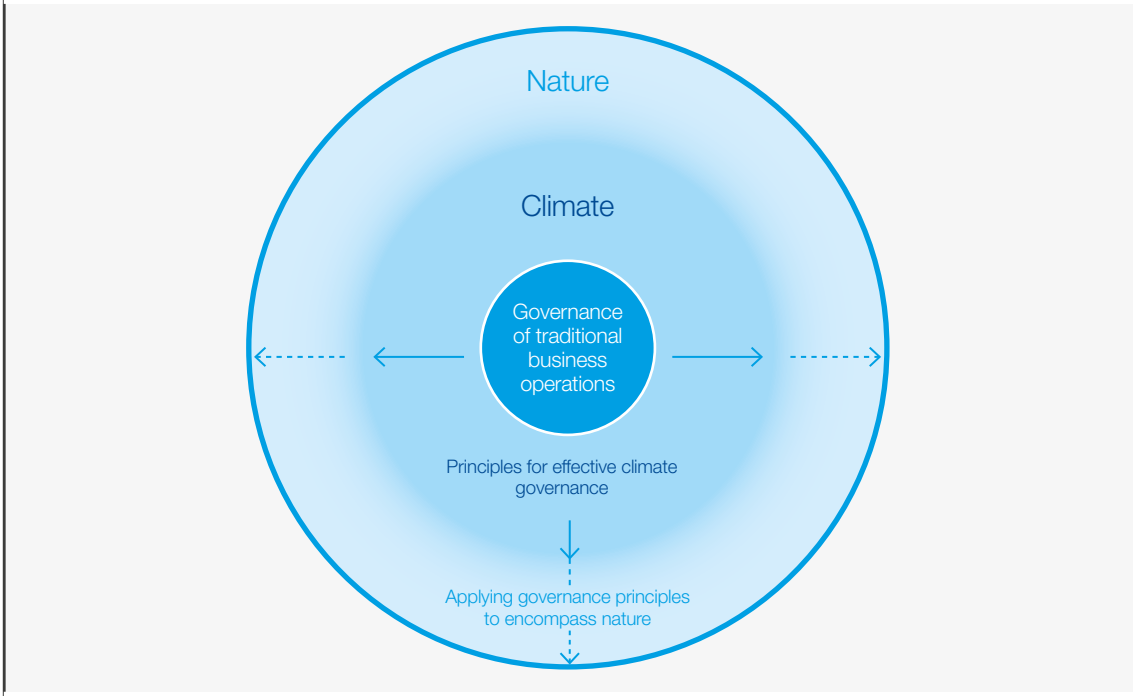
Protecting and restoring nature is also critical to achieving net-zero greenhouse gas emissions targets because climate change and nature loss are deeply intertwined. In many cases, the same actions drive climate change and nature loss and so solutions to one challenge are often beneficial for the other.[5] For example, protecting and restoring forests, wetlands and grasslands can get the world more than one-third of the way to meeting global commitments under the Paris Agreement, which seeks to limit global warming to 1.5 degrees Celsius.[6]

Chairpersons have a responsibility to consider how both the degradation and conservation of nature may impact the business and promote appropriate risk mitigation and opportunity assessments. Businesses will increasingly be expected to show they have done this analysis as pressure mounts, including from organizations such as the Taskforce on Nature-related Financial Disclosures (TNFD) and the International Sustainability Standards Board (ISSB).

1.2 From net zero to nature positive

With climate action now largely accepted as a foundational component of good governance, stakeholders are increasingly expecting the governance principles of the future to include greater emphasis on the importance of nature.[7] As businesses seek to meet this growing expectation, a new vision has emerged: to become nature positive.

FIGURE 2 **Expanding spheres of governance**



Source:
World Economic Forum

What is nature positive?

Nature positive is a concept whereby nature is protected, restored and regenerated, rather than degraded. It is anticipated that, just like net-zero emissions targets, setting a nature-positive target will become a core business benchmark that boards across the wider economy must address.

While this may seem complex or challenging, many boards will have already begun this process by using the World Economic Forum's Principles for Effective Climate Governance as a guide. Boards might find it helpful to consider how this framework could be applied to address nature.

How should businesses think about nature positive?

As nature positive emerges as a key business concept, work is underway to develop a framework for a nature-positive position.[8]

The main considerations for businesses to start thinking about include:

1. **Scope and scale of operation** – How large are your business's nature-positive ambitions? Is your business seeking to become nature positive across one product, service, project or programme? Or across a geographic area or even the whole of the organization?

2. **Defining your boundary of analysis** – Will your business set targets only for direct impacts (direct operations) or also include indirect impacts (across the value chain, much like scope 3 emissions)?

3. **Realistic targets** – Are the targets set by the business realistic and achievable within a given timeframe? How do you design a programme of small wins? At what point are you confident to commit to specific dates and goals?

To avoid greenwashing or creating unintended consequences, chairpersons should consider these points carefully and prioritize oversight of the integrity of claims[9] to maintain market trust. This includes meaningful engagement with local and indigenous communities to advise on the considerations above.

CASE STUDY 1

Burberry

> **Protecting, restoring and regenerating nature is key to safeguarding the planet for generations to come, and we must be ambitious in our intentions and action-oriented in our approach. Burberry's biodiversity strategy will not only address impacts in our own extended operations but also help to create new systems to reduce biodiversity loss in the world's greatest areas of need, making a meaningful contribution to global conservation efforts.[10]**
>
> Gerry Murphy, Chair of Burberry

Building on its carbon footprint efforts, Burberry's biodiversity strategy recognizes the importance of biodiversity to its operations. The strategy addresses protecting and restoring nature, regenerative supply chains and providing support for farming communities.

To understand the ecological impacts on biodiversity in its value chain, Burberry conducted a biodiversity baseline assessment and identified leather, cashmere and wool as the major contributors to biodiversity loss and carbon footprint in its value chain.

As part of its biodiversity strategy, Burberry funds projects to reduce its carbon footprint, and protect, restore and regenerate natural ecosystems, including:[11]

- A regenerative agricultural programme with wool producers in Australia to help farms improve their "carbon capture in soils, strengthen watershed and soil health and promote biodiverse habitats."[12]
- A policy to source 100% of its leather from tanneries with environmental, traceability and social compliance certification by 2025, with 92% of leather sourced in financial year 2021/22 meeting those criteria.[13] The company joined the LEAF Coalition (Lowering Emissions by Accelerating Forest Finance), which seeks to protect tropical and sub-tropical forests and reduce deforestation.[14]
- Burberry also supported the Land to Market Programme, which facilitates grassland regeneration in the leather supply chain.[15]

In 2020, Burberry raised a £300 million ($340 million) sustainability bond to support the finance of its nature-based solutions projects.[16]

Burberry believes these investments in nature-based solutions enhance its own business strategy and empower businesses in its value chain, local communities and the industry.[17]

2

Actions for board members

Board members are in a unique position to drive change.

“Perfect should not get in the way of progress. Businesses are not expected to have all the answers but they are expected to have a plan.

By recognizing the value of nature as core to business and by implementing a strong governance framework, board members can build business resilience and stakeholder value.

There is increasing recognition that today’s corporate governance principles will need to expand to include the role of nature in business strategy and operations.

Valuing nature requires both a strategy and a mindset transformation. However, time is not on the side of business. Although data quality and best practices are still in the “norming” phase, the scale and urgency of preventing and reversing nature loss require rapid action.

The accuracy and methods of measurement and reporting will improve but, as with the continuous improvement of financial accounting standards over past decades, action based on imperfect data is preferable to inaction – perfect should not get in the way of progress.

Businesses are not expected to have all the answers but they are expected to have a plan. Prudent board members should, at a minimum, be overseeing an appropriate risk assessment process and considering the long-term impacts of unmitigated nature-related risks on the business.

The following steps are prompts to start the conversation on incorporating nature within business strategy.

TABLE 1 | **Steps to begin valuing nature**

1 Understand why nature is important

Description

When shaping long-term strategy, ensure the board has been given a comprehensive induction on nature and ecosystem services. This will enable an informed reflection on potential nature-related corporate risks and opportunities and assist in creating a distinct connection between the organization and nature.

Key questions for board members to ask

What would be the high-level impact on employees, customers and business operations (as well as key suppliers' businesses) of:

- Stringent water restrictions or water pollution in operating locations?
- Regulations imposing strict limits on plastic waste or plastic product applications (e.g. the European Union's ban on single-use plastics)?
- Significant air pollution impacting the ability to go outdoors, staff deployment to certain geographies or short-distance travel?
- Regular natural disasters including floods and fire?
- Reduced tourism due to biodiversity loss?
- Fresh food shortages due to invasive species plagues or decline in pollinating species?
- Seafood shortages from overfishing, plastics contamination or coral bleaching?
- Wide-spread perception that your business perpetrated any of the above?

Relevant Principles for Effective Climate Governance

2. Subject command

3. Board structure

2 Take stock of current business activities

Description

Review your existing business pledges and commitments.

Identify pre-existing environmental or social risk assessments across the value chain that can be leveraged to assess nature-related risks and opportunities.

Key questions for board members to ask

- What has the business already pledged or what declarations have been signed in relation to the environment? How confident are you that these claims can be validated in all operating locations?
- What existing efforts are your executives making to assess social or environmental risks across the value chain and how can these be leveraged as part of the nature stocktake? For example, scope 3 emissions or modern slavery investigations.
- How can your executive team identify and address gaps in order to ensure an integrated approach to climate, nature, health and safety, and communities?
- How can you ensure this approach is reflected in your supply chain?

Relevant Principles for Effective Climate Governance

4. Material risk and opportunity assessment

3 Locate interfaces with nature

Description

Begin the first step of the TNFD assessment and disclosure process (see LEAP framework in Appendix B) by identifying where your assets and processes have an interface with nature in specific locations.

Key questions for board members to ask

- Are you, as a board, clear on where your business and your value chain interacts with land, oceans, atmosphere, freshwater and living things?
- Does the business have systems in place to ensure these touchpoints are monitored on an ongoing basis?

Relevant Principles for Effective Climate Governance

2. Subject command

4. Material risk and opportunity assessment

4 Identify next steps

Description

Develop a roadmap for multi-year delivery that demonstrates how your business will investigate, disclose and address opportunities and risks across the value chain arising from nature as a core part of corporate strategy and operations.

Design pilot programmes for a single product or operation; learn from mistakes so you can begin to apply those learnings to the rest of the business.

Key questions for board members to ask

- Where are the business opportunities to develop new or enhanced value-adding nature-improving products or services? For example, does the business have unproductive land that can be converted into a carbon sink or biodiversity restoration area?
- Can the business select a specific product or service line to pilot? For example, products or materials that are anticipated to have a larger impact on nature, "green" products that need to be validated, or new products or services to be launched.
- Where are the opportunities to collaborate across the industry or the value chain? For example, identify the major contributors to nature loss in your value chain and work with them to identify pilot programmes.

Relevant Principles for Effective Climate Governance

5. Strategic integration

5 Communicate

Description

Inform stakeholders of the current status of and next steps your business is taking on nature. Ensure all claims and commitments are transparent and verifiable to mitigate the risk of greenwashing accusations. Be upfront that the priority is taking action, even if it is small to start, not mapping every touchpoint.

Key questions for board members to ask

- Who are the expert stakeholders (including local and indigenous communities) in this field that your executive team needs to engage, listen to and learn from?
- Who are your stakeholders that need to be informed and what do they need to know?
- What structures does your business have in place to validate commitments and claims to the market?

Relevant Principles for Effective Climate Governance

7. Reporting and disclosure

8. Exchange

2.1 Disclosure actions

The TNFD has developed a set of fundamental concepts to help market participants understand, assess and report on nature in relation to conducting business.

Due for finalization in late 2023, the draft TNFD Nature Related Risk & Opportunity Management and Disclosure Framework involves an integrated assessment process for businesses to:

Locate interfaces with nature
Evaluate dependencies and impacts
Assess material risks and opportunities
Prepare to respond and report (Appendix B).

The TNFD framework makes clear that nature disclosures should integrate with – and build on – existing disclosure and reporting frameworks.[18]

Shareholders are already pressuring companies to disclose biodiversity and nature loss as a material risk in annual reports.[19]

Valuing nature is core to disclosure and adding it to the balance sheet – using the capital concepts of stocks, assets, services and flows for both financial and natural capital through new approaches to accounting for nature – is critical.

There are many factors for board members to consider when tracking and reporting on nature across the business. Boards should oversee sufficient resource allocation and identify the appropriate board structures to tackle this challenge. For example, setting up a board-level environmental, social and governance (ESG) or sustainability and nature committee to work in tandem with the risk and audit committees.

Consider what key performance indicators (KPIs) for nature are helpful in prioritizing the main outcomes and tracking progress at the board level. Examples of common KPIs used include:

Carbon
What is your impact on the total amount of carbon in the atmosphere?

Biodiversity
What is your impact on the variability of living organisms?

Stakeholder support
Do you have the support of critical environmental and community stakeholders?

However, board members should also be wary of the increasing scrutiny of the integrity of disclosures and claims.[20] Taking ownership of a plan, including the source of capital and anticipated operating impact, can assist in rebutting greenwashing claims.

2.2 From risk to action

There are a number of steps businesses can take to accelerate nature recovery. Steps begin by implementing **avoid, reduce, restore and regenerate** hierarchy within the business created by the Science Based Targets Network (SBTN).[21]

Avoid and reduce

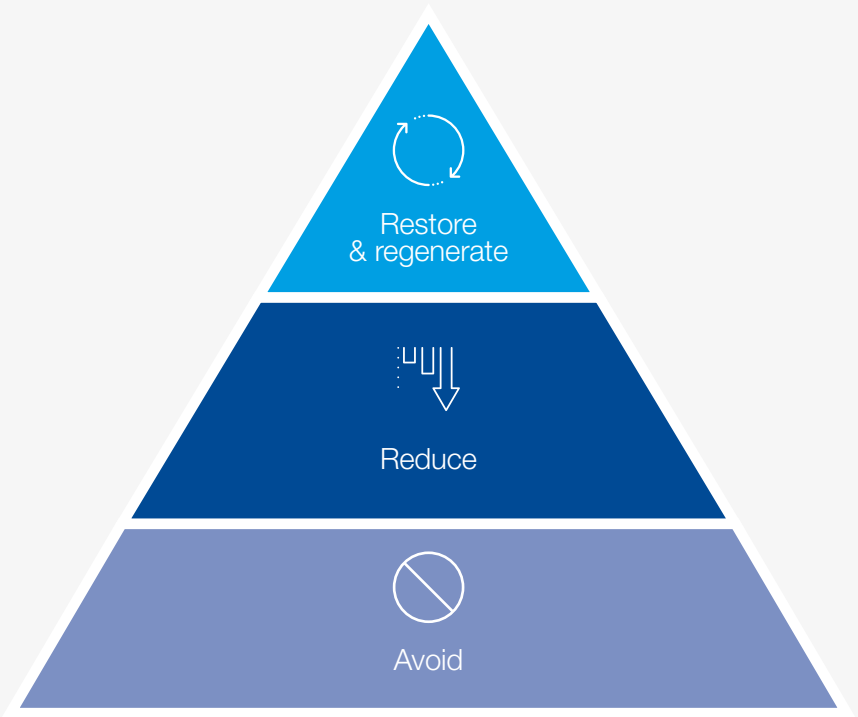
In the first instance, businesses should avoid and reduce pressure on nature by preventing or minimizing their impact on nature. This can be done:

- Directly in local operations by implementing better processes, such as regenerative practices or enhancing natural resource efficiency. This can have the added benefit of reducing business dependency on nature.
- Indirectly by working across the value chain to support suppliers and customers as they strive to avoid or reduce their own impacts. This could include working with upstream or downstream businesses to redesign their products or processes to avoid or reduce direct impacts.

Examples of avoid and reduce include:

- Diageo, maker of Johnnie Walker whisky, Guinness and Smirnoff vodka, has reduced water usage by 50% through a water stewardship strategy that includes setting water replenishment targets.[22]
- Diversifying the use of materials in products can improve business resilience to commodity and supply chain collapse by distributing risk across a broader range of natural resources and can improve biodiversity by avoiding mono-culture ecosystems.

FIGURE 3 **Hierarchy of business steps to nature recovery**



Source: Adapted from SBTN, Science-Based Targets for Nature: Initial Guidance for Business, 2020.

Restore and regenerate

Businesses can restore and regenerate nature to accelerate the recovery of an ecosystem or to increase the ecological productivity of an area. These actions are needed to remediate previous or unavoidable harmful actions and to promote nature-positive outcomes. Actions include:

1. **Investing in restoration and regeneration programmes** in current operations to achieve local ecosystem targets. Where businesses achieve nature-positive outcomes beyond restoration for their own impact, there is an opportunity to generate new revenue. For example, through biodiversity markets or increased land value.

2. **Collaborating to develop nature-based solutions**, for example with local governments, communities and industries to develop products or solutions that are nature-friendly.

3. **Compensating for any unavoidable harm**, for example via high-quality offsets.[23]

Rather than attempting to identify a new set of projects to deliver nature-positive outcomes, board members should consider the broader nature opportunities within existing activities.

While sequestering carbon is a major advantage of nature-based solutions, nature is also critical to building resilience against the effects of climate. For example:

- Supporting mangrove habitats can increase resilience to flooding and storm surges;
- Wetland restoration can recharge groundwater levels and support flood risk mitigation;[24]
- Healthy coral reefs can reduce wave energy during storms;[25] and
- Allowing beavers to build dams on agricultural land can maximize water storage, protect crops from severe flooding and fires, reduce erosion, create carbon storing wetlands and improve biodiversity.[26]

Integral to all nature-positive activities is engagement with – and support from – local communities. Rural and indigenous communities hold a wealth of knowledge in local ecosystems and may have the power to stall or stop projects from proceeding. As the impact of nature loss and climate change becomes more real, boards will need to support executives to find new ways of engaging with stakeholders to avoid the risk of backlash (as discussed in The Chairperson's Guide to a Just Transition), for example, chairpersons leading site visits that involve walking among the nature the sites rely on for operations.[27]

Indigenous peoples are well placed to advise on nature loss and climate change solutions given their connection with the natural world. This knowledge is valuable and brings business opportunities with it; the risks of not consulting and involving indigenous peoples in decision-making are high and may put the organization's broader strategy at risk.

Indigenous principles for caring for the natural world may be a helpful framework for businesses to assess for nature-related decisions to be truly impactful. For example, the Next Seven Again principle asks individuals and businesses to examine the impact of their decisions on the next seven generations.[28] Consistent with principle 8 of the Principles for Effective Climate Governance, open dialogue is critical to ensuring boards have meaningful exchanges to stay informed on the topic.[29]

3

Recognizing emerging risks

All organizations have some degree of nature-related risk.

> **The absence of an equivalent dollar value on nature has plunged the global economy into an ecological debt that is, to date, largely obscured from global budgets, balance sheets, corporate strategies, and risk frameworks.**
>
> Guy Williams, Global Nature Lead, Deloitte

These risks cover both:

- **Physical impacts** to operations and the value chain from acute or chronic risks arising from changes in nature; and
- **Transition risks**, including the policy and legal risks, technology risks and risks to market and reputation stemming from changing stakeholder expectations.

These also result in a range of **systemic risks**, including ecosystem collapse, aggregated risks and contagion.[30]

Broadly speaking, Earth has nine planetary boundaries,[31] the limits beyond which humanity should "put no further pressure if we want to safeguard the stability of our home."[32] Currently, at least four are being exceeded:[33]

- **Climate change** is already causing extreme weather and sea level rises, which are impacting capital stocks, changing crop yields and lowering productivity from health and heat stress.[34]
- Biodiversity loss is causing far-reaching impacts across critical systems, for example to global food production caused by declining pollinators and coral reef bleaching.[35]
- **Chemical and plastic pollution**, through production, use and disposal, have reached dangerous levels, with plastic particles detected in human blood.[36]
- **Land conversion** caused the tropics to lose close to 30 soccer fields' worth of forest every single minute in 2019.[37] In addition to lost carbon sequestration and biodiversity, deforestation increases the risk of disease, which is linked to 31% of new and emerging disease outbreaks.[38]

The World Economic Forum's 2022 *Global Risks Report* identifies biodiversity loss resulting in ecosystem collapse and extreme weather as two out of the three most severe risks for the next decade.[39] The United Nations Environment Programme has described the ongoing loss of natural species as a systemic risk for the global economy.[40]

3.1 Physical risks to operations and value chain disruption

All businesses depend on nature either directly or indirectly through their value chains. The value chain often hides or incorrectly prices the link between nature and business. As a result, nature-related risks are either invisible or businesses underestimate them.

As humanity continues to push past Earth's planetary boundaries, environmental assets and ecosystems are expected to change, becoming increasingly uncertain and unreliable, impacting the value chains that rely upon them.

A business is only as resilient as the least resilient element of its value chain.

TABLE 2 **Direct and indirect nature-related risks to business**

Direct	Direct and indirect	
Commodity risks[41]	**Supply chain performance risks**[42]	**Damage and business continuity risk**[43]
Risk relating to business production processes arise when there is an uninterrupted link between natural resources and revenue, with businesses either reliant on the direct extraction of resources or ecosystem services, such as the supply of clean water, healthy soil or pollination. They will be unable to operate if the natural resource they are reliant on is irreparably damaged or eroded. Together the three largest sectors that are highly dependent on nature generate close to $8 trillion of gross value added (GVA): construction ($4 trillion); agriculture ($3 trillion); and food and beverages ($1 trillion). Other critical sectors include forestry, fisheries, energy and water utilities.[44]	Risk related to business dependency on an industry that has a direct dependency anywhere in the supply chain creates an indirect dependency. The long-term viability of the business model depends on supply chain continuity and therefore depends on natural capital.[45] For example, the supply of shea butter used in various cosmetic products is reliant on the shea tree, which is threatened by deforestation, parasites and pollinator loss.[46]	Nature can provide physical security against damage from acute and chronic events including heatwaves, flooding and tropical cyclones.[47] For example, mangroves protect against coastal flooding and storm surges in addition to providing biodiversity benefits and carbon sequestration. One study has estimated that, if today's mangroves were lost, annual damages to property would increase by $82 billion.[48]

Workforce risk

Nature-related risks to the workforce underpin and exacerbate commodity, supply chain and business continuity risks. Human capital is the foundation upon which the global economy and business are built. Risks include the increased spread of disease, lack of access to fresh air, clean water and food, as well as implications for physical health and mental well-being.

Impacts on business

- Reduced revenue or increased costs from less or lower quality natural resources/raw inputs
- Reduced productivity
- Increased capital expenditure for adaptation
- Increased cost of insurance[49] and risk of asset stranding[50]
- Increased natural hazard costs such as through impaired assets
- Reduced revenue or increased costs from damaged infrastructure
- Real estate asset repricing[51] and
- Increased cost or reduced access to capital.

Failure to address nature loss poses a major risk to achieving net-zero emissions targets, potentially undermining business climate commitments. Nature loss and the climate crisis are inextricably linked; the Intergovernmental Panel on Climate Change stipulates they must be addressed jointly.[52] For example, species richness in the ocean is intimately linked to the efficacy of carbon sequestration in the ocean.[53]

Many nature-related risks are not isolated, with cascading impacts across systems and sectors via the movements of people, goods, capital and information. The whole global economy is vulnerable to these systemic risks, including impacts on global health, peace, trade, economic development and gender equality.[54]

Board members should consider their duty to understand business dependencies, both direct and indirect, on nature. Value chain continuity, predictability and resilience are crucial to the success of ongoing operations.

3.2 Transition risks

Organizations will likely begin to see pressure grow from investors, shareholders, financiers and insurers to address nature-related risks and opportunities as the market continues to develop.[55] The careful management of stakeholder expectations and emerging technologies will be essential to a business's operations, long-term viability and market price.[56] Chairpersons should be particularly attuned to the policy and legal ramifications emerging from efforts to protect nature.

Policy

There is a rising trend towards greater environmental policy and regulation to protect nature. To minimize risk, the business should be prepared for the introduction of increased nature-related policy, legislation and regulation and ensure the business is set up to facilitate compliance.

- Over 100 countries have committed to the Kunming Declaration, which calls for urgent action to transition from a nature-negative economy to a nature-positive economy by 2030.[57]
- Ninety-three countries have endorsed the Leaders Pledge for Nature, which commits to reversing biodiversity loss by 2030.[58]
- The European Union has proposed new binding targets to restore degraded ecosystems.[59]
- The US President has issued an Executive Order creating a national measure on natural capital.[60]
- Indonesia has issued a permanent moratorium on clearing primary forests and peatlands for land-use activities such as palm oil plantations and logging.[61]

To achieve emerging policy objectives, many countries are likely to adopt risk disclosure regulations for businesses. This will likely see the TNFD shift from a voluntary framework to a mandatory regulatory framework in many jurisdictions, much like the Taskforce on Climate-Related Financial Disclosures (TCFD) in the European Union, the United Kingdom, Japan, Brazil, Hong Kong, Singapore and New Zealand.[62]

Emerging risk of litigation

Global environmental litigation is a rapidly expanding field of law with thousands of cases filed worldwide.[63] Increased scrutiny of the dependencies and impacts of business on nature, including the link between climate change and biodiversity loss and the strengthening of environmental protection laws,[64] means litigation is increasingly focusing on global biodiversity decline.[65]

A number of cases have been brought against private businesses for historic environmental damage, including deforestation, soil quality decline, biodiversity reduction, escalation of water insecurity, and pollinator collapse.[66]

Director liability for offences committed by a corporation is a well-established concept, including environmental offences in many jurisdictions.[67] This liability may extend retrospectively, much like the case of asbestos, which resulted in successful retrospective lawsuits against company directors for breach of their duties and, in extreme cases, for involuntary manslaughter.[68]

What if, in the future, this liability extends to cover retrospective liability for environmental damage when directors could reasonably have been expected to have foreseen the impact of their decisions?

4

The upside for chairs: Unlocking the hidden value in nature

Valuing nature is good for business, good for the economy, good for biodiversity and good for the planet.

Beyond managing nature-related risk, incorporating nature in core strategy can also help businesses discover untapped value. Regenerating nature can reduce business costs, create new revenue opportunities and contribute to broader societal commitments.

Some nature-related opportunities may already exist within the business' ecosystem – the historic undervaluing or neglect of nature has created the conditions for undiscovered opportunities across all sectors of business.

4.1 Reduced costs of business

Nature provides opportunities to improve cost efficiency through increased resource efficiency and reduced cost of capital.

Resource efficiency

Nature can provide services and processes that are cheaper and more resource-efficient than traditional technology and infrastructure.

For example, to address the urban heat island effect, a single healthy tree can provide the cooling power of 10 air conditioning units on a sunny day due to evaporation alone.[69]

In urban regions, there is a movement to convert concrete drainage systems into living streams. This is more resource efficient and provides other benefits, including improving water quality and filtration, enhancing biodiversity, slowing floodwaters, and improving nearby property valuations.[70]

Businesses can also mimic natural systems in business models to reduce resource use. Where the current economy relies on a linear take, make, dispose model, nature works in regenerative, circular systems.[71] Introducing this circularity into business models through reuse, repair, remanufacturing and recycling can help optimize manufacturing and services, thereby reducing overall costs.

Using recycled copper is around $3,000 per tonne cheaper than virgin mining. Similarly, recycling aluminium can generate cost savings of approximately $840 per tonne and energy savings of up to 95%.[72]

Reduced cost of capital

Sustainable business operations are increasingly attractive to financial investors. Financial ratings agencies have started to include nature-related disclosures in their assessments, while institutional investors are demanding greater accountability of the environmental risks that companies are incurring and imposing on nature.[73]

Businesses that are proactively nature positive may be able to access lower costs of capital due to discounts on sustainable financing or sustainability-linked debt instruments that build-in an interest rate penalty for failure to meet defined green targets. Further, since the due diligence and preparatory work are similar for a single small project as for a larger project, nature-related projects with larger impacts may benefit from greater liquidity and attract more capital.

4.2 New revenue opportunities

New revenue opportunities include accessing new environmental markets or developing new nature-related products through nature-based solutions.

New products and services

Nature can create new revenue streams via new product and service innovations.

New product innovation from sustainably harvesting diverse natural materials: For example, researchers believe 70% of rainforest plants have anticancer properties,[74] yet only 15% of plant species in the world have been analysed for their pharmaceutical properties.[75] Sustainably harvesting these materials will not be possible without safeguarding nature's biodiversity; experts already estimate that the world is losing one potential major drug every two years.[76]

Nature-related services: As understanding of and appreciation for nature increases, eco-services like eco-tourism are becoming more popular. For example, the US outdoor recreation industry accounted for $454 billion in 2021.[77]

Sustainable products that safeguard nature are increasingly in demand and often attract price premiums.[78] Products using more sustainable materials, such as bamboo, have seen an uptick in demand.[79] Consumer groups are increasingly aware of the power of consumer choice and they demand responsible products that are good for the planet.[80]

Environmental markets

There are several existing and emerging environmental markets, including carbon markets, biodiversity markets and water markets (for more details, see Appendix C). A targeted survey of 20 businesses in the financial services industry found that 90% were interested in participating in some form of natural capital marketplace.[81]

Revenue from these markets can be stacked such that one nature-based solution can generate multiple streams of revenue from carbon, biodiversity and water markets simultaneously. This makes the business case for entering these markets more attractive.

As demand on nature continues to grow and if the approach to nature is not changed, then the supply of natural resources will become increasingly scarce, which is likely to increase the price of products in these environmental markets. This has been witnessed with carbon markets – revenue from the European Emissions Trading Scheme jumped from $1.9 billion to $22.5 billion between 2010 and 2020.[82] Entry into these markets should be done with attentiveness to local and indigenous communities to avoid tensions between local rights and corporate investment.

Nature-based solutions are not just reserved for agriculture and forestry. New technologies are enabling carbon offsets through innovative urban developments, such as algae biofuels.[83]

Cooperation and collective action are likely to amplify nature-based solutions. Geographical collaboration, such as within an industrial precinct, can create synergies to enable greater nature-positive contributions to the locality, as opposed to making a single effort that other actors in the region then undo.

4.3 Indirect benefits

Beyond direct value-adding opportunities, including nature in business decision-making can have a range of indirect benefits. These include:

Achieving Sustainable Development Goal (SDG) commitments	Investing in nature can address various SDG goals, such as climate change, food security, access to clean water and gender equality.[84]
Engaging local communities	Local communities can be excellent environmental stewards, able to establish a shared vision and on the ground habitat management.
Empowering indigenous communities	Indigenous communities have a long-established connection to country, with ecological knowledge preserved over many millennia. Businesses can work with indigenous communities to enhance nature-based practices and solutions.
Reputation	Consumers increasingly expect businesses to have climate and nature-related targets. Businesses that can demonstrate action in this space may enhance customer perception.

CASE STUDY 2

New Forests

New Forests presents an interesting case study because of the organization's ambition to integrate nature and social progress into all of its investments. It is understood that this is achieved by applying a comprehensive set of metrics to assess impact on nature and social progress in acquisition due diligence and regular fund management reporting.

New Forests is a global investment firm that provides investors with access to funds that invest in forests, landscapes, processing facilities and carbon projects.

The business delivers returns on investment through the management of real assets such as timber plantations, carbon projects and agriculture. It manages these assets sustainably in line with internationally recognized environmental standards, allowing New Forests to generate additional returns through biological growth of the assets, sustainable production, carbon offsets and biodiversity conservation.[85]

New Forests aims to integrate commercial forestry with impact activities, such as ecosystem restoration and reforestation, and seeks to be guided by local indigenous land care knowledge.[86] Under its Responsible Investment Policy, it screens all investments for long-term positive impact in addition to financial returns. It also actively manages investments to this end, including a requirement for third-party property managers to apply the Responsible Investment Policy to assets managed on behalf of New Forests. Four crucial priorities underpin this:[87]

1. Scale natural climate solutions;
2. Generate shared prosperity;
3. Support the emergence of a circular bioeconomy;
4. Advance policies and standards that foster responsible private sector investment.

New Forests believes these impact activities lead to better financial returns, operational efficiency and long-term sustainability outcomes. Since its inception, the organization has reported an average nominal rate of return of around 11%.[88]

5

Conclusion

Chairpersons have a responsibility to embed the importance of nature in decision-making.

Will you lead your board with a culture of courage and commitment to nature?

Although businesses depend on nature for all activities, nature is an undervalued and neglected asset. **For too long, business has taken nature for granted, forgetting that it is the foundation of society, economy and human existence**.

Because of this, humans have collectively degraded nature to the point where some planetary boundaries are being exceeded. Business is already facing severe risks from this degradation and this is only going to increase. These include rising commodity prices, job losses and resource shortages,[89] in addition to systemic threats to human survival, including global health, peace, trade, economic development and equality.[90]

But, just as there is a window of opportunity to improve the climate through net-zero emissions strategies, there is a window to stop and reverse nature degradation, resulting in a nature-positive future.

The transition to nature positive holds boundless opportunities for businesses to mitigate risk and explore new products, new markets or new business models. This will underpin the thriving businesses of the future.

To drive effective change, it is critical for companies to integrate nature into their core strategy and operations – they can no longer treat it as something nice to have. **Chairpersons should take ownership of instilling a culture that embeds the importance of nature in decision-making**. This is consistent with the Principles for Effective Climate Governance[91] and reiterated by the TNFD Principles.[92]

While it may seem like a daunting task to understand the connections, impacts and mitigation measures – particularly in addition to the challenge of emissions reductions – it is critical for businesses to start the process. The steps below provide the foundations for businesses on their journey to help establish and meet their nature-positive goals.

FIGURE 4 | **The foundations for businesses to establish and meet their nature-positive goals**

Source:
World Economic Forum

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Endnotes

1. World Economic Forum, *Nature Risk Rising*, 2020, p. 13.
2. World Economic Forum, *Nature Risk Rising*, 2020, p. 13.
3. Taskforce on Nature-related Financial Disclosures, "*Understanding nature*".
4. Deloitte Asia Pacific, *Banking on Natural Capital*, 2022, p. 14
5. Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services and Intergovernmental Panel on Climate Change, *Scientific Outcome of the IPBES-IPCC co-sponsored workshop on biodiversity and climate change*, 2021, p. 6.
6. Deloitte Asia Pacific, *Banking on Natural Capital*, 2022, p. 4.
7. Findings from the World Economic Forum Sustainable Development Impact Meetings 2022, New York, Accelerating Board Action for Net Zero.
8. International Union for Conservation of Nature (IUCN), *Towards an IUCN nature-positive approach: a working paper,* 2022.
9. United Nations High-Level Expert Group on Net Zero Commitments, *Integrity Matters: Net Zero Commitments by Businesses, Financial Institutions, Cities and Regions*, 2022.
10. Burberry, "Burberry builds on climate positive commitment with biodiversity strategy to protect, restore and regenerate nature", 6 November 2021.
11. Burberry, "Burberry builds on climate positive commitment with biodiversity strategy to protect, restore and regenerate nature", 6 November 2021.
12. Burberry, "Burberry to be climate positive by 2040", 10 June 2021.
13. Burberry, "Product: Responsible Craftmanship".
14. Ettinger, J., "Burberry's Biodiversity Pledge: 'Part of being climate positive is working beyond your own initiatives'", ethos, 8 November 2021.
15. Burberry, "Burberry builds on climate positive commitment with biodiversity strategy to protect, restore and regenerate nature", 6 November 2021.
16. Burberry, 2021/22 *Financial Statements: Notes to the Financial Statements*, 2022, p. 278.
17. Burberry, *Annual Report 2021/22*, 2022, p. 52-97.
18. Task Force on Nature-related Financial Disclosures, "The TNFD Principles".
19. Eyers, J., "ANZ under pressure to reveal biodiversity risk", *Australian Financial Review,* 29 August 2022.
20. United Nations High-Level Expert Group on Net Zero Commitments, *Integrity Matters: Net Zero Commitments by Businesses, Financial Institutions, Cities and Regions*, 2022.
21. Science Based Targets Network, *Science-Based Targets for Nature: Initial Guidance for Business*, 2020, p. 9.
22. Diageo, "Preserve Water for life".
Evans, J., "Climate pressures force businesses to count true cost of water", *The Financial Times*, 20 October 2022.
23. Organisation for Economic Co-operation and Development (OECD), *Biodiversity Offsets: Effective Design and Implementation*, 2014, p.3.
24. Gartner, T. et al., "How Nature-based Solutions Can Protect Businesses from Water Risks", *World Resources Institute*, 30 August 2022.
25. International Union for Conservation of Nature (IUCN), "Nature-based solutions to disasters".
26. Einhorn, C., "It was war. Then, a rancher's truce with some pesky beavers paid off", *The New York Times*, 6 September 2022.
27. Richardson, M. and Butler, C.W., *The nature connection handbook: A guide for increasing people's connection with nature*, The Nature Connectedness Research Group, University of Derby, 2022.
28. World Economic Forum, "This Indigenous principle could transform how we invest in nature".
29. World Economic Forum, How to Set Up Effective Climate Governance on Corporate Boards: Guiding principles and questions, 2019.
30. World Economic Forum, *Nature Risk Rising*, 2020, p. 13.
31. Rockström, J. et al., "Planetary boundaries: exploring the safe operating space for humanity", *Ecology and Society*, 14 no. 2, 2009, p. 32.
32. Raworth, K., *Doughnut Economics: Seven Ways to Think Like a 21st-Century Economist*, London, Penguin Random House, 2017, p. 49.
33. Steffen et al., "Planetary Boundaries: Guiding human development on a changing planet", *Science* 347, no. 6223, 2015.
34. Deloitte, *Turning point: Technical appendix*, 2021.

35. Murphy et al., "Globalisation and pollinators: Pollinator declines are an economic threat to global food systems", *People and Nature* 4, no. 3, 2022, pp. 773–785.
United Nations Environment Programme (UNEP), *Status of Coral Reefs of the World: 2020*, 2020.
36. Leslie et al., "Discovery and quantification of plastic particle pollution in human blood", *Environment International* 163, 2022.
37. WWF, "Deforestation and Forest Degradation".
38. Kessler, R., "What Exactly is Deforestation Doing to Our Planet?", *EcoHealth Alliance*.
39. World Economic Forum, *The Global Risks Report 2022, 17th Edition*, 2022, p. 23.
40. United Nations Environmental Programme, *The State of Finance for Nature in the G20*, 2022.
41. Taskforce on Nature-related Financial Disclosures, "Annex 4: Nature-related risks and opportunities and their financial impact".
42. Taskforce on Nature-related Financial Disclosures, "Annex 4: Nature-related risks and opportunities and their financial impact".
43. Taskforce on Nature-related Financial Disclosures, "Annex 4: Nature-related risks and opportunities and their financial impact".
44. World Economic Forum, *Nature Risk Rising*, 2020, p. 8.
45. Antithesis Group, "Biodiversity: The Risks & Opportunities in your Supply Chain".
46. Department for International Development, Cultivating Climate Resilience: The shea value chain, 2016.
Sanou et al., "Vegetative propagation of Vitellaria paradoxa by grafting", *Agroforestry Systems* 60, 2004, pp. 93-99;
World Economic Forum, *Nature Risk Rising*, 2020, p. 20.
47. World Economic Forum, *Nature Risk Rising*, 2020, p. 20.
48. Beck et al., The Global Value of Mangroves for Risk Reduction: Summary report, The Nature Conservancy, 2018, p. 6.
49. Antithesis Group, "Biodiversity: The Risks & Opportunities in your Supply Chain", 2020
50. World Economic Forum, *Nature Risk Rising*, 2020, p. 16.
51. World Economic Forum, *Nature Risk Rising*, 2020, p. 20.
52. Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services and Intergovernmental Panel on Climate Change, *Scientific Outcome of the IPBES-IPCC co-sponsored workshop on biodiversity and climate change*, 2021, p. 6.
53. Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services and Intergovernmental Panel on Climate Change, *Scientific Outcome of the IPBES-IPCC co-sponsored workshop on biodiversity and climate change*, 2021, p. 6.
54. Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services and Intergovernmental Panel on Climate Change, *Scientific Outcome of the IPBES-IPCC co-sponsored workshop on biodiversity and climate change*, 2021, p. 17-18.
55. Robins et al., *Climate change and the just transition: A guide for investor action*, Grantham Research Institute on Climate Change and the Environment, 2018, p. 10.
56. Dorobantu, S., Henisz, W.J., and Nartey, L., "Not all sparks light a fire: Stakeholder and shareholder reactions to critical events in contested markets", *Administrative Science Quarterly* 72, no. 3 (2017): pp. 561–97.
57. Deloitte Asia Pacific, *Banking on Natural Capital*, 2022, p. 15.
58. Leaders' Pledge for Nature, "*Endorsers*".
59. European Commission, "*Nature Restoration Law*".
60. The White House, "A New National Strategy to Reflect Natural Assets on America's Balance Sheet", press release, 18 August 2022.
61. Tacconi, L. and Muttaqin, M.Z., "Policy forum: Institutional architecture and activities to reduce emissions from forests in Indonesia", *Forest Policy and Economics* 108 (2019): p. 101980; World Economic Forum, *Nature Risk Rising*, 2020, p. 21.
62. Pangolin Associates, "Countries are mandating climate-related financial disclosures. Is Australia next?", 4 July 2022.
63. Grantham Research Institute on Climate Change and the Environment, "Climate Change Laws of the World".
64. Clyde and Co, *Biodiversity liability and value chain risk report*, March 2022.
65. Clyde and Co, "*Biodiversity litigation: Environment analysis*".
66. Clyde and Co, "*Biodiversity litigation: Environment analysis*".
de Wit, E. and Stebbing, S., "Climate change litigation update September 2022", Norton Rose Fulbright.
Setzer, J. and Higham, C., "Global trends in climate change litigation: 2022 snapshot", Grantham Research Institute on Climate Change and the Environment, 2022, p. 24.
67. *Companies Act 2006* (UK) s 172(1)(d).
Saxe, D., "Should Company Directors and Officers Be Personally Liable for Environmental Contamination They Did Not Cause?", *LexisNexis*, 2013.
Tsagas, G., "Section 172 of the UK Companies Act 2006: Desperate Times Call for Soft Law Measures", *Oxford Business Law Blog*, last modified 1 September 2017.
Lexology, "Environmental liability in the USA", last modified 15 November 2018.
Lawrence, L., "Director liability for environmental offences", *Holding Redlich*, 2020.

68. Business and Human Rights Resource Centre, "Eternit lawsuit (re asbestos exposure in Italy)".
International Labour Organization, "Asbestos in the workplace: a difficult legacy".
Leahy, K. "Asbestos Exposure and the Law in the United States", *Asbestos and its Diseases*, Oxford, Oxford University Press, 2008, p. 348.
Field, T., "Liability to Remedy Asbestos Pollution", *Journal of Environmental Law* 18, no. 3, 2006, pp. 479-494.

69. United Nations Environment Programme, "Six ways nature can protect us from climate change", 24 June 2020.

70. Polyakov, M. et al., "The value of restoring urban drains to living streams", *Water Resources and Economics* 17, 2017, p. 44.
Myers, Z., "More than just drains: recreating living streams through the suburbs", *The Conversation*, 18 September 2017.

71. Ellen Macarthur Foundation, "Circular economy introduction".

72. Zeng et al., "Comparing the costs and benefits of virgin and urban mining", *Journal of Management Science and Engineering 7*, no. 1, 2022, pp. 98-106.

73. World Economic Forum, *Nature Risk Rising*, 2020, p. 16.

74. Shah, S., "Ethnomedicinal knowledge of indigenous communities and pharmaceutical potential of rainforest ecosystems in Fiji Islands", *Journal of Integrative Medicine*, 17, 4, 2019.

75. Palhares et al., "Medicinal Plants Recommended by the World Health Organisation: DNA Barcode Identification Associated with Chemical Analyses Guarantees Their Quality", *PLoS One*, no. 5, 2015.

76. Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), *Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services*, 2019.

77. U.S. Bureau of Economic Analysis, "Outdoor Recreation Satellite Account, U.S. States, 2021", 9 November 2022.

78. Kearney, "Why today's pricing is sabotaging sustainability", 11 September 2020.

79. WWF and The Economist, *An Eco-wakening: Measuring global awareness, engagement and action for nature*, 2021.

80. WWF and The Economist, *An Eco-wakening: Measuring global awareness, engagement and action for nature*, 2021.

81. Deloitte Asia Pacific, *Banking on Natural Capital*, 2022, p. 10.

82. The World Bank, "Carbon Pricing Dashboard".

83. Commonwealth Scientific and Industrial Research Organisation (CSIRO), "Producing biofuels from algae".

84. United Nations, "Sustainable Development: The 17 Goals".

85. New Forests, "Our history".

86. New Forests, "Nature-based investments for a sustainable future" (homepage).

87. New Forests, *Responsible Investment Policy*, 2021, p. 2.

88. New Forests, *Sustainability Report 2021*, 2022, p. 19.

89. Deloitte Asia Pacific, *Banking on Natural Capital*, 2022, p. 14.

90. Deloitte Asia Pacific, *Banking on Natural Capital*, 2022, p. 17-18.

91. World Economic Forum, *How to Set Up Effective Climate Governance on Corporate Boards: Guiding principles and questions*, 2019.

92. Taskforce on Nature-related Financial Disclosures, "The TNFD Principles".

Appendix A: Terminology

Term	Definition
Biodiversity	The variability among living organisms from all sources, including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems. (Read more at TNFD.)
Ecological debt	The global ecological debt, representing a real financial liability, is the excess consumption of natural resources over and beyond the Earth's capacity to regenerate. (Read more at Deloitte.)
Ecosystem	A dynamic complex of plant, animal and microorganism communities and the non-living environment, interacting as a functional unit.
Ecosystem Services	The contributions to the benefits that are used in economic and other human activity.
Natural Capital	The stock of renewable and non-renewable natural resources (e.g. plants, animals, air, water, soils, minerals) that combine to yield a flow of benefits to people.
Natural-climate solutions	A subset of nature-based solutions; includes conservation, restoration and improved land and sea management for the purposes of addressing climate change. (Full definition at TNFD.)
Nature	The natural world, with an emphasis on the diversity of living organisms (including people) and their interactions among themselves and with their environment.
Nature loss	The loss and/or decline of the state of nature. (Full definition at TNFD.)
Nature-based solutions	Actions to protect, conserve, restore, sustainably use and manage natural or modified ecosystems that address social, economic and environmental challenges while simultaneously providing human well-being, ecosystem services and resilience and biodiversity benefits. (Read more at International Union for Conservation of Nature – IUCN.)
Nature-positive	A high-level goal and concept describing a future state of nature (e.g. biodiversity, ecosystem services and natural capital) that is greater than the current state. (Read more at IUCN.)
Nature-related opportunities	Activities that create a positive outcome for organizations and nature by avoiding or reducing impacts on nature or contributing to its restoration. (Full definition at TNFD.)
Nature-related risks	Potential threats posed to an organization linked to its and other organizations' dependencies on nature and nature impacts. These can derive from physical, transition and systemic risks.
Planetary boundaries	The nine processes that regulate the stability and resilience of the Earth system and in which humanity can continue to operate safely, develop and thrive for generations to come. (Read more at Ecology & Society.)
Nature-related systemic risks	Risk arising from the breakdown of the entire system, rather than the failure of individual parts. (Full definition at TNFD.)
Nature-related transition risks	Risks that result from a misalignment between an organization's or investor's strategy and the changing regulatory and policy landscape in which it operates. (Full definition at TNFD.)

Appendix B: TNFD LEAP framework

Locate

Scope the assessment & interface with nature

An organization's assets, business processes, products and services interface with nature at specific locations.

While there will be similar types of nature-related dependencies and impacts across similar business processes in different locations, their size and scope will be location-specific.

Evaluate

Dependencies & impacts

Develop an understanding of nature-related dependencies and nature impacts at each location where a business interfaces with nature to gain a robust view of risks and opportunities.

Assess

Material risks & opportunities

Leveraging the dependency and impact analysis developed in the Evaluate phase, seek to identify how those impacts might translate into risks and opportunities for the organization.

Prepare

To respond and report

Be prepared to incorporate assessment into decision-making. This will involve strategy and resource allocation decisions, measuring performance and deciding what information the company will disclose to stakeholders.

Source: Adapted from the Taskforce for Nature-Related Financial Disclosures (read more).

Appendix C: Environmental markets

Carbon	Carbon markets involve the production, buying and selling of carbon credit units to invest in an activity which reduces greenhouse gas emissions to compensate for emissions produced elsewhere. As business leaders set increasingly ambitious commitments to reduce global greenhouse gas emissions, businesses are voluntarily buying and selling credits to address emissions that have not yet been or are unable to be eliminated. Many of these credits are provided through natural-climate solutions, such as tree-planting. Nature-based carbon credits (being a subset of all carbon credits) are forecast to provide the majority of the voluntary carbon market by 2030, up to $50 billion annually. (Source: Taskforce on Scaling Voluntary Carbon Markets, *Final Report,* 2021, p. 2.)
Biodiversity	Biodiversity markets are an emerging area that aims to provide businesses with commercial value for projects that protect or restore biodiversity through, for example, financial incentives for species protection or habitat restoration. (Source: World Economic Forum, *Biodiversity Credits: Unlocking Financial markets for Nature-Positive Outcomes*, 2022, p. 4.) While biodiversity markets are still emerging, including biodiversity benefits in existing carbon credit projects generally attracts a price premium. (Sources: Watson, A. "Deep dive: Sustainability co-benefits of carbon projects", *Decarbonized*, 28 April 2022; Second Nature, *Co-Benefits of Carbon Offset Projects: Information for Carbon Offset Procurement*, 2020; Queensland Government, "Co-benefits overview", 11 July 2022.) For example in one project, biodiversity attracted a premium of up to AUD$65 ($42) per carbon credit. (Source: Carbon Neutral, *Putting a value of co-benefits: Yarra Biodiversity Corridor*, 2022, p. 5.) Countries that are trialling or exploring biodiversity markets include Colombia, New Zealand and Australia. (Source: World Economic Forum, *Biodiversity Credits: Unlocking Financial markets for Nature-Positive Outcomes*, 2022, p. 4.)
Water	Water markets incentivize businesses to limit extraction from, or pollution into, water streams through regulatory cap and trade schemes: – Water quantity markets (such as the Murray-Darling Basin and Colorado River) cap the total amount of water an entity can extract. Businesses that are able to reduce their water use below their set limit can generate revenue by selling or leasing the remaining water rights available to them, incentivizing water allocation to its highest-value use. – Water quality markets cap the total amount of water pollutants by an entity. In the same way as quantity markets, businesses that are able to reduce their water pollution below the set limit can generate revenue by selling the remaining water credits to another entity. (Source: United States Environmental Protection Agency, "Water Quality Trading".) Nature-based solutions are often cost-effective in reducing water use and enhancing pollution control. These include improving soil water retention by using soil carbon or adopting grass buffers along stream banks to reduce pollutants.

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