



Biodiversity as Systemic Risk

10 Game-Changers for Board Directors and Stewardship Teams

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Introduction

For the International Corporate Governance Network (ICGN), the primary obligation of investor fiduciaries is to align investment practices with the creation of long-term, sustainable value for beneficiaries while minimising risks that could impact future returns. This paper acknowledges the fiduciary duty to address material risks related to the loss of biodiversity, the impairment of ecosystem services, and damage to the natural capital upon which our economy is based.¹

As described below, scientists, economists, policy-makers, corporate leaders, and investment institutions have begun to grasp the dire state we are in. The race is on to identify the “game-changers” that can allow us to move rapidly and intentionally to halt biodiversity loss, and restore natural capital and the ecosystem services it provides, while also providing sustainable value creation and requisite investment return.

In this viewpoint, we briefly describe the risks to capital markets presented by biodiversity loss and take heed of the urgent situation which demands significant actions to deal with the challenges presented. We list ten game-changers that stewardship teams and board directors should note. We follow this list, and conclude this paper, with ten areas of consideration for boards and stewardship teams to examine in order to ensure that appropriate actions are taken to stave off the significant, if not existential, risks to companies, investors, investment institutions, and the global economy.

The Challenge

Historically ignored by economic and investment analysis, biodiversity is increasingly recognised as core to the task of long-term sustainable value creation.² Some aspects of the economic value of biodiversity and nature are obvious (e.g. fish stocks, forest resources, genetic material for developing medicines). But for centuries, abundance has made these resources seem inexhaustible, and therefore of little interest to investment fiduciaries beyond the investment prospects of a select number of natural resource-dependent companies. For society as a whole, not just fiduciaries, few understood our economic reliance on ecosystem services and that the lack of payment for these services was unsustainable. Our economic growth has not reflected nature’s true value and the benefits it has provided.

Other aspects of biodiversity and their economic value are only recently becoming understood by capital markets. For example, investment fiduciaries are beginning to understand how biodiversity underpins critical natural systems such as recycling nutrients in soils, pollination, purifying water, absorbing atmospheric carbon, and keeping both global and local temperatures tolerable. We are also just beginning to understand how these systems can reach critical junctures, or “tipping points”, and collapse.

¹ **Biodiversity** is defined as the variability among living organisms from all sources, including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part. **Ecosystem services** are the contributions of ecosystems to the benefits that are used in economic and other human activity. **Natural capital** is defined as 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. For a full glossary of terms see: <https://framework.tnfd.global/appendix/glossary-of-key-terms/>. This paper will use biodiversity as an imprecise but efficient proxy for these terms.

² <https://www.weforum.org/press/2020/01/half-of-world-s-gdp-moderately-or-highly-dependent-on-nature-says-new-report>.

Further, we are beginning to accept that human activity is the cause of biodiversity loss with resource extraction, industrialisation, agriculture, urbanisation, and the release of pollutants to air, marine, freshwater, and land ecosystems serving as the main drivers.³ During the past 200 years, biodiversity loss and species extinction have accelerated to the point that most conservation biologists now believe we have entered a period of mass extinction.⁴ An average of approximately 25 per cent of species in assessed animal and plant groups are threatened, suggesting that around 1 million species already face extinction, many within decades unless action is taken to reduce the intensity of drivers of biodiversity loss. Without such action, there will be a further acceleration in the global rate of species extinction, which is already at least tens to hundreds of times higher than it has averaged over the past 10 million years.⁵

Indeed, scientists, policy-makers, and now capital markets entities are converging on the conclusions reached by the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES): “Nature is declining globally and at rates unprecedented in human history - and the rate of species extinction is accelerating, with grave impacts on peoples around the world now likely. This degradation of biodiversity has repercussions on all human activities... We are eroding the very foundations of our economies, livelihoods, food security, and quality of life worldwide.”⁶

Economists increasingly acknowledge this reality. A major independent report published in 2021 by the United Kingdom Treasury stated that between 1992 and 2014, produced capital per person doubled. Human capital per person increased by 13 per cent globally. But the stock of natural capital per person has decreased by 40 per cent. We will need 1.6 earths to maintain the world’s living standards. Our prosperity has come at a terrible cost to nature and imperils our economic future.⁷

The complex, dynamic and interrelated connections between biodiversity loss and climate change are also confirmed. In a landmark joint report, the IPBES and the Intergovernmental Panel on Climate Change (IPCC) concluded that “unprecedented changes in climate and biodiversity, driven by human activities, have combined and increasingly threaten nature, human lives, livelihoods, and well-being around the world. Biodiversity loss and climate change are both driven by human economic activities and mutually reinforce each other. Neither will be successfully resolved unless both are tackled together.”⁸

Five years ago, biodiversity loss did not feature prominently in discussions of investment risk. But, along with climate change, these challenges have now jumped to the top of the global agenda, presenting potentially existential threats to the economy, society, and capital markets.⁹ It is challenging to discuss the risks presented without sounding alarmist. But the reality is that the world has now entered an era where humanity has become the dominant evolutionary force and is triggering the greatest extinction of species we have known.

Business as usual is not a viable long-term strategy. We need game-changers: concepts, processes, strategies, frameworks, and legal regimes that will change how the economy and capital markets interact with the environment. Here are 10.

³ <https://www.unep.org/news-and-stories/story/5-key-drivers-nature-crisis>.

⁴ <https://www.worldwildlife.org/stories/what-is-the-sixth-mass-extinction-and-what-can-we-do-about-it>. For accessible but thorough explorations see David Quammen, *The Song of the Dodo: Island Biogeography in an Age of Extinction*, (New York: Touchstone, 1997) and Elizabeth Kolbert, *The Sixth Great Extinction: An Unnatural History*, (New York: Henry Holt, 2014).

⁵ <https://ipbes.net/global-assessment>.

⁶ <https://ipbes.net/global-assessment>.

⁷ <https://www.gov.uk/government/publications/final-report-the-economics-of-biodiversity-the-dasgupta-review>.

⁸ <https://ipbes.net/events/ipbes-ipcc-co-sponsored-workshop-biodiversity-and-climate-change>.

⁹ <https://www.weforum.org/agenda/2023/01/global-risks-report-2023-experts-davos2023/>.

The Response: 10 Game-Changers

Below we list and describe 10 significant developments that can play a role in turning the tide on biodiversity loss. Each holds deep relevance for boards, stewardship teams, and other capital markets participants.

1. Post-2022 Global Biodiversity Framework

On 19 December 2022, 190 countries signed the Post-2022 Global Biodiversity Framework which includes protecting 30 per cent of land and oceans by 2030 plus 22 other targets to restore biodiversity, protect nature, and enhance the ability of the environment to yield the ecosystem services upon which the economy is based. The 2022 Kunming-Montreal Global Biodiversity Framework now succeeds the Strategic Plan for Biodiversity (the Aichi Biodiversity Targets) that had been in effect from 2011-2020. It will serve as a strategic plan for the implementation of the Convention on Biodiversity and its Protocols.¹⁰

The agreement recognises the critical role that the financial sector can play in halting and reversing biodiversity loss and requires the alignment of private and public financial flows with both the 2030 targets and the 2050 vision of the framework. Directors and stewardship teams should know that Target 15 specifically calls upon businesses and financial institutions to progressively reduce negative impacts on biodiversity, increase positive impacts, reduce biodiversity-related risks to the economy, and promote actions to ensure sustainable patterns of production. To achieve these goals, business and financial institutions are asked to:

- Regularly monitor, assess and transparently disclose their risks, dependencies, and impacts on biodiversity along their operations, supply and value chains, and portfolios;
- Provide information needed to consumers to promote sustainable consumption patterns; and
- Report on compliance with access and benefit-sharing regulations and measures, as applicable.

Access and benefit-sharing is a reference to the Nagoya Protocol on Access and Benefit-Sharing, a supplementary agreement to the 1992 Convention on Biological Diversity and a component of the 2022 Global Biodiversity Framework. Nagoya aims to provide for the fair and equitable sharing of benefits arising from the utilisation of genetic resources with the contracting party (often located in the Global South) providing genetic resources. Critically, Kunming-Montreal also recognises the leadership, traditional knowledge, participation, and the rights held by indigenous peoples for the purposes of biodiversity protection, including the right to free, prior, and informed consent, in accordance with national legislation.

Of further note, Target 18 includes the requirement for governments to identify, eliminate, phase out, or reform incentives that are harmful to biodiversity. For this reason, the agreement could have significant implications for the agricultural and extractive industries currently relying on subsidies that result in damage to the environment.

2. Human Right to a Clean, Healthy, and Sustainable Environment and State Regulation

On 28 July 2022, the United Nations General Assembly adopted a historic resolution recognising a clean, healthy, and sustainable environment as a universal human right. The UN expects the resolution will help reduce environmental injustices, close protection gaps, and empower people, especially those in vulnerable situations, including environmental human rights defenders, children, youth, women, and indigenous peoples. The decision will also help countries accelerate the implementation of their environmental and human rights obligations and commitments.¹¹ The resolution calls for business enterprises to adopt policies, enhance international cooperation,

¹⁰ <https://www.cbd.int/doc/c/e6d3/cd1d/daf663719a03902a9b116c34/cop-15-l-25-en.pdf>.

¹¹ <https://news.un.org/en/story/2022/07/1123482>.

strengthen capacity-building, and continue to share good practices in order to scale up efforts to ensure a clean, healthy, and sustainable environment for all.

While the resolution is non-binding, directors and stewardship teams should note that soft law instruments and declarations can find their way into hard law. Most notably, we can expect that the right to a clean, healthy, and sustainable environment will be incorporated into the United Nations Guiding Principles on Business and Human Rights and the OECD Guidelines on Business and Human Rights.¹² Both these documents are referenced in the European Union's Corporate Sustainability Disclosure Directive and the proposed Corporate Sustainability Due Diligence Directive as are requirements to report on biodiversity. Specific duties for directors include setting up and overseeing the implementation of the due diligence processes and integrating due diligence into corporate strategy. In addition, when fulfilling their duty to act in the best interest of the company, directors must take into account the human rights, climate change, and environmental consequences of their decisions. Requirements entered into force in January 2023.¹³

3. Taskforce on Nature-Related Financial Disclosures (TNFD)

Modelled on the Taskforce for Climate-Related Financial Disclosures (TCFD), but adjusted for the unique challenges of reporting on risks and opportunities associated with biodiversity and nature, the TNFD aims to develop and deliver a risk management and disclosure framework for organisations to report and act on evolving nature-related risks. The ultimate aim is to support a shift in global financial flows away from nature-negative outcomes and toward nature-positive outcomes.

The TNFD framework uses the four main disclosure categories of the TCFD: governance, strategy, risk and impact management, and metrics and targets. While boards and stewardship teams will wish to become familiar with these main features, directors should note that the TNFD calls for disclosure of the board's and management's oversight of nature-related dependencies, impacts, risks, and opportunities. Critically, the TNFD advances disclosure of how stakeholders, including rights-holders, are engaged in response to nature-related dependencies, impacts, risks, and opportunities.

The TNFD advocates the use of the LEAP Nature Risk Assessment. This calls for reporting organisations to:

- "Locate" their interface with nature (business foot-printing, nature interface, priority location identification, sector identification);
- "Evaluate" their dependencies and impacts (identification of relevant ecosystem services, identification of dependencies and impacts, dependency analysis, impact analysis);
- "Assess" their risks and opportunities (risk and opportunity identification, existing and additional risk and opportunity mitigation management, risk and opportunity materiality assessment);
- "Prepare" to respond and report (strategy and resource allocation, performance management, reporting, and presentation).

¹² <https://www.business-humanrights.org/en/big-issues/un-guiding-principles-on-business-human-rights/>;
<https://www.oecd.org/corporate/mne/>.

¹³ https://commission.europa.eu/business-economy-euro/doing-business-eu/corporate-sustainability-due-diligence_en;
https://eur-lex.europa.eu/resource.html?uri=cellar:bc4dcea4-9584-11ec-b4e4-01aa75ed71a1.0001.02/DOC_1&format=PDF; <https://op.europa.eu/en/publication-detail/-/publication/e47928a2-d20b-11ea-adf7-01aa75ed71a1/language-en>; https://finance.ec.europa.eu/capital-markets-union-and-financial-markets/company-reporting-and-auditing/company-reporting/corporate-sustainability-reporting_en.

The TNFD also calls for reporting organisations to describe how targets on nature and climate risks are aligned with each other and the trade-offs that may be necessitated.

The TNFD has promulgated beta version 0.3 for trial and comment. The final beta version will be published in March 2023 for comment and finalised in Q3 2023.¹⁴

4. Biodiversity Measurement, Data, Metrics, and Guidance

Directors and stewardship teams should seek to become familiar with significant biodiversity approaches (e.g. the mitigation hierarchy - avoid, minimise, restore, offset), metrics (e.g. Mean Species Abundance, Potentially Disappeared Fraction, Species Abatement and Restoration), targeting (Science-Based Targets for Nature), and guidance initiatives now available or under development. Finance for Biodiversity (see below) has published an extensive guide.¹⁵ Familiarity with the LEAP tool, as promulgated by the TNFD, will also be of value.¹⁶

Financial institutions will also wish to become familiar with ENCORE (Exploring Natural Capital Opportunities, Risks, and Exposure). Established by the UN World Conservation Monitoring Centre (UN-WCMC) and the Natural Capital Finance Alliance, ENCORE helps financial institutions understand how investment and lending are influencing biodiversity, assess the extent to which they are harming or building resilience, and determine if portfolios are in alignment with global/regional biodiversity targets.¹⁷

As a relatively new field, measuring biodiversity exhibits a need for high-integrity, consistent, comparable, and decision-useful data. In recognition, the TNFD has established the Nature-Related Data Catalyst. Bringing together experts from across the nature-related data landscape to identify current shortcomings and find ways to remedy them, the aim is to facilitate the ease, speed, and scale of adoption of the TNFD once the framework is launched.¹⁸

A wide range of organisations are also publishing useful tools and guidance documents to advance the recognition of biodiversity.¹⁹ Directors and stewardship teams should become familiar with the major initiatives in this space. Because of its investor orientation, directors and stewardship teams should learn more about the protocol advocated by the Natural Capital Coalition.²⁰ Given the rapid evolution of this field, all capital markets participants will wish to make sure they remain apprised of developments, tools, data sets, and metrics as these emerge and become increasingly refined.

5. International Sustainability Standards Board (ISSB) and Biodiversity

The International Sustainability Standards Board (ISSB) is a standard-setting body established in 2021-2022 under the International Financial Reporting Standards Foundation (IFRS) whose mandate is the creation and development of sustainability-related financial reporting standards to meet investors' needs for sustainability reporting. The aim of the ISSB is to change the current fragmented environmental, social, and governance (ESG) corporate reporting landscape into a global and inter-operable language of common sustainability-related financial disclosures.

In December 2022, the ISSB clarified that a company's ability to deliver value for its investors is inextricably linked to the stakeholders it works with and serves, the society it operates in and the

¹⁴ <https://tnfd.global>.

¹⁵ https://www.financeforbiodiversity.org/wp-content/uploads/Finance-for-Biodiversity_Guide-on-biodiversity-measurement-approaches_2nd-edition.pdf.

¹⁶ <https://conservationhierarchy.org/what-is-conservation-hierarchy/>; <https://www.globio.info/what-is-globio>; <https://www.ibat-alliance.org/about-us?locale=en>; <https://www.naturebasedsolutionsinitiative.org/news/science-based-targets-for-nature-sbbtn/>; <https://framework.tnfd.global/the-leap-nature-risk-assessment-process/>.

¹⁷ <https://naturalcapital.finance/ncfa-steering-committee/>; <https://encore.naturalcapital.finance/en/about>; <https://www.financeforbiodiversity.org/publications/guide-on-biodiversity-measurement-approaches/>.

¹⁸ <https://tnfd.global/consultation-and-engagement/data-catalyst/>; <https://framework.tnfd.global/wp-content/uploads/2022/06/TNFD-Data-Discussion-Mar22-Up-June22.pdf>.

¹⁹ <https://embeddingproject.org/issue-snapshots/ecosystems/biodiversity>.

²⁰ https://capitalscoalition.org/capitals-approach/natural-capital-protocol/?fwp_filter_tabs=guide_supplement.

natural resources it draws on. Sustainability will be described in the ISSB's General Sustainability-related Disclosures Standard (S1) as the ability of a company to sustainably maintain resources and relationships with and manage its dependencies and impacts within its whole business ecosystem over the short, medium, and long term.

The ISSB has also recognised the connection between climate and nature. The ISSB will now research incremental enhancements that complement the Climate-related Disclosures Standard (S2), including relating to natural ecosystems and the human capital aspects of the just transition to a low-carbon economy. To deliver this, consistent with its approach of building upon the work of market-led initiatives grounded in current best-practice and thinking, the ISSB will consider the work of the TNFD and other existing nature-related standards and disclosures where they relate to the information needs of investors.²¹

ISSB standards will be finalised in 2023. Stewardship teams should ensure they are kept up to date on these developments. Directors should ensure that management is monitoring developments and beginning to put in place the people and procedures necessary to ensure compliance.

Note that the Global Reporting Initiative promulgated a biodiversity standard in 2016. The standard is undergoing revision for 2023.²²

6. Finance for Biodiversity and Nature Action 100

The Finance for Biodiversity Pledge commits financial institutions to call on global leaders to protect and restore biodiversity through their financial activities and investments. The pledge consists of five steps:

1. Collaborate and share knowledge on assessment methodologies, biodiversity-related metrics, targets, and financing approaches for positive impact.
2. Incorporate biodiversity into ESG policies and engage companies to reduce their negative and increase their positive impacts on biodiversity.
3. Assess financing activities and investments for significant positive and negative impacts on biodiversity and identify drivers of its loss.
4. Monitor opportunities to set and disclose targets based on the best available science to increase significant positive and reduce significant negative impacts on biodiversity.
5. Report annually and be transparent about the significant positive and negative contributions to global biodiversity goals linked to financing activities and investment portfolios.²³

As of January 2023, the pledge includes 126 financial institutions in 21 countries representing 18.8 trillion euros.

In December 2022, Finance for Biodiversity partnered with other key groups to launch Nature Action 100, a new global engagement initiative created to drive urgent investor action on the nature-related risks and dependencies in the companies they own. The initiative will engage companies in key sectors that are deemed to be systemically important in reversing nature and biodiversity loss by 2030.

Modelled on Climate Action 100+, Nature Action 100 aims to drive greater corporate ambition and action on tackling nature loss and biodiversity decline, complementing the UN Global Biodiversity Framework. The initiative will identify the actions companies need to take to protect and restore

²¹ <https://www.ifrs.org/news-and-events/news/2022/12/issb-describes-the-concept-of-sustainability/>.

²² <https://www.globalreporting.org/standards/standards-development/topic-standard-project-for-biodiversity/>.

²³ https://www.financeforbiodiversity.org/wp-content/uploads/2.-Guidance-Finance-for-Biodiversity_Dec2022.pdf.

nature.²⁴ Stewardship teams should assess the value of joining the initiative. Directors should maintain a watch on the sectors and companies that will be prioritised for engagement and take heed of the solution sets that the investor initiative will propose.

7. The Rights of Nature and Ecocide

The rights of nature advance a new understanding of the relationship between humans and the environment where natural entities (e.g. rivers and watersheds) are conceived as legal entities with the status of a legal person.²⁵ Legal standing can be achieved on behalf of the entity by a representing legal guardian. Advocates believe that such representation could increase the protection of culturally significant aspects of the natural environment, or areas vulnerable to exploitation and pollution. As of 2022, researchers have identified 409 rights of nature initiatives in 39 countries.²⁶ The Commonwealth Climate Litigation Initiative has published a framework of liability risks (physical, transition, and misrepresentation) associated with biodiversity loss.²⁷

At the international level, lawyers and environmental organisations have advocated for the addition of the crime of ecocide to the Rome Statute of the International Criminal Court (ICC).²⁸ Ecocide would join genocide, crimes against humanity, war crimes, and crimes of aggression to be investigated and prosecuted by the ICC where states are unable or unwilling to do so themselves. Ecocide had been considered for inclusion in the original drafting of the Rome Statute in 1996 but was not included when, in 1998, the Statute was adopted by a vote of 120 countries to seven, with 21 countries abstaining.²⁹

In November 2020, the Stop Ecocide Foundation convened an independent expert panel to establish a legal definition. The panel, consisting of 12 legal experts from around the world with expertise in criminal, environmental, and climate law, completed their work in June 2021. For the purpose of the Statute, “ecocide” means “unlawful or wanton acts committed with the knowledge that there is a substantial likelihood of severe and either widespread or long-term damage to the environment being caused by those acts.”

Adding the crime of ecocide to the Rome Statutes will build on the existing international crime of severe damage to the environment during armed conflict and is expected to both raise awareness and serve as a deterrent to those contemplating projects that could fall under the established definition.³⁰ Directors and stewardship teams may wish to enhance their understanding of the potential legal and reputational risks that may ensue, not just for ecocide, but also for other liabilities associated with biodiversity loss.³¹

8. Initiative for Responsible Mining Assurance

Climate impacts and biodiversity loss are intertwined. At the same time, key strategies designed to reduce carbon emissions have the potential to cause negative impacts on the environment and biodiversity loss. As an example, the International Energy Agency (IEA) states that as the electricity sector becomes cleaner, electrification emerges as a crucial economy-wide tool for achieving net zero greenhouse gas emissions by 2050.³² In this context, demand for critical

²⁴ <https://www.financeforbiodiversity.org/at-cop15-investors-announce-nature-action-100-to-tackle-nature-loss-and-biodiversity-decline/>; <https://www.natureaction100.org>.

²⁵ <https://news.climate.columbia.edu/2021/04/22/rights-of-nature-lawsuits/>.

²⁶ <https://www.tandfonline.com/doi/full/10.1080/17445647.2022.2079432>.

²⁷ <https://commonwealthclimatelaw.org/wp-content/uploads/2022/06/CCLI-Biodiversity-liability-risks-report-vFINAL.pdf>

²⁸ <https://www.stopecocide.earth/what-is-ecocide>.

²⁹ <https://www.icc-cpi.int>.

³⁰ <https://static1.squarespace.com/static/5ca2608ab914493c64ef1f6d/t/60d7479cf8e7e5461534dd07/1624721314430/SE+Foundation+Commentary+and+core+text+revised+%2525281%252529.pdf>.

³¹ https://commonwealthclimatelaw.org/wp-content/uploads/2022/12/CCLI_Biodiversity_risk_paper_2022.pdf.

³² https://iea.blob.core.windows.net/assets/7ebafc81-74ed-412b-9c60-5cc32c8396e4/NetZeroby2050-ARoadmapfortheGlobalEnergySector-SummaryforPolicyMakers_CORR.pdf.

minerals will increase significantly.³³ To illustrate, according to one IEA pathway, electric vehicles (EV) will increase from 5% of global car sales to more than 60% by 2030.³⁴ The increased mineral production associated with EV production has the potential to negatively impact nature and exacerbate biodiversity loss.³⁵

The Initiative for Responsible Mining Assurance (IRMA) provides a strategy for mitigating the negative impacts of mineral production. IRMA was founded in 2006 by a coalition of non-governmental organisations, mining companies, affected communities, labour unions, and businesses purchasing metals and minerals. Investment institutions have now joined this initiative. The standard under development provides independent third-party verification and certification against a comprehensive standard for all mined materials. The standard covers 26 performance categories, including eight environmental issues. For IRMA, biodiversity underpins ecosystem functioning and the provision of ecosystem services essential for human well-being. It is a central component of many belief systems, world views, and identities, provides food security, human health, clean air and water, and contributes to local livelihoods and economic development.³⁶ Stewardship teams and boards may wish to evaluate IRMA as a potential solution to growing demand for strategic minerals necessary for tackling both climate change and biodiversity loss.

9. Biodiversity Loss and the Circular Economy

More than 90% of biodiversity loss is due to the extraction and processing of natural resources in our current linear production system.³⁷ In a linear economy, natural resources are turned into products that are ultimately destined to become waste. This process can be summarised as ‘take, make, waste’.

The circular economy, in contrast, advances a model of production and consumption that involves sharing, leasing, reusing, repairing, refurbishing, and recycling existing materials and products as long as possible in order to extend their life cycle as long as possible.³⁸

A circular economy is restorative or regenerative by intention and design. It replaces the end-of-life concept with restoration, shifts towards the use of renewable energy, eliminates the use of toxic chemicals, which impair reuse and return to the biosphere, and aims for the elimination of waste through the superior design of materials, products, systems, and business models.³⁹ While conservation and restoration efforts are critical to addressing biodiversity loss, circular production models hold the potential to decouple economic prosperity from resource consumption and environmental degradation.⁴⁰

The origins of circularity can be traced back to Kenneth Boulding and Allen V. Kneese.⁴¹ Today, an increasing number of companies are adopting circular principles to create value, drive innovation and increase competitiveness.⁴² Legislation in some countries is following suit, particularly in the

³³ <https://www.sciencedirect.com/science/article/pii/S2211464521000373>.

³⁴ <https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions/executive-summary>; <https://pubdocs.worldbank.org/en/961711588875536384/Minerals-for-Climate-Action-The-Mineral-Intensity-of-the-Clean-Energy-Transition.pdf>

³⁵ https://www.researchgate.net/publication/363016574_Metals_for_low-carbon_technologies_Environmental_impacts_and_relation_to_planetary_boundaries.

³⁶ https://responsiblemining.net/wp-content/uploads/2018/07/IRMA_STANDARD_v.1.0_FINAL_2018-1.pdf

³⁷ <https://environmentjournal.online/articles/material-extraction-is-responsible-for-90-of-global-biodiversity-loss/>.

³⁸ <https://www.europarl.europa.eu/news/en/headlines/economy/20151201STO05603/circular-economy-definition-importance-and-benefits>.

³⁹ <https://www.weforum.org/reports/towards-circular-economy-accelerating-scale-across-global-supply-chains/>.

⁴⁰ <https://ellenmacarthurfoundation.org/biodiversity-report>.

⁴¹ <https://www.jstor.org/stable/2808100?origin=crossref>.

⁴² <https://www.raycandersonfoundation.org/issue/circular-economy>; https://environment.ec.europa.eu/strategy/circular-economy-action-plan_en.

case of advancing the ‘right to repair’ for consumer products.⁴³ Stewardship teams may wish to add circularity to solution sets for targeted companies. And board directors should ensure management is aware of opportunities to establish circular production methods across the value chain.

10. Planetary Boundaries and Systems-Level Investing

In 2009, Johann Rockström and a group of 28 scientists proposed a new approach to global sustainability in which they defined nine planetary boundaries within which humanity can function safely. The “planetary playing field for humanity” is identified as:

1. CO2 concentrations in the atmosphere,
2. ocean acidification,
3. stratospheric ozone,
4. the biogeochemical nitrogen cycle,
5. global freshwater use,
6. land-system change,
7. chemical pollution,
8. atmospheric aerosol loading and
9. biodiversity loss.

Transgressing one or more planetary boundaries may be deleterious or catastrophic due to the risk of crossing thresholds that will trigger non-linear, abrupt environmental changes within continental to planetary-scale systems.

At the time of publication in 2009, the researchers concluded that society had already transgressed three boundaries: CO2 concentrations, global nitrogen cycle, and biodiversity loss. In 2022, reassessments concluded that the global economy had now also crossed planetary boundaries related to environmental pollutants and other novel entities such as plastic and freshwater.⁴⁴

Transgressing planetary boundaries is becoming viewed as presenting systemic risks to humanity — and investors. Systemic risks threaten the stability of the financial system and the economy. The nature of systemic risk is that it builds over time, is interactive and synergistic, and once in play, is difficult to control. Systemic risk drivers tend to be cumulative and/or interdependent, resulting in far-reaching impacts and shocks, such as the global financial crisis in 2008.⁴⁵

In recent years, a growing number of investors have recognised climate change as presenting a systemic risk. Biodiversity loss — and the planetary systems identified by Rockström et al — are now being added to a long list of interconnected financial, social, and environmental systemic risks. In response, thought leaders and investors are working to advance systems-level investing.

Related to the concept of beta stewardship,⁴⁶ systems-level investing goes beyond the use of ESG criteria to improve security analysis and portfolio risk management. It goes beyond sustainable

⁴³ <https://www.europarl.europa.eu/news/en/headlines/society/20220331STO26410/why-is-the-eu-s-right-to-repair-legislation-important>.

⁴⁴ <https://www.stockholmresilience.org/research/planetary-boundaries.html>.

⁴⁵ <https://www.icgn.org/sites/default/files/2021-06/ICGNGuidanceonInvestorFiduciaryDuties.pdf>.

⁴⁶ <https://preventablesurprises.com/what/#Mission>; <https://www.icgn.org/sites/default/files/2021-06/ICGNGlobalStewardshipPrinciples2020.pdf>.

investing whereby institutions strive intentionally to achieve social and environmental benefits along with financial returns. In addition to sustainable investing, systems-level investors seek to establish comprehensive responses to systemic risks in recognition of the power of investments to impact complex, interrelated and dynamic social, financial, and environmental systems. Systems-level investors intentionally manage the risks and rewards of the social, financial, and environmental systems that provide a stable, resilient foundation for investments across all asset classes and their impact on these systems. They use a range of techniques to manage these risks and rewards, set explicit goals for their impact on systems, and measure progress toward those goals. They seek to preserve and enhance foundational social, financial, and environmental systems in the long term while nevertheless achieving competitive returns in the short term. They do so through thematic investing, comprehensive stewardship strategies, and public policy engagement, often working in collaboration with other investment institutions and capital markets entities.⁴⁷

Stewardship teams may wish to become familiar with the concept of planetary boundaries, and systems-level investing. Directors, too, will need to become familiar with these risks and concepts and begin to prepare their boards and senior-level management to incorporate them into decision-making, looking to build adaptive and transformative capacity as necessary.

10 Key Areas for Consideration

These developments are evolving rapidly. Corporate and investment institution boards now need to raise their level of awareness and be prepared to respond appropriately to the questions listed below. Stewardship teams may wish to use the questions listed in these areas of consideration as a basis for company-specific or systems-oriented engagements.

1. Does the board as constituted possess or have access to sufficient skills and expertise in this area? If not, is the board considering how it may begin to recruit for this type of expertise, ensuring the identification of individuals with relevant business expertise? What training is required to help the board and company executives and staff build capacity in this area? Is the board in a position to assess the adequacy of management time spent and corporate resources allocated to biodiversity risk? Has the company joined relevant networks and initiatives to enhance learning and performance? Who in the company is responsible for tracking the myriad of developments in this space and ensuring appropriate action?
2. Has the company engaged its legal department to assess potential litigation? Is the team aware of developments in the rights of nature and the international crime of ecocide?
3. Has the board discussed — or does it plan to discuss — developments at COP 15 and the 2022 Kunming-Montreal Global Biodiversity Framework and how these may impact the business? How does the company plan to demonstrate its contributions to ecosystems-level, regional and international biodiversity goals in a manner consistent with the Post-2022 Agenda?
4. Has the company considered how it could build on the expertise and resources from climate-related governance and disclosure and apply them to biodiversity issues? Is the company taking a holistic approach, integrating climate and biodiversity to account for their interconnectedness? Could the company make use of the principles, guidance, training, and expertise made available, for example, by the Commonwealth Climate Law Initiative and the Climate Governance Initiative?⁴⁸ Has the company discussed the linkages between climate change, biodiversity loss, social dislocation, and a just transition to a low-carbon economy?⁴⁹
5. Is the company reviewing the due diligence and disclosure requirements specified in the CSRD and is it aware of how the CSRD may be impacted by the adoption of the right to a clean,

⁴⁷ <https://tiiproject.com/system-level-investing/>.

⁴⁸ <https://commonwealthclimatelaw.org/>; <https://climate-governance.org/>.

⁴⁹ <https://www.icgn.org/de-carbonising-global-economy-just-transition>.

healthy, and sustainable environment as it relates to the UN Guiding Principles on Business and Human Rights, the OECD Guidelines for Multinational Enterprises and CSRD requirements?

6. Is the company benchmarking its reporting and performance against an appropriate peer group? Is the company tracking the development of biodiversity measurement, data, metrics, and analytical tools, and has it started to consider how it might implement these to inform strategy? Is it considering its response to biodiversity loss in the context of planetary boundaries and IPBES drivers of biodiversity loss? Is the company prepared to respond to the demands emerging from Nature Action 100?
7. How is the company planning to respond to ISSB disclosures and its evolving position on biodiversity? Is the company engaged in developing the TNFD framework and/or does it plan to report in accordance with the TNFD?
8. Is the company building strategies and programs to manage dependencies and impacts? What are the species, habitats, and ecosystems that require prioritisation? What are the relevant metrics and targets? Is it making use of LEAP? In the case of financial institutions is it making use of ENCORE? To what extent does the board integrate biodiversity risks and strategies into overall enterprise risk management and strategy? Has it considered the potential value of IRMA as a way to mitigate the impacts of critical minerals production across the value chain? Is the company examining circular production models as a way to reduce impacts on biodiversity?
9. Does the board consider how the company's targets, risks, policies, and overall strategy relating to biodiversity, climate, and human rights interrelate, to anticipate potential trade-offs and conflicts? As the company plans for a low carbon economy and begins to implement solutions, has it considered potential impacts on biodiversity? Has the company considered setting science-based targets? Is the company planning to align these targets with the Science Based Targets for Nature?⁵⁰ Has it examined opportunities to begin developing dashboards, maps, or other visuals to assist planning and demonstrate performance?
10. How does the company engage with policymakers to highlight the required outcomes needed for their operating environment and the barriers that currently prevent appropriate action? Has the company considered reviewing its lobbying, trade association memberships, and policy positions in relation to the specificities of biodiversity, guided by the indicators in the Global Standard for Responsible Climate Lobbying (as applied to biodiversity instead of climate)?⁵¹

About ICGN

Led by investors responsible for assets under management of around US\$70 trillion, ICGN is a leading authority on global standards of corporate governance and investor stewardship. Headquartered in London, our membership is based in over 45 countries and includes companies, advisors, and other stakeholders. ICGN offers an important international investor perspective on corporate governance and investor stewardship to help inform public policy development and the encouragement of good practices by capital market participants. For more information, please visit www.icgn.org.

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⁵⁰ <https://www.naturebasedsolutionsinitiative.org/news/science-based-targets-for-nature-sbtl/>.

⁵¹ https://climate-lobbying.com/wp-content/uploads/2022/03/2022_global-standard-responsible-climate-lobbying_APPENDIX.pdf.