



The IUCN approach to setting robust targets and implementing rapid, verifiable actions for species and ecosystems



IUCN Rapid High-Integrity Nature-positive Outcomes

Technical Source Document 2.0



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About this document

This document presents IUCN's proposed contribution to the process by which society, in particular companies, can contribute to species and ecosystem goals comprised in the Kunming-Montreal Global Biodiversity Framework (KMGBF) and the Sustainable Development Goals (SDGs). Its intended audience includes those responsible for designing and implementing Nature Positive contributions in companies, including asset-holders, value chain participants and finance organisations, as well as their government and civil society partners. Components of the document will also be accessible as specific technical contributions to biodiversity risk and opportunity disclosure, target setting, and investment mechanisms under development following the KMGBF agreement.

This document builds from a previous version and the feedback collected from consultation by IUCN membership, Commissions and the private sector between November 2023 and March 2024. Several key components are currently being tested and refined, while others require further development and consultation which will result in future versions of the content. IUCN Members, private sector partners and government agencies interested to collaborate in the further refinement of this approach are urged to contact the IUCN secretariat.

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Foreword

The diverse and dynamic Membership of IUCN is working intensively across the world to address the global crisis of biodiversity loss. These efforts, often carried out in challenging circumstances, are making significant contributions to the Kunming-Montreal Global Biodiversity Framework and are fundamental to restoring the health of the planet's ecosystems. Yet, we all know that success depends on the contribution of 'the whole of society.' Business and economic systems have a particularly vital role to play. With their reach, resources, and influence, companies have the potential to become some of the most powerful drivers of positive change for biodiversity. Closing this gap in action is urgent and essential to halt and reverse biodiversity loss. At the same time, it is also an immense opportunity: by embedding nature at the heart of business and economic decision-making, we can accelerate progress, safeguard our planet's life-support systems, and create a safer, more sustainable future for all.

Many businesses recognise that they have a significant contribution to make yet often struggle with the complexity of turning this ambition into meaningful action. The IUCN Rapid High-Integrity Nature-positive Outcomes (IUCN RHINO) framework was created to bridge this gap. IUCN RHINO provides companies with clear, science-based tracks to make credible, measurable contributions and join the 'whole of society' effort that our planet needs. While this source document lays out the technical and scientific foundation, a suite of web resources and practical toolkits ensure that applying the framework is straightforward and accessible. By using IUCN RHINO, businesses can move from recognition to action – helping to shape a truly nature-positive future.

The IUCN RHINO approach starts with companies that have impact on specific components of biodiversity in particular places, and carries them through and beyond the existing excellent guidance of the Taskforce on Nature-related Financial Disclosure (TNFD), to formulating and delivering contributions that are scientifically robust, quantified and defensible.

The IUCN RHINO approach also lays out how the other components of the 'whole of society' can support companies in delivering these contributions. If the Global Biodiversity Framework goals and targets are truly to be delivered, it must be through a joint effort, with government policy and incentives matching with civil society's technical and cultural knowledge, to orient and support company actions.

The IUCN RHINO approach presented here has been developed with many contributors and partners over the last three years. It draws on IUCN's standards and data products, including the IUCN Red List of Threatened Species™ and the Red List of Ecosystems. These key products are the result of many years of work by the members of the Species Survival and Ecosystem Management Commissions. The Species Threat Abatement and Restoration (STAR) metric, a key component of the IUCN RHINO approach, was developed and deployed widely through many partnerships, including with The Biodiversity Consultancy and Newcastle University.

The IUCN RHINO approach was the subject of a substantial consultation process, across the IUCN Membership and through advisory and piloting tests with companies. It will still require development, in particular to address impacts

generated through value chains and through investment, and through the development of an ecosystem impact methodology. However the existing approach, described here, will enable companies to act now, to deliver real, quantified positive impacts on the extinction risk of species. This is the first time such an approach has been developed, and we are eager to improve and complete the approach with corporate partners, as well as with IUCN Member governments and civil society. This is a vital step forward as

we continue to strengthen and learn from the various approaches. Action is required now, the IUCN RHINO approach is ready, and we will continue to grow and finetune this important approach. Let's start this ambitious process immediately, and work together, united as one for a stronger, healthier and more nature-positive world.

Dr Grethel Aguilar
IUCN Director-General

Executive summary

Vision and ambition

‘Nature Positive’ requires that nature will be visibly and measurably on the path of recovery by 2030. In line with the Kunming-Montreal Global Biodiversity Framework (KM-GBF), it sets a vision of a world where the future state of nature is greater than its current state, to ensure the health of people, the planet and the economy.

Developed through extensive consultation (November 2023–March 2024), IUCN RHINO addresses the urgent need for measurable, high-integrity biodiversity contributions, particularly from the private sector. In doing so, the IUCN RHINO approach provides a science-based, actionable track for companies, financial institutions, governments, and civil society to contribute to the Kunming-Montreal Global Biodiversity Framework (KMGBF) and the UN Sustainable Development Goals (SDGs).

IUCN RHINO envisions “a world where nature loss is reversed with fast, focused action, grounded in science.” It enables rapid, verifiable contributions to biodiversity goals, focusing on reducing species extinction risk and ecosystem collapse. The approach is aligned with global initiatives including the Nature Positive Initiative, Taskforce on Nature-related Financial Disclosures (TNFD), and Science Based Targets Network (SBTN).

Nature Positive means transforming the global economy so that nature’s value is embedded in systems and institutions, aiming to reverse nature loss by 2050. Achieving such transformation requires collective action across governments, businesses, communities, Indigenous peoples, and civil society.

High-integrity principles and scope of IUCN RHINO

IUCN RHINO adopts the Nature Positive Initiative definition: “Halt and reverse nature loss by 2030 on a 2020 baseline, and achieve full recovery by 2050.” Companies adopting a nature positive goal or target should base their actions on ten fundamental principles, including avoiding and mitigating impacts, mainstreaming biodiversity, collaborating across landscapes and sectors, ensuring transparency and equity, and aligning with global goals.

IUCN RHINO also emphasises local and system-scale integrity, ensuring actions are scientifically robust, socially equitable (respecting IPLCs and applying FPIC), and transparent. It integrates IUCN standards and aligns with global policy frameworks.

While IUCN RHINO is not a complete solution, it provides a means for companies to embark on no-regrets actions that are robust and scientifically supported. It is structured around three impact tracks:

1. Direct Impact – for companies with spatial control over land/seascapes
2. Value Chain Impact – for companies sourcing commodities with biodiversity footprints
3. Investor Impact – for financial institutions influencing biodiversity via portfolios

The current version of the approach emphasises the first track, with the Value Chain Impact and Investor Impact tracks to be further developed.

Measurement framework

The core metric of the IUCN RHINO approach is STAR (Species Threat Abatement and Restoration), derived from the IUCN Red List of Threatened Species™. It quantifies extinction risk reduction through:

- STAR_T: Threat abatement
- STAR_R: Restoration

STAR is spatially explicit, scalable, and supports aggregation across sites, portfolios, and jurisdictions. It can be used to assess opportunities (estimated STAR), calculate a baseline and identify priority actions that need to be taken (calibrated STAR), set a target (target STAR) and evaluate how actions have contributed to reducing threats to species (realised STAR).

Ecosystem metrics are under development, based on the Red List of Ecosystems (RLE) and other global typologies.

Implementation steps

Aligned with TNFD's LEAP framework, IUCN RHINO guides users through:

- Locate: Identify sensitive areas and stakeholders (estimated STAR)
- Evaluate: Confirm species and threats, define your baseline (calibrated STAR)
- Assess: Prioritise threats and engage stakeholders, refine your baseline
- Prepare: Develop action plans and targets (target STAR)

IUCN RHINO further proposes two additional phases:

- Implement: Deliver and monitor threat reduction
- Report: Quantify and disclose contributions (realised STAR)

Case studies and application

Examples include Anglo American (mining sector) and Suzano (forestry sector) in Brazil, and coffee sourcing in Brazil, demonstrating the application of the IUCN RHINO approach in aligning biodiversity management with the KMGBF. More pilots are ongoing to help expand the lessons learned from the application of the approach.

Examples in India, Costa Rica and Colombia confirm that the IUCN RHINO approach is also relevant for national and sub-national government institutions and agencies in their decisions affecting nature, and for civil society organisations who can contribute significant value to outcomes.

Conclusion

The IUCN RHINO approach still requires developments and piloting, in particular for ecosystems and in the Value Chain and Investor Impact tracks. However, it offers a ready-to-implement, high-integrity track for companies and institutions with spatial control over land/seascapes to contribute meaningfully to global biodiversity goals. It combines scientific rigour, stakeholder engagement, and policy alignment to ensure that Nature Positive actions are measurable, defensible, and impactful.

Acknowledgements

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List of acronyms

AoH	Area of Habitat
BBOP	Business and Biodiversity Offsets Programme
CBD	Convention on Biological Diversity
CSRD	EU Corporate Sustainability Reporting Directive
EICAT	Environmental Impact Classification for Alien Taxa
EII	Ecosystem Integrity Index
EU	European Union
FPIC	Free, prior and informed consent
GBIF	Global Biodiversity Information Facility
GET	Global Ecosystem Typology
GHG	Greenhouse gas
GRI	Global Reporting Initiative
GSS	Green Status of Species
IAS	Invasive alien species
IBAT	Integrated Biodiversity Assessment Tool
IFC	International Finance Corporation
IPLC	Indigenous peoples and Local communities
ISEAL	Core Criteria for Mature Landscape Initiatives
IUCN RHINO	IUCN's approach to delivering Rapid High-Integrity Nature-positive Outcomes
IUCN	International Union for Conservation of Nature
KMGBF	Kunming-Montreal Global Biodiversity Framework
LCA	Life Cycle Assessment
NbS	Nature-based Solutions
NBSAP	National Biodiversity Strategy and Action Plan
NGO	Non-governmental organisation
OCC	Opportunity Cost of Capital
PBAF	Partnership for Biodiversity Accounting Financials
RLE	IUCN Red List of Ecosystems
SBTN	Science Based Targets Network
SDG	UN Sustainable Development Goals
SEEA	System of Environmental Economic Accounting
SEEA EA	SEEA Ecosystem Accounting
SJNS	San José Northern Sub-catchments
SMART	Specific, Measurable, Achievable, Relevant and Time-bound
STAR	Species Threat Abatement and Restoration metric
TNFD	Taskforce on Nature-related Financial Disclosures
TNFD LEAP	TNFD's Locate Evaluate Assess Prepare approach
UNEP-WCMC	UN Environment Programme World Conservation Monitoring Centre
WBCSD	World Business Council for Sustainable Development
WDKBA	World Database of Key Biodiversity Areas





Introduction

1. Introduction

The term 'Nature Positive', through the Global Goal for Nature: to Halt and Reverse Nature Loss by 2030 on a 2020 baseline and achieve full recovery by 2050, is increasingly gaining traction within the discourse on policy and private sector commitments to biodiversity conservation (Milner-Gulland, 2022; zu Ermgassen et al., 2022a). Many businesses, including state-owned enterprises¹ and non-state actors,² have expressed interest in making contributions to Nature Positive outcomes, and governments³ and multilateral organisations⁴ are increasingly using the term.

Originating from civil society, the wider Nature Positive approach represents an aspirational, inclusive and intuitive summary of societal goals for nature, including the Convention on Biological Diversity (CBD)'s Kunming-Montreal Global Biodiversity Framework (KMGBF). It can be used by companies, government, and civil society to mainstream and progress commitments. The growing enthusiasm for the Nature Positive concept represents a promising opportunity – a

means to accelerate and scale up the actions that are urgently needed to halt and reverse the loss of nature.

This technical source document describes the issues that have led to the Nature Positive momentum being generated, the wider response that society is mobilising, across companies, civil society and government. Recognising the need and opportunity, this document then sets out a proposed approach by which IUCN can deploy its expertise, standards, and data sets to help companies contribute to the delivery of outcomes for species and ecosystems, through the: IUCN Rapid High-Integrity Nature-positive Outcomes approach (IUCN RHINO). While this approach may not deliver all the solutions required for humanity to solve the biodiversity crisis, it is at least a point of departure, where organisations can make rapid progress with the confidence that their actions are based on solid science and the substantial engagement and authority of IUCN.

1 See e.g. <https://getnaturepositive.ch>, <https://www.wbcsd.org/actions/roadmaps-to-nature-positive/>

2 See e.g. the Call to Action at <https://www.naturepositive.org/naturecalltoaction>

3 See e.g. <https://www.gov.uk/government/news/government-commits-to-nature-positive-future-in-response-to-dasgupta-review>, <https://www.consilium.europa.eu/media/50363/g7-2030-nature-compact-pdf-120kb-4-pages-1.pdf>,

4 See e.g. <https://www.ebrd.com/home/news-and-events/news/2021/multilateral-development-banks-to-step-up-protection-of-nature.html>



The biodiversity crisis and the Nature Positive response

2. The biodiversity crisis and the Nature Positive response

There is overwhelming evidence that human actions have caused and continue to cause pervasive declines in life on Earth (Díaz et al., 2019). Over the past half century, a growing human population coupled with rising per capita consumption (particularly in wealthy and middle-income nations) has placed ever more pressure on our finite natural resources. This has caused unprecedented declines in biodiversity, degrading both nature and its contributions to people, and thus endangering the global economy, the welfare of future generations, and the health of our entire planetary system (WEF, 2021; WWF, 2020). There is clear evidence that industrial economic activities, particularly animal agriculture/aquaculture and associated land/water-use change, are key drivers of biodiversity loss, and that the cost of this loss is not currently borne by the most damaging industries and their investors (Dasgupta, 2021; Maxwell et al., 2016). In parallel, there is a gap of over US\$ 700 billion in global biodiversity financing, while public money continues to be spent on perverse subsidies that degrade nature (Deutz et al., 2020).

This worsening crisis has prompted calls for ‘transformative change’ and ‘integrated strategies’ to ‘bend the curve’ on global biodiversity loss (Díaz et al., 2019; Leclère et al., 2020; WWF, 2020). These calls have begun to find outlets in societal goals such as the KMGBF and the Sustainable Development Goals (SDGs).

The vision of the KMGBF is a world living in harmony with nature where “by 2050, biodiversity

is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people.” This vision is accompanied by the mission of the KMGBF “*To take urgent action to halt and reverse biodiversity loss to put nature on a path to recovery for the benefit of people and planet by conserving and sustainably using biodiversity and by ensuring the fair and equitable sharing of benefits from the use of genetic resources, while providing the necessary means of implementation.*” (UNEP/CBD, 2021, p. 4). In IUCN’s view, the vision and mission of the KMGBF should “*serve as a universal framework for action on biodiversity, [and] promote coherent action and synergies with related processes*” (IUCN, 2019, p. 1).

Strategies to deliver the goals and targets of these global agreements must address the root socio-economic drivers of the crisis, in particular, through a transformational shift in markets and economic systems, while accounting for complex issues of equity and potentially competing development goals.

Many governments already have in place biodiversity No Net Loss (NNL) and Net Gain policies for particular sectors and circumstances (zu Ermgassen et al., 2019). With need for governments to deliver national contributions towards the KMGBF, demonstrating progress towards Nature Positive may soon become a general regulatory requirement. In the interim, risk and reporting frameworks for corporates

and financial institutions (e.g. the EU Corporate Sustainability Reporting Directive (CSRD) (particularly European Sustainability Reporting Standard Environment (ESRS) #4 on Biodiversity and Ecosystems (ESRS E4), the EU Taxonomy, the [Global Reporting Initiative](#), the [International Sustainability Standards Board \(ISSB\)](#), [International Financial Reporting Standards \(IFRS\)](#) [S1 Standard on General Requirements for Disclosure of Sustainability-related Information](#), the [Principles for Responsible Banking](#), the [EU Sustainable Finance Disclosure Regulation](#)) are increasingly requiring measurement and disclosure of biodiversity footprints. The Taskforce on Nature-related Financial Disclosure (TNFD) has developed disclosure recommendations and additional guidance for assessment, disclosure and management of nature-related dependencies, impacts, risks and opportunities and recommends the use of existing spatially-explicit methods, and is informing development of these voluntary and regulatory nature-related standards.

Approaches that make contributions to Nature Positive outcomes are an opportunity for companies, including the finance sector, to address the growing operational, physical, transitional, and systemic risks (van Toor et al., 2020) from biodiversity loss. For example, transparency and advocacy initiatives raising consumer or investor awareness of companies' environmental impacts can create reputational

risk for companies perceived as lagging on these issues, and can be an incentive for voluntary adoption (Lyon & Maxwell, 2007; Segerson, 2013; Suter et al., 2010). For example, NGO public campaigns surrounding the biodiversity impacts of palm oil have played a role in establishing voluntary standards under the Roundtable on Sustainable Palm Oil (Khor, 2011; Ruyschaert & Salles, 2018). Just as investors and consumers are demanding 'deforestation-free' supply chains (CDP, 2014; Rothrock et al., 2019), the same may soon be expected for other types of environmental externalities such as waste and bycatch (Booth et al., 2021; Veleva & Bodkin, 2018). Other forms of risk offer opportunities through delivery of Nature Positive outcomes, Nature Positive commitments potentially create opportunities for improved access to investors, market share and prices, and thus positive incentives for voluntary commitments (Krause et al., 2021). Companies also have the potential to lead systemic improvements, for example through companies with large market power demanding higher standards from suppliers and partners, and those with leading environmental practice lobbying governments for regulatory reforms (Lambin et al., 2018 & 2020; Österblom et al., 2022). Through these actions, companies can benefit through obtaining permits and license to operate, opportunities to maximise efficiencies with their corporate climate goals, and deliver cost-effective implementation

2.1 Definition of Nature Positive

The definition of Nature Positive framed in the Global Goal for Nature paper (Locke et al., 2021) and agreed by the Nature Positive Initiative and over 300 organisations globally is:

Halt and Reverse Nature Loss by 2030 on a 2020 baseline, and achieve full recovery by 2050

Delivering the Nature Positive goal requires measurable net-positive biodiversity outcomes through the improvement in the abundance,

diversity, integrity, and resilience of species, ecosystems, and natural processes.

The definition of Nature Positive is informed by science, but delivery is a 'whole of society' effort, with crucial contributions coming from the private sector, civil society, including Indigenous peoples and Local communities (IPLCs), and governments, including sub-national and local governance structures.

In this document, references to Nature Positive relate to this definition, requirements and the approaches by which contributions to it can be made.

Underpinning the definition, and following Maron et al. (2021), Milner-Gulland (2022), and zu Ermgassen et al. (2022a), there are several critical features of credible approaches to making Nature Positive contributions:

2.1.1 Ambition

The definition of Nature Positive requires that nature will be in an improved state by 2030 from a 2020 baseline (Figure 1). Human activities will continue to have some unavoidable negative impacts on nature, but these must be prevented and reduced as far as possible and then appropriately compensated and restored to ensure overall gains.

2.1.2 Scope of impacts and actions

Progressing towards Nature Positive requires a concerted effort across society to address the direct and indirect drivers of biodiversity loss. This necessitates that companies broaden their scope of action in two dimensions (zu Ermgassen et al., 2022a).

Firstly – the vertical scope – companies need to think and act beyond their direct operational footprint, working at the landscape scale around places where they operate and encompassing supply chain and end-of-life impacts and dependencies. Secondly – the horizontal scope – companies need to engage in sector-wide efforts to increase industry sustainability, working with government and other stakeholders to improve regulatory frameworks and reform economic structures and incentives.

For example, the Science Based Targets Network Action Framework (SBTN, 2020) and the mitigation and conservation hierarchy (Milner-Gulland et al., 2021) (Figure 1) both go beyond the traditional mitigation hierarchy (referring to direct operational impacts), emphasising the need to consider the full value chain and including additional steps to renew nature and transform systems, to drive sector-wide improvements.

2.1.3 A fixed and measured baseline

This ambition implies an increase in nature relative to a fixed baseline, rather than the declining counterfactual that is often embedded in biodiversity compensation frameworks (Simmonds et al., 2022).

Delivery of verified contributions to Nature Positive outcomes requires clear steps towards defined targets, with timeframes attached, and regular monitoring and verification. This ambition requires that the IUCN RHINO approach is founded on measurable gains, either the avoidance or reduction of impacts or the restoration and conservation of biodiversity, to avoid the risk that a 'Nature Positive contribution' includes any action that supports biodiversity (Milner-Gulland et al., 2022). While all such actions are encouraged, a much more robust, credible and systematic approach is needed to ensure that global goals are met. Nature Positive

contributions should not apply to partial and inadequate compensation, which would run the risk of greenwashing. The Nature Positive Initiative is leading work on Nature Positive claims to avoid this risk.

To support the contributions, robust metrics are needed which relate to the state of biodiversity and both positive and negative changes in that state, are spatially explicit, and can potentially be attributed to an institution's actions (Andersen et al. 2020).

The 'global goal for nature' (Locke et al., 2021), supported by many non-state actors, as well as SBTN's interim targets (SBTN, n.d.), proposes 2020 as a baseline year, and that measurable progress in 'bending the curve' should be visible by 2030. This is in line with the dates proposed by the KMGBF.

Achieving ambitious Nature Positive goals will require disaggregation of targets into tractable components distributed among specific geographical areas, that can be targeted by clear sets of cost-effective actions. In parallel, there is a need to assess how actions will add up to deliver gains at multiple institutional, administrative and societal scales.

Parties to the CBD are expected to formulate national level targets (equivalent to Nationally Determined Contributions for climate (CBD, 2020)) that will collectively achieve the global target. Similarly, appropriate responsibilities need to be determined for companies across sectors and companies in line with and contributing to achieving these national and subnational goals. This is not a straightforward task for climate, and remains challenging for biodiversity, but frameworks exist that can help to structure an appropriate response. The mitigation and conservation hierarchy (Milner-Gulland et al., 2021) is applicable at all scales and by all actors for coordinating, prioritising, and tracking the

numerous actions that collectively contribute to Nature Positive outcomes (Figure 1).

2.1.4 Mainstreaming

For companies, including the finance sector, Nature Positive alignment requires nature to be mainstreamed across all business processes, rather than as an add-on consideration after key decisions have been made. This requires embedding nature in organisational decision-making via governance, strategy, risk management, metrics, and targets, as highlighted by the TNFD approach.

2.1.5 Integration across other components of nature, climate, and social justice

To deliver the KMGBF's overarching vision of 'living in harmony with nature' (which implicitly acknowledges our interlinked social and ecological systems), and avoid perverse consequences, Nature Positive contributions necessitate an integrated approach across relevant components of nature and climate, as well as an equitable approach to achieve social justice. An integrated Nature Positive approach means aligning *each* component of nature (for instance species, ecosystems, non-living nature) with societal goals; although it does not mean that different dimensions are substitutable.

In line with existing definitions, corporate Nature Positive contributions to Nature Positive outcomes should capture all key elements of biodiversity, and be integrated across all relevant dimensions of natural and social systems, to promote synergies and minimise trade-offs (Milner-Gulland, 2022; zu Ermgassen et al., 2022a). For example, a key component of this integrated approach is ensuring synergies with emissions reduction targets. Many actions companies should already

have taken as part of their science-based climate strategies can also contribute significantly to halting and recovering biodiversity, particularly for companies with, or connected to, significant land-

based footprints. Such companies should already be following the Science Based Targets initiative (SBTi) Forest Land Use and Agriculture (FLAG) guidance for estimating land-use impacts.

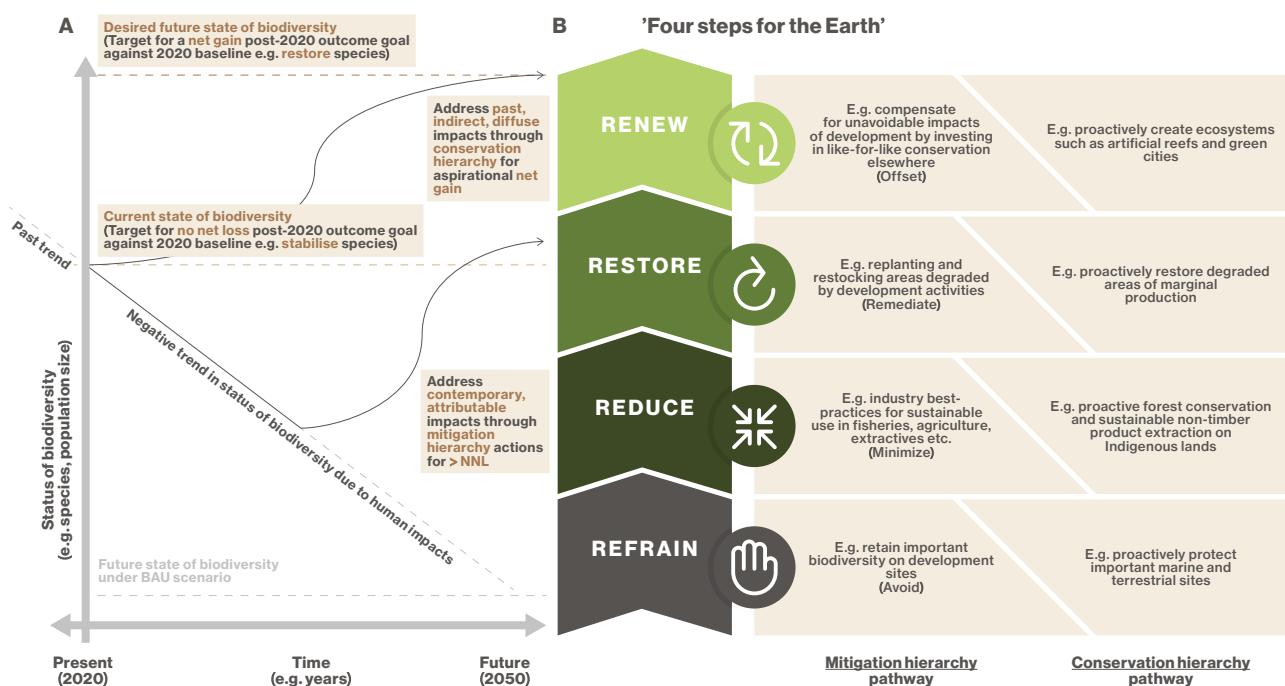


Figure 1 Relationship between the goals and targets of the KMGBF, Nature Positive, and Mitigation and Conservation Hierarchy

Source: Adapted from Milner-Gulland et al. (2021, p. 79).

'Nature Positive' requires that, overall, there will be more nature in 2030 than in 2020. The mitigation and conservation hierarchy offers a framework for the mainstreaming and delivery of this goal, where the scope of commitments and actions goes beyond the traditional mitigation hierarchy for operational or site-based impacts and includes additional actions to renew nature and systems.

2.2 Defining Nature Positive for business

In addition to the critical features of the Nature Positive approach presented in preceding sections, and under the agreed definition of the Nature Positive Global Goal for Nature, IUCN's Commission on Ecosystem Management, through the Impact Mitigation and Ecological Compensation (IMEC) Thematic Group, has produced *Nature-positive for business: Developing a common approach* (Baggaley et

al., 2023), which lists principles, definitions, and recommended actions for use in decision-making by companies, governments, and civil society. The IMEC approach considers all aspects of nature and humanity, as well as the corporate world's dependencies on nature. The IMEC technical paper provides the framing for the use of this document, which then goes further in describing the IUCN RHINO approach and metrics that

companies, including the finance sector and governments, can use to identify, prioritise, and set targets for verifiable inputs to the KMGBF.

To achieve a nature-positive goal, Baggaley et al. (2023) propose that all businesses need to consider adopting the following 10 core principles. These principles are fundamental to enabling the needed transformation and should be followed to shape actions for businesses to contribute to the Nature Positive global goal:

1. Nature as a whole

Adopt targets which capture all realms of nature upon which the business impacts and depends, balancing trade-offs to ensure that nature benefits.

2. Avoid and mitigate

Apply the Mitigation Hierarchy and focus on impact avoidance and minimisation measures, and work to achieving a net gain for all elements of nature negatively impacted by operational activities and material impacts in the value chains.

3. Holistic actions

Extend actions to encompass landscape-level thinking, up- and down- stream impacts and dependencies; and include sector-wide efforts to 'transform' and drive systemic change.

4. Aligned with global goals

Apply measurable, science-based targets that are consistent with global goals (e.g. the Kunming-Montreal Global Biodiversity Framework and Sustainable Development Goals).

5. Mainstreaming

Integrate nature and the importance of biodiversity into the decision-making processes of the business, from board room down (for example the [Asking Better Questions on Nature for board directors guidance](#) from TNFD), into the operations, risk and financial decision-making, and into the value chains.

6. Collaborative

Identify and engage with stakeholders within landscapes, sectors, and value chains that will enable and support nature positive outcomes.

7. Adaptive

Apply effective monitoring of the state and pressure on nature across landscapes and value chains with a clear process for triggering adaptive management responses.

8. Transparent

Introduce commitments and targets that are communicated and backed up by credible, clear, and replicable approaches to measurement.

9. Just

Deliver safeguards and activities that respect the important role, contributions, rights, and livelihoods of Indigenous peoples and Local communities as custodians of biodiversity and partners in the conservation, restoration, and sustainable use.

10. Measurable

Adopt clear and demonstrable measurement and accounting of losses and gains, for operational level commitments (e.g. net gain or net positive impact) and within the value chain.





IUCN's role in delivering a Nature Positive future

3. IUCN's role in delivering a Nature Positive future

Recognising the urgent need and opportunity, and the timely context of the KMGBF, together with emerging voluntary disclosure recommendations and guidance such as the Taskforce on Nature-related Financial Disclosures (TNFD) and regulations including the EU Corporate Sustainability Reporting Directive, this document sets out a proposed approach by which IUCN can deploy its expertise, standards, and datasets to support the delivery of rapid, high-integrity Nature Positive outcomes, for species and ecosystems through the IUCN Rapid High-Integrity Nature-positive Outcomes, or IUCN RHINO.

While this document introduces the scientific, technical, and reference background and context of the IUCN RHINO approach, it is not intended to be used for implementation of the approach. Companies that would like to explore the IUCN RHINO approach and start on the track to delivering Nature Positive contributions should visit the IUCN RHINO [website](#), which contains guided and semi-automated tracks to identifying, planning, and delivering these contributions. Within the IUCN RHINO web-based material, there are many references back to the content of this document, as well as links to relevant external content and toolkits to simplify the process of delivering IUCN RHINO contributions.

3.1 IUCN mandate

IUCN is the only institution that brings governments and civil society together with one purpose: to advance sustainable development and create a just world that values and conserves nature. The Union's diversity, depth and reach give its decisions a powerful mandate and its actions profound impact. IUCN is composed of over 1,400 Member organisations, including States and government agencies at the national and sub-national levels, NGOs large and small, Indigenous Peoples' Organisations, scientific and academic institutions, and business associations. IUCN's expert Commissions are broad and active networks of more than 17,000 scientists and experts providing IUCN and its Members

with sound scientific and policy advice to drive conservation and sustainable development.

The IUCN RHINO approach is grounded in a series of Resolutions, Recommendations, and Decisions from IUCN's Member organisations that establish the mandate and set the 'ground rules' for engaging with the business and finance sectors on nature. These include, among others:

- [WCC 2008 RES 056](#) – Rights-based approaches to conservation
- [WCC 2012 Res 108](#) – The green economy and corporate, social and environmental responsibility

- [WCC 2016 Res 059](#) – IUCN Policy on Biodiversity Offsets
- [WCC 2016 Res 066](#) – Strengthening corporate biodiversity measurement, valuation and reporting
- [WCC 2016 Res 067](#) – Best practice for industrial-scale development projects
- [WCC 2016 Rec 102](#) – Protected areas and other areas important for biodiversity in relation to environmentally damaging industrial activities and infrastructure development
- [WCC 2016 Rec 110](#) – Strengthening business engagement in biodiversity preservation
- [WCC 2020 Res 084](#) – Global response to protected area downgrading, downsizing, and degazettement (PADDD)

More recently, the World Conservation Congress (WCC) in Marseille passed [WCC-2020-Res-116](#) which called for a strong commitment for a Nature Positive outcome from the CBD post-2020 global biodiversity framework which, among other requirements, “.... contains specific, measurable, achievable, realistic and time-bound targets and milestones for 2030 to halt and reverse the unprecedented loss of biodiversity and take urgent and transformative action to restore and conserve biodiversity for the survival and benefit of nature, people and planet” (p. 2). This resolution also includes other specific requirements, including the mainstreaming of conservation contributions by the private and finance sector expressly linked with the overall Nature Positive goal, the subsequent framing of the KMGBF, and the desired outcome of the IUCN RHINO approach as described here.

3.2 Resources to develop the IUCN RHINO approach

IUCN's standards and data, and the tools and guidance based on these, already contribute significantly to improved decision making and positive outcomes for biodiversity, as evidenced by extensive use throughout the conservation community, a vast array of scientific papers, and the embedding of data products based on IUCN standards in key indicators including those for the SDGs and KMGBF. The key drivers for this are the quality, legitimacy and global coverage of key data products. The approach set out in this document draws on IUCN's standards and data products, notably the [IUCN Global Standard for Nature-based Solutions](#), [IUCN Natural Resource Governance Framework](#), [The IUCN Red List of Threatened Species™](#), [IUCN Green Status of Species](#), [IUCN Red List of Ecosystems](#), [World Database on Key Biodiversity Areas](#), and [World Database on Protected Areas](#) – the metrics (e.g. [Species Threat Abatement & Restoration metric](#)), indicators (e.g. Red List Index), and tools (e.g.

[Integrated Biodiversity Assessment Tool - IBAT](#)) derived from these data. Other tools, such as [PANORAMA – Solutions for a Healthy Planet](#) and [IUCN's Conservation Planning](#), may support future implementation. Table 1 presents a brief description of IUCN's standards and data sources.

The IUCN RHINO approach also draws on IUCN's experience with [biodiversity net gain](#), or [Net Positive Impact](#) on biodiversity, a target for project outcomes in which potential impacts on biodiversity caused by the project are outweighed by the actions taken to avoid and reduce such impacts, restore affected species and ecosystems, and offset any residual impacts. The [Net Positive Impact Alliance](#) ran until 2015, with lessons learned incorporated in [WCC 2016 Res 059](#).

Table 1 demonstrates that IUCN has a range of established resources that are the building blocks of the IUCN RHINO approach. This gives

IUCN RHINO a unique edge to deliver a robust degree of functionality for the identification of

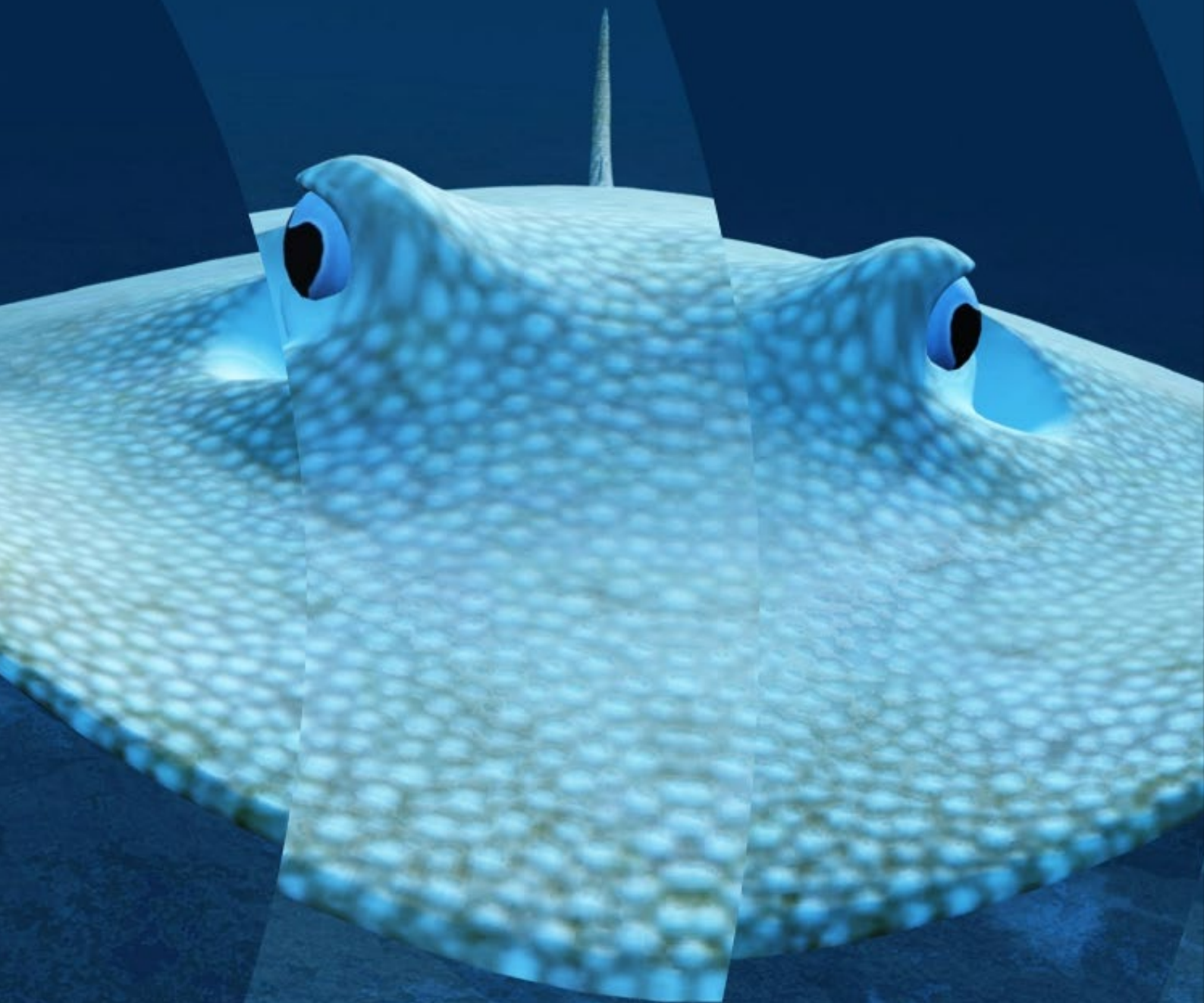
impacts, risks and opportunities, target setting, and contributions for biodiversity.

Table 1 IUCN standards and data sources which have informed and will support the IUCN RHINO approach

IUCN Resource	Brief description	Relevance to IUCN RHINO
The IUCN Red List of Threatened Species™ and Species Threat Abatement and Restoration (STAR) metric	The world's most comprehensive information source on the global conservation status of animal, fungi, and plant species; and the contribution that spatially-explicit conservation investments can make to reducing species extinction risk. The STAR metric includes mammals, birds, reptiles and amphibians	Provides underlying data for risk screening, footprinting and potential gains from interventions
IUCN Red List of Ecosystems, and accompanying Global Ecosystem Typology	A typology for the world's ecosystems and a set of categories and criteria for assessing the risks to those ecosystems; focuses attention on where ecosystems are threatened.	Provides the basis for ecosystem-based metrics
IUCN Global Standard for Nature-based Solutions	Self-assessment that consists of eight criteria and associated indicators, which address the pillars of sustainable development (biodiversity, economy, and society) and resilient project management.	Provides foundational principles for high integrity projects
IUCN Environmental and Social Management System (ESMS)	A systematic procedure to check IUCN projects for potential adverse environmental and social impacts. Its purpose is to ensure that negative impacts are avoided or minimised to the extent possible, while positive impacts are promoted.	Provides tools and procedures to check for high integrity projects
IUCN Green Status of Species	The main objectives are: to provide a standardised framework for measuring species recovery; to recognise conservation achievements; to highlight species whose current conservation status is dependent on continued conservation actions; to forecast the expected conservation impact of planned conservation action; and to elevate levels of ambition for long-term species recovery.	Provides a complementary metric to STAR, with a robust method to set aspirational targets for species recovery for IUCN RHINO at the appropriate spatial unit scale. A version of the GSS to support analysis of programmes to species recovery is under development.
IUCN Natural Resource Governance Framework	Created to provide a robust, inclusive, and credible approach to assessing and improving natural resource governance at multiple levels and in diverse contexts.	Provides tools and approaches for high integrity projects (particularly to enable process justice through good governance)

IUCN Resource	Brief description	Relevance to IUCN RHINO
World Database of Key Biodiversity Areas, IUCN standard for the identification of Key Biodiversity Areas (KBAs), and guidelines on business and KBAs	Guidelines on business and KBAs have been developed by KBA Partners to support companies in managing risk to biodiversity; useful to business and certification scheme operators, financial institutions, civil society organisations, and public authorities; applicable to companies' entire area of influence, as well as throughout the life cycle of the operation, from pre-feasibility to closure (and, where relevant, site rehabilitation). The guidelines can also be integrated into responsible sourcing policies for goods and services, the production of which could have direct, indirect, and cumulative impacts on KBAs.	Provides a key data layer for supporting understanding of business' biodiversity risks and opportunities
PANORAMA – Solutions for a Healthy Planet	Identifies and promotes examples of tested and replicable solutions in biodiversity conservation and broader sustainability issues.	Can support companies in planning and investing in interventions
Conservation Planning Project Inventory	A compilation of planning projects conducted or enabled by IUCN Species Survival Commission Specialist Groups.	Can support companies in planning and investing in interventions
Restoration barometer, associated guide for governments, and IUCN Restoration Intervention Typology for Terrestrial Ecosystems	Used by governments to track the progress of restoration targets across terrestrial ecosystems.	Underlying data and methods can support companies and other stakeholders to measure successful implementation of restoration-based interventions
IUCN Green List of Protected and Conserved Areas, and associated Green List Sustainability Standard	A protected or conserved area that reaches the IUCN Green List Standard is certified and recognised as achieving ongoing results for people and nature in a fair and effective way. Any site can join, and work its way towards achieving verified success, and then maintain the Standard or further improve.	Provides foundational data and methods for measuring conservation success (e.g. to support step 6 in the IUCN RHINO track)

IUCN Resource	Brief description	Relevance to IUCN RHINO
IUCN Environmental Impact Classification of Alien Taxa	A set of categories and criteria for assessing the magnitude of impacts to the environment from invasive alien species. Supports the identification of priority invasive species, and assesses results of management actions.	Can support companies in identifying priority invasive alien species within their operations and at sites that may require management measures to prevent their spread and impacts. It can also be used to assess the results of management actions.
Ecolex database	Database on environmental and natural resource management law.	Can support companies and NGOs to understand relevant environmental laws and company compliance with those laws to ensure high integrity



The IUCN RHINO approach

4. The IUCN RHINO approach

This section begins with the vision and scope of the IUCN RHINO approach, indicating what the approach is intended to do, focusing on its novel aspects, and what it does not cover. Links to resources are provided, enabling companies to fill the gaps in the IUCN RHINO approach. It

then explores and highlights the importance of both rapid action and high-integrity, science-based outcomes, and taking specific actions in specific places, followed by the introduction of three impact tracks, and finally the measurement framework (for species and ecosystems).

4.1 Vision for the IUCN RHINO approach

The IUCN RHINO approach presented here aspires to deliver the following vision: *A world where nature loss is reversed with fast, focused action, grounded in science.*

The approach enables delivery of rapid, significant, measurable, and verifiable contributions to the KMGBF and the Nature Positive Global Goal, specifically in reducing species extinction risk and the risk of ecosystem collapse, in line with national commitments and with active participation from and benefit to governments and civil society. It guides companies and other actors on what to do, where to act, and how to measure progress towards Nature Positive outcomes.

This document only covers how IUCN resources can be used to deliver IUCN RHINO outcomes. It is not a complete guide to all the ways that these outcomes can be delivered, and there are other approaches and metrics that can be used to do so.

The IUCN RHINO approach will allow companies, including finance institutions, insurance companies, and other commercial enterprises, to:

- 1) Deliver rapid, high integrity IUCN RHINO interventions that contribute to Nature Positive outcomes in line with the KMGBF, and identify and 'score' where on the track to delivery of those contributions they are;
- 2) Screen their value chains and investments, including operations, land holdings, commodity sourcing, downstream impacts and portfolios, for impacts to nature, and corporate risks and opportunities to deliver IUCN RHINO outcomes;
- 3) Support companies in the application of the TNFD LEAP approach;
- 4) Report on these impacts, risks and opportunities to disclosure and reporting frameworks;
- 5) Estimate a biodiversity baseline, which includes both historical and ongoing impacts;
- 6) Define SMART objectives and assess performance measures, or Key Performance Indicators (KPIs), to drive actions that will improve positive and reduce negative impacts;
- 7) Decide on, design, and deliver interventions;

- 8) Ensure regular monitoring, verification, and disclosure of progress; and
- 9) Allow the assessment of IUCN RHINO contributions to societal goals and to Nature Positive.

We recognise that the achievement of societal goals, such as the KMGBF and the SDGs, is dependent on a 'whole of society' approach and, while prioritising corporate efforts, the approach also provides the means by which civil society and government can support the delivery of IUCN RHINO contributions.

4.2 Scope and novel contributions

The IUCN RHINO approach will allow the delivery of the following short-term outputs (specific products to deliver outcomes), intermediate outcomes (important milestones), and long-

term outcomes (the ultimate impact desired), to contribute to Nature Positive outcomes, as shown in Figure 2.

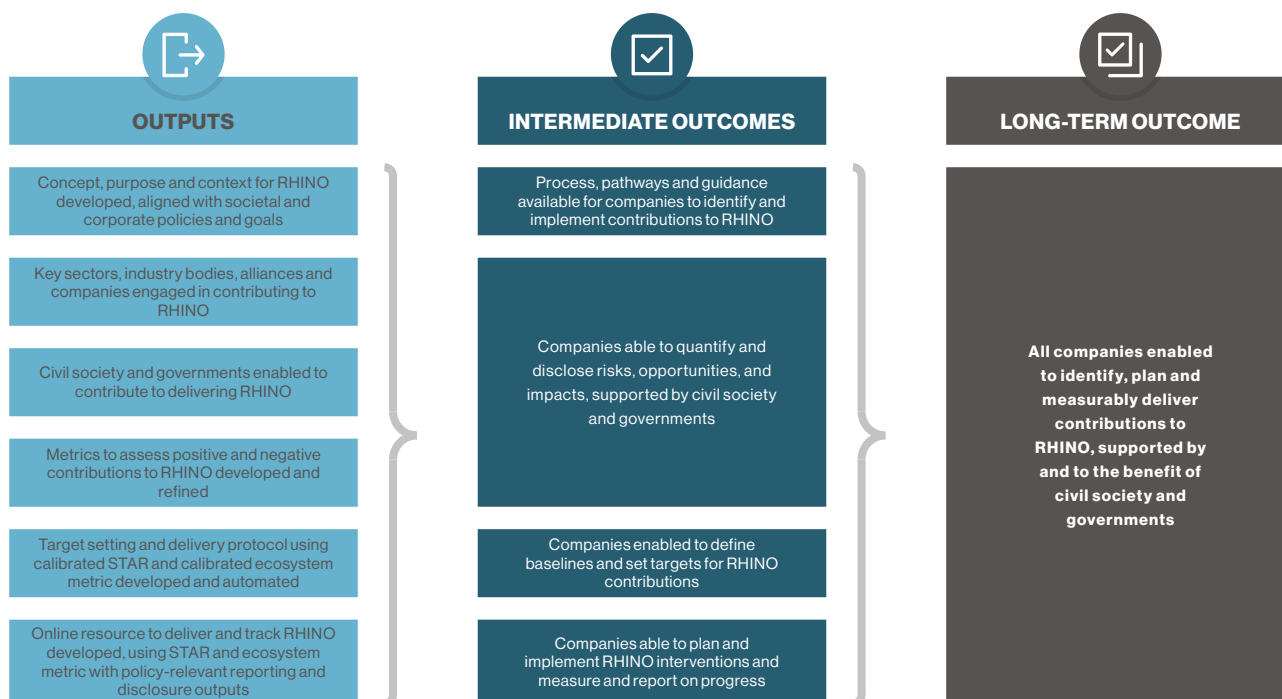


Figure 2 Summary of outputs, intermediate, and long-term outcomes for the IUCN RHINO approach

The aim is to ensure a process with **high integrity** (section 9.2) that is founded on **strong avoidance and reduction of negative impacts on biodiversity and measurable biodiversity net gain** (Milner-Gulland et al., 2021).

Section 2.2 above presents how IUCN's global standards and data can contribute to enabling governments, civil society, and companies to understand their connections to the living components of nature (specifically species and ecosystems), and to be sure that the actions they

undertake have tangible positive outcomes. The IUCN RHINO approach is intended to support and reinforce the many significant and complementary actions mobilised by the wider Nature Positive community, focused on engaging companies and financial institutions. These include the [Nature Positive Initiative](#), a coalition of 27 organisations including IUCN, and with the [Taskforce on Nature-related Financial Disclosure](#) and the [Science Based Targets Network](#). Additional initiatives include the [IMEC Nature Positive Working Group](#), the [World Economic Forum Nature Positive Transitions approach](#), the [WWF Nature Positive Pathways](#), the [Business for Nature Sector Actions towards a Nature Positive Future](#), and others which already aim to help companies and finance institutions contribute to the KMGBF. These initiatives help companies to identify starting points by providing principles and guidelines on integrating biodiversity into corporate decision making, with consistent references to analysis of corporate impacts and dependencies, and target setting.

However, methods to measure, monitor, and report on quantifiable, verifiable changes in the status of underlying biodiversity (and therefore contributions to the KMGBF), in a practical and consistent manner, are still being evaluated by the Nature Positive Initiative. The approach presented here is therefore complementary and additional to other Nature Positive approaches because IUCN RHINO:

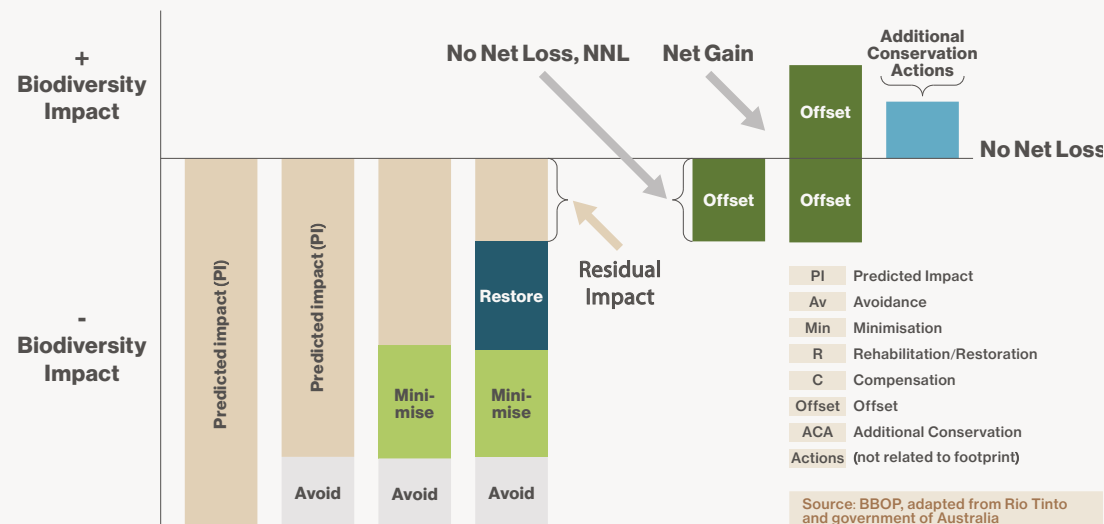
- is framed within a set of principles for high integrity, in terms of the scientific basis for the methods and the social context in which contributions can be made (see section 9.2);
- is focused on rapid action, to deliver verified and quantitative contributions to the KMGBF as quickly as possible. The contributions made as a result of the IUCN RHINO approach may not be the

complete set required for full recovery of biodiversity, but they are scientifically demonstrated to contribute to the larger societal goal, and can be improved and iterated, even as contributions are delivered;

- focuses on **species and ecosystems**, as these are components of biodiversity that are immediately accessible for measurement, quantification, and action (see section 4.6);
- enables companies (and their investors) to assess **biodiversity-related impacts**, and thereby identify ways to mitigate this risk to companies and the impacts on nature.
- provides a framework to allow contributions to be considered in the context of the **Mitigation Hierarchy**, which provides an evidence-based and widely used framework for action that is already mainstreamed into environmental impact assessments for many sectors (see Box A and section 5.2);
- enables companies to **quantify contributions to societal goals**, using science-based metrics for species and ecosystems, thereby allowing assessments of **potential and delivered impacts across the globe**, and for those contributions to be compared with each other and aggregated at higher levels, for instance at country or subnational level (see section 10);
- supports the delivery of contributions in land, freshwater, and marine realms; pristine environments, protected areas, managed landscapes or urban and production areas;
- enables companies (and their investors) to **assess whether they are contributing to nature positive outcomes with respect to species and ecosystems, and to register and track contributions** to global policy goals.

Box A The Mitigation Hierarchy

The Mitigation Hierarchy consists of steps taken by a company to compensate for negative impacts on biodiversity at a site scale. It is sometimes extended (as the mitigation and conservation hierarchy) to include value chain impacts.



The four steps of the Mitigation Hierarchy.

Source: Adapted from BBOP (2012a).

The mitigation hierarchy is comprised of the following steps:

Avoidance: measures taken to avoid creating impacts from the outset, such as careful spatial or temporal placement of elements of infrastructure, to completely avoid impacts on certain components of biodiversity. This results in a change to a 'business as usual' approach.

Minimisation: measures taken to reduce the duration, intensity and / or extent of impacts that cannot be completely avoided, as far as is practically feasible.

Rehabilitation/restoration: measures taken to rehabilitate degraded ecosystems or restore cleared ecosystems following exposure to impacts that cannot be completely avoided and/or minimised.

Compensation or offset: measures taken to compensate for any residual significant, adverse impacts that cannot be avoided, minimised and/or rehabilitated or restored. Measures to achieve No Net Loss (NNL) or a Net Gain of biodiversity for at least as long as the project's impacts are biodiversity offsets. Offsets can take the form of positive management interventions, such as restoration of degraded habitat, arrested degradation or averted risk, where there is imminent or projected loss of biodiversity. Measures that address residual impacts, but are not quantified to achieve NNL or not secured for the long term are compensation, are otherwise known as compensatory mitigation.

Source: *IUCN Biodiversity Offsets Policy*

On the other hand, the IUCN RHINO approach does **not**:

- allow the evaluation of **dependencies on nature**, which are generated from ecosystem services and are best measured by existing and complementary approaches (see Box B);
- **provide a framework** to assess risks and opportunities for organisations, or plan, and deliver actions **to improve the status of non-living nature (for instance water, soil carbon)**, except in the context of the conservation and restoration of ecosystems;
- provide a framework to assess, plan and implement **actions to deliver improvements to the genetic component** of biodiversity. We anticipate that mechanisms and metrics to include the genetic components of biodiversity will become available in the future, but do not want to delay action on biodiversity by waiting for these to become available (see section 4.6.);
- provide an **accounting framework** that would be necessary to allow an organisation to become 'Nature Positive', through a comparison of total positive and negative impacts.

Box B

Resources to support assessment of dependencies on nature and impacts on non-living nature, in line with the TNFD framework, including disclosure recommendations and the LEAP.

The distribution of biodiversity (including species of conservation concern) does not align perfectly with the provision of ecosystem services, on which companies rely (such as water provision) and for which dependencies generate risks and opportunities for companies (Anderson et al. 2009; Giradello et al., 2019). There is substantial data on the distribution of natural assets that provide benefits to people (Chaplin-Kramer et al., 2023; Díaz et al., 2018; Neugarten et al., 2024). Many of these datasets are available through online toolkits that can help companies wishing to assess dependencies at specific sites such as [TESSA](#), the Ecosystem Service Assessment Support Tool and the Ecosystem Services Footprinting Tool. The [TNFD Tools Catalogue](#) provides the most comprehensive collection of tools relevant to ecosystem service dependencies as well as assessing risks and opportunities relating to non-living nature. The [Natural Capital Protocol](#) contains relevant material on natural capital stocks, flows and benefits to society, and the [Partnership for Biodiversity Accounting Financials](#) includes details on dependency assessment.

4.3 Rapid and high-integrity outcomes

The rate of loss of biodiversity means that every effort to reduce threats to biodiversity is required from all sections of society. Companies have a major role in the loss of biodiversity and therefore also need to make a major contribution to reducing

threats. However, companies can present different motivations, ranging from wanting to genuinely do good, to giving themselves a nice image at minimum cost but with a risk of greenwashing. The existence of such risk means that companies

must be provided with sufficiently clear and precise guidance to ensure robust, measurable implementation, while avoiding the pitfall of overly rigorous or detailed guidelines that could make compliance difficult and limit adoption.

The IUCN RHINO approach aims to find an appropriate balance between speed and efficiency. For instance, in this paper, the range of actions is restricted to those that deliver reductions in extinction risk for a subset of threatened species. While this does not cover all components of biodiversity, or the threats that apply to them, the actions that result from following the approach have a high probability of generating positive impacts on wider biodiversity as well as to this subset of species. That is because the threats that apply to the subset of species apply in most cases to ecosystems and genetic variation in the species found in the places where the threatened species occur. By delivering reductions in these threats, quantifiable positive impacts to the subset of threatened species are scientifically highly likely, and unquantified positive impacts on the rest of biodiversity probable.

At the same time, waiting for enough underlying data to ensure that comprehensive, high-quality impacts cover the whole range of biodiversity would cause unacceptable loss of that very biodiversity. Rapid actions, backed by the science and approaches covered here, can ensure

that early positive impacts are achieved, and the priority given to the nature of threats and the actions to manage them can be tailored and improved once further data is obtained. The principles for high-integrity outcomes that underpin the IUCN RHINO approach further ensure the delivery of real, additional, and verifiable positive outcomes for nature, whilst enabling social justice (see section 9.4 for details and reference on these principles).

To ensure that the IUCN RHINO approach delivers social goals, it is aligned with the IUCN's Global Standard for Nature-based Solutions (NbS, section 10.7.2) which includes criteria relevant to ensuring that IUCN RHINO-aligned actions also deliver positive outcomes for human well-being. While Criteria 1, 4, 5, and 6 within the NbS Standard are amenable to scaling, policy analysis and for target setting and delivery of societal goals, in particular KMGBF Targets 8 and 11, Criterion 3 (Net Gain for Biodiversity and ecosystem integrity) is clearly completely aligned with the IUCN RHINO approach. Good practice principles are also available for ensuring No Net Loss for people as well as nature as part of biodiversity net gain activities (Bull et al., 2018; Jones et al., 2019); further guidance on integrating social outcomes at the scale of corporate targets and commitments is covered in sections 10.2 to 10.6).

4.4 Alignment with the Taskforce on Nature-related Financial Disclosure (TNFD)

An important success factor to support the adoption of any approach by companies is to ensure its alignment and coherence with existing initiatives and frameworks, while highlighting its complementarity and specific purpose.

TNFD launched its [disclosure recommendations and guidance](#) in September 2023 to help financial institutions and companies assess and disclose nature-related dependencies, impacts, risks and opportunities (collectively 'nature-related issues') and incorporate into their strategic planning, risk management and asset allocation decisions. By

October 2024, over [500 organisations](#) across the world representing US\$17 trillion in assets under management had committed to adopt the TNFD disclosure recommendations, confirming its relevance for financial institutions and companies

TNFD's integrated approach – covering all four realms of nature - for the identification and assessment of nature-related issues aims to help organisations conduct the due diligence necessary to inform TNFD-aligned disclosures or identify and assess their nature-related issues, regardless of their formal disclosure requirements (TNFD, 2023). Designed for use by organisations of all sizes across all sectors and geographies, the LEAP approach is structured around four main phases:

- **Locate** your interface with nature
- **Evaluate** your dependencies and impacts
- **Assess** your risks and opportunities
- **Prepare** to respond and report

A key component of the TNFD disclosure is that companies are able to identify their dependencies

and impacts *on nature*; and the consequential risks and opportunities *to their organisation*. Because nature is so variable across space, nature-related risks are tied to particular places. The risks that companies face from dependencies and impacts on nature therefore need to be tied to assets they control or their presence in a value chain that causes dependencies or impacts at source

The IUCN RHINO approach is designed to generate outputs that can be used by companies in their TNFD disclosure, in the LEAP approach. In particular, using IUCN RHINO, companies can screen their assets (for instance, plantations, crop production areas, mine sites, construction or infrastructure projects) and get a ready assessment of their potential impacts on nature.

The IUCN RHINO approach goes further than the TNFD LEAP approach in providing companies with subsequent guidance to plan, implement, and report on actions to reduce impacts on biodiversity and support delivery of rapid, verifiable contributions to reducing biodiversity loss.

4.5 Three impact tracks for companies

Contributions to wider systemic change are essential to create the context for positive impacts on nature, and can be formulated and delivered through corporate transition plans, such as those framed by TNFD. However the results of systemic change have to be reflected in **specific actions in specific places that have impacts on specific components of biodiversity**. In practice, this means that companies need to have measurable, verifiable impacts on threats to species and ecosystems in a clearly delimited **Area of Influence**, where they have the means

to influence outcomes. Consistent with IFC's Performance Standard 1 (2012), and further elaborated by Gullison et al. (2015), the area of influence is not just limited to the immediate project footprint but also encompasses zones of direct, indirect, and cumulative effects. Victorine et al. (2024) emphasise the importance of landscape conservation actions, in addition to onsite impact management, to generate Nature Positive contributions in the context of mining operations (Figure 3).

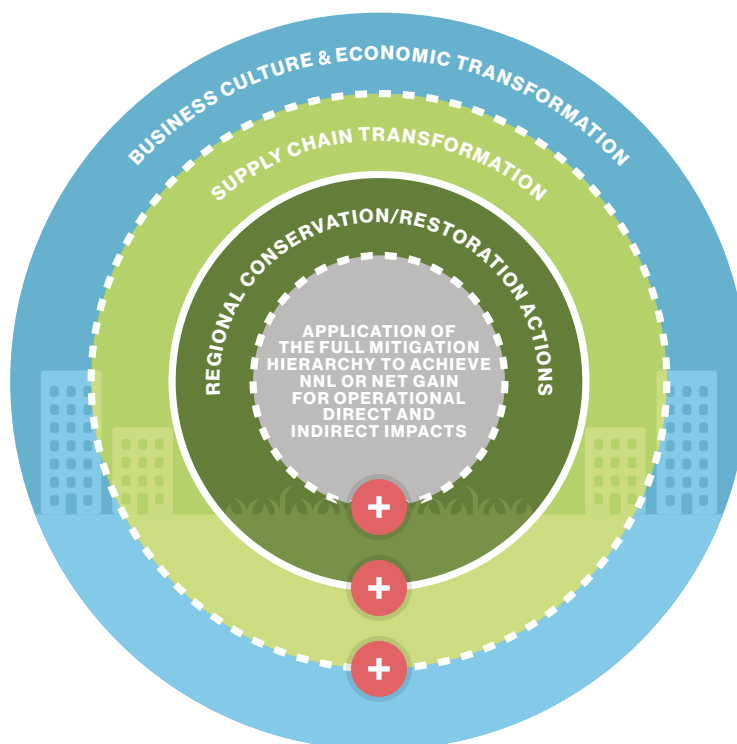


Figure 3 Conceptual approach to understanding the different scopes of action and influence that are needed for Nature Positive ambition

Source: Adapted from Victurine et al. (2024).

A company's impacts relating to biodiversity lie on a spectrum –

- from having clear authority (often partial) over decisions affecting biodiversity in a specific site (direct impacts);
- to purchasing a commodity or service that, in its production or delivery, has impacts on biodiversity that are not discernible by the company, owing to lack of spatial precision of product or service source in the value chain (value chain impacts);
- to investing in companies that sit somewhere on the above spectrum (investor impacts).

The impacts to biodiversity always take place at particular places, and therefore mitigating direct impacts provide an immediate track to make IUCN RHINO contributions. Additionally, knowledge of places where commodities are

sourced and produced can offer pathways to influence value chain impacts and investor impacts. However, companies that source materials from suppliers along complex or poorly disclosed supply chains have challenges in delivering IUCN RHINO contributions, for several inter-related reasons.

1. It remains difficult for many companies to understand and address their supply chain impacts (Lyons-White & Knight, 2018), and there is often very limited, reliable, and detailed information on supply chain sources (World Bank & WWF, 2020). However, efforts are increasing to enhance transparency and develop high-resolution understanding of the ecological impacts of agricultural supply chains. Nevertheless, large sections of these supply chains can remain hidden from view because end users purchase from indirect suppliers,

making it difficult to trace the commodities to its source (zu Ermgassen et al., 2022b). Improved supply chain information is being incentivised through policy initiatives, such as the [EU's deforestation law](#)⁵ that aims to end commodity imports associated with deforestation, the [EU Corporate Sustainability Due Diligence Directive](#), and [European Sustainability Reporting Standard E4](#) (within the broader framework of the EU Corporate Sustainability Reporting Directive), all of which will require high-resolution data to assess impacts and monitor for compliance. In their beta assessment framework, TNFD (a market-led and science-based initiative) in their disclosure recommendations and additional guidance emphasise the need for location-specific information about companies' interface with nature. This has the potential to have an expectation of traceability in supply chains the norm rather than an exception.

2. A company's steps to address supply chain impacts could be undermined through the actions of others. Attempts to improve management practices on the ground can lead to displacement of impacts to other sites ('spillover' or 'leakage') (Meyfroidt et al., 2020). Switching to alternative suppliers in the same region, or sourcing from different countries altogether, can lead to re-routing through less discriminating purchasers (a market 'split') (Lima et al., 2019; Lyons-White & Knight, 2018; Wilman, 2019).
3. Responsibility for supply chain impacts, as well as downstream impacts in the value chain, can be unclear due to the

length and complexity of supply chains (Lyons-White & Knight, 2018). Control over ultimate biodiversity impacts can be hindered by inter-company barriers (for example, culture and values), fragmentation in supply and use of commodities, lack of leverage or control over other tiers in the supply chain, poor traceability, and lack of incentives, among others (Lyons-White & Knight, 2018; Wilman, 2019). If the company producing commodities or materials is not willing or able to take steps to reduce and compensate for biodiversity impacts, how far should a company buying those commodities take responsibility for those impacts?

These challenges all highlight the need for companies seeking to contribute to Nature Positive outcomes to work with other companies, civil society, and governments to drive transformational improvements throughout their sectors and along value chains, including via advocacy for a level playing field through improved regulation, to improve production systems at the site level and result in positive impacts on biodiversity.

The basis of the IUCN RHINO approach is therefore to provide clear guidance on delivering contributions in the first case, and then enable companies to identify opportunities of making positive contributions to the KMGBF across this spectrum, even in the worst case scenarios. We believe that with time, the interests of the consumer will push suppliers to be more transparent about sourcing information, and perhaps the application of technology such as artificial intelligence and blockchain will improve traceability in the supply chain.

5 For an overview of the EU regulation, see: https://environment.ec.europa.eu/publications/proposal-regulation-deforestation-free-products_en

For convenience, while the spectrum of knowledge about sourcing locations is continuous, and companies' control over producer standards also varies from complete to none, we have divided the approach into three impact tracks:

- A. Direct Impact Track: for companies with opportunities to affect spatial planning and operational decisions through their own management authority (e.g. infrastructure and renewable energy developers, primarily agricultural and logging commodity producers, extractive industry), where biodiversity is directly within their sphere of control.** This track includes opportunities to influence action across landscapes surrounding corporate assets.
- B. Value Chain Impact Track: for companies with value chain connections to holdings, through purchase and processing of commodities with impacts on biodiversity at the site of production or extraction, but for which the company does not have direct authority over spatial planning decisions (commodity consolidators, consumer product companies in sectors with significant reliance on commodities with heavy biodiversity footprints, retailers, wholesalers).** For such companies, biodiversity is within their sphere of influence but not directly within their sphere of control, therefore they have a more complex task to assess and address biodiversity impacts. As far as possible, it will be desirable to design interventions in places where commodities are sourced following the track outlined for direct impacts. However, for many products that companies buy, the precise geographical sourcing information may be missing, requiring engagement with suppliers, individually or in collaboration

with other buyers, to identify likely areas of production linked to significant biodiversity impacts, and engage in dialogue to influence production standards in those priority places.

- C. Investor Impact Track: for finance companies with portfolios that contain combinations of companies with direct impacts and value chain impacts. For such companies, biodiversity impacts are within their sphere of influence, yet they are less able to directly control them.** However, finance companies can assess how their portfolio is performing overall in terms of biodiversity impacts, through evaluation of investee companies' progress. Sector-level statistics could then be compiled to inform how portfolio holdings are performing, and how they can be adjusted or improved through, for example, biodiversity-linked loan covenants, shareholder activism (e.g. voice and exit) or sector-specific messaging. An appropriate platform will in the future provide finance sector companies with a means to assess investee companies' performance in relation to their progress along the IUCN RHINO track and overall contributions, and attribute a score to each. This will enable the calculation of portfolio-level IUCN RHINO scores and identify opportunities for exerting influence over investee companies to improve their biodiversity performance.

These tracks provide details for how companies can develop and then deliver positive impacts, based on their interactions with biodiversity in specific places, recognising that many companies will have activities that touch all three tracks. As we move from direct impact to value chain impact, and onto investor impact, there is a trade-off between cost and uncertainty:

- Increasing distance from impacts on biodiversity;
- Increasing uncertainty regarding the magnitude and location of impacts;
- Increasing geographic scope of impacts and influence;
- Potential decreasing leverage and likely proportion of accountability for any one given site-based impact in any one location

At some point, the time and cost of gathering additional information to fully quantify and spatialise impacts for ensuring IUCN RHINO outcomes outweigh the benefit, and lead to delays in implementing solutions, hence the emphasis on rapid action (see section 4.3). We therefore propose a risk-based precautionary approach, starting with managing direct impacts on specific components of biodiversity at specific sites. The

current tracks are therefore limited to identifying, planning, and implementing actions in specific places to reduce species extinction risk, for the reasons listed in section 4.3.

The three impact tracks are being tested in a range of different practical contexts, and this process will lead to the formulation of improved tracks, guidance, and tools to help companies proceed efficiently. A number of case studies on the operational application of the tracks are included in this paper, and further examples will be shared through the IUCN RHINO website. These case studies are not only an important part of the knowledge base, illustrating that IUCN RHINO contributions can be achieved, but they also serve as a source of practical insights, ensuring the tracks continue to be refined in response to its application in an operational context.

4.6 Measurement framework

The measurement framework for the IUCN RHINO approach builds on existing IUCN metrics, datasets, and standards.

The KMGBF (UNEP/CBD, 2021), in line with global goals for nature set out by non-state actors (Locke et al., 2021), aims to put biodiversity on a path to recovery by 2050. This requires ‘bending the curve’ of biodiversity loss from its current downward course to a positive outcome (CBD, 2020; Mace et al., 2018). ‘Bending the curve’ requires integrated action across a suite of targets (Leadley et al., 2022). The IUCN RHINO approach assessment framework thus focuses on two key and complementary elements of the global goals:

- Stemming biodiversity loss through reducing species extinction risk; and
- Biodiversity recovery through ecosystem conservation and restoration.

The metrics used to assess contributions to species extinction risk and ecosystem conservation and recovery are being refined through a piloting process coordinated by the [Nature Positive Initiative](#). The results of the testing with companies will be used to improve the species extinction approach documented here, and to propose a set of ecosystem metrics. For the moment, the IUCN RHINO approach focuses on species metrics, described in detail below. The Nature Positive Initiative is also piloting the use of species metrics and lessons from this process will be used to improve the IUCN RHINO approach.

The current approach already enables companies to assess **contributions to global policy goals**, such as the proposed KMGBF goals and targets for species and (ultimately) ecosystems. The fact that the contributions can be aggregated (for instance across corporate footprints,

administrative units or portfolios) will enable the business community to engage with governments that are responsible for coordinating efforts, to deliver these goals, using metrics that the governments and their policy instruments use. **It does not provide a means to audit or certify such contributions**, although this functionality could be developed in the future. In addition, it is still under debate whether an individual company can claim to be 'Nature Positive' on its own, through some kind of comprehensive accounting process that has yet to be developed. The Nature Positive Initiative claims review process will aid this debate.

For the moment, companies can contribute to a global Nature Positive goal by demonstrating:

- that they have delivered verifiable IUCN RHINO contributions across their measurable, attributable, contemporary sphere of influence (i.e. new and ongoing impacts in sites and land/seascape over which they have control or influence, and within value chains);
- a proportional positive contribution to driving systemic change (i.e. beyond value chain investments, driving land/seascape and sector-wide transformations). Guidance on these contributions is outlined in a range of documents, including Baggaley et al. (2023).

The KMGBF has goals for ecosystem, species, and genetic diversity. This initial version of the IUCN RHINO assessment framework covers species, with ecosystem metrics in review. Metrics to measure changes in genetic diversity is a complex area under development. We acknowledge its crucial importance and commit to actively exploring its integration in future revisions, drawing on advancements (e.g. Hoban et al., 2022) to build a comprehensive IUCN Nature Positive framework for companies.

The initial version of the IUCN RHINO approach's quantification framework uses two complementary metrics, described in greater detail below:

- The Species Threat Abatement and Restoration (STAR) metric. STAR combines species diversity, range restriction, and threat status, to highlight the greatest opportunities for interventions to reduce species extinction risk.
- Ecosystem metrics. IUCN is in the process of identifying appropriate ecosystem metrics that consider extent, condition (or integrity) and risk, in collaboration with piloting efforts coordinated through the Nature Positive Initiative.

STAR focuses attention on species' vulnerability and irreplaceability, two key elements in conservation priority setting; the ecosystem metrics will focus on extent, condition and risk. The two approaches complement each other: STAR addresses the need to reduce biodiversity loss by prioritising the places where this is most urgent, and where there are fewest spatial options. The ecosystem approach will additionally address the need for nature recovery across all ecosystems.

The future ecosystem approach and species extinction metrics used in the IUCN RHINO approach assessment framework are spatially explicit, that is, they refer to impacts that can be generated in specific sites. These sites may be places where commodities (agricultural, mineral, and other) are produced, or they can be protected areas, or infrastructure projects (dams and roads). The fact that the metrics used are scalable means that impacts (negative or positive) can be added up across larger administrative or ecological areas. This can allow governments to assess the combined contributions of companies to KMGBF targets across a country or state, or allow companies to assess combined contributions across a set of landholdings, for instance farms or

mines. While the use of many commodities in value chains cannot yet be linked to specific sites, those sites where the commodities are being produced are increasingly well known. The expectation is that with increasing knowledge of impacts of commodity production on biodiversity in specific places, pressure from regulators and consumers will push commodity producers to enable buyers to know production locations more explicitly in the future.

The two metrics also overlap, as actions to reduce species' threats are likely to improve ecosystem extent and condition, and vice versa. Each is best suited for application in different contexts.

4.6.1 Species methodology: extinction risk reduction

STAR is a biodiversity metric based on information in The IUCN Red List of Threatened Species™ (thereafter IUCN Red List). STAR is well suited as a metric to support IUCN RHINO business contributions to outcomes, as it directly supports several key elements of the KMGBF: Goal A and Milestone A.2 to reduce species extinction risk, and Target 4 on active management actions to enable the recovery and conservation of species.

While the IUCN Red List applies only to globally threatened species, many countries have [National Red Lists](#) that, if analysed in the same way using a STAR approach, could provide a powerful means to determine and deliver national policy goals related to reduction of extinction risk. To make this goal achievable, national Red Lists should be generated using the latest IUCN [guidelines](#).

The extinction risk of threatened species in the IUCN Red List is estimated using standardised science-based criteria that enable an assessor to classify species into one of the IUCN Red List categories of extinction risk (Least Concern, Near Threatened, Vulnerable, Endangered or Critically

Endangered). Each species is assessed against these criteria, and extensive documentation is compiled to justify the assessment and propose action. This includes recording the impact on each species of threats, and the magnitude of their impact. The premise of STAR is that if all the threats to a species are removed, the species will improve in status and qualify for Least Concern. This means that a verified contribution to threat reduction makes a quantifiable contribution to reducing species' extinction risk (Mair et al., 2021). However, a reduction in the intensity of a threat at a particular site may not by itself result in a change in a threatened species' Red List category, because threats may persist in other parts of the species' range. However, it will reduce the overall extinction risk for that species compared with the situation without such a local reduction in the threat.

Amphibians, reptiles, birds, and mammals are included in the current global STAR layer because they are the only major taxonomic groups in which all species worldwide have been assessed for the IUCN Red List and for which Area of Habitat (Brooks et al., 2019) has also been calculated. Including species from groups not comprehensively assessed would mean that STAR values in different parts of the world would not be comparable. Birds, mammals, reptiles, and amphibians are reasonable, if not perfect, proxies for biodiversity, in general (Rodrigues & Brooks 2007; Rapacciuolo et al., 2018). The estimated STAR layer for marine environments was [published recently](#) and a freshwater layer will be available soon.

The STAR methodology maps range rarity, a measure of the number of species and proportion of their distributions overlapping at a site, weighted by species' threat of extinction risk (Mair et al., 2021). STAR thus combines the elements of biodiversity vulnerability and irreplaceability, frequently used for conservation priority setting, as they imply constrained conservation options

in time and space, respectively. Changes in STAR values used in evaluating IUCN RHINO contributions can be generated by the reduction in threats to threatened species. These threats are often closely linked to company activity (for

instance habitat loss caused by infrastructure development) and thus give companies a means to link their activities directly to the threats that affect the status of biodiversity.

Box C

Scientific foundations and specific applications of STAR

STAR has been used to explore a range of issues relating to delivery of species extinction risk reduction:

A metric for spatially explicit contributions to science-based species targets (Mair et al., 2021; <https://doi.org/10.1038/s41559-021-01432-0>)

The scientific basis for calculation of STAR scores and analysis of STAR opportunities by threat and country

Sub-national assessment of threats to Indian biodiversity and restoration opportunities: Chaudhary et al. 2022. <https://doi.org/10.1088/1748-9326/ac5d99>.

STAR used to analyse opportunities to reduce species extinction risk at sub-national scale (see case study in section 8.3)

Quantifying and categorising national extinction-risk footprints (Irwin et al., 2022; <https://doi.org/10.1038/s41598-022-09827-0>)

STAR used to identify pathways for transmission of extinction-risk footprints through international trade

An investment strategy to address biodiversity loss from agricultural expansion (Guerrero-Pineda et al., 2023; <https://doi.org/10.1038/s41893-022-00871-2>)

Using STAR to evaluate agricultural management and cost options to reduce biodiversity loss in Colombia (see case study in section 8.5)

Quantifying and mapping species threat abatement opportunities to support national target setting (Mair et al., 2022; <https://doi.org/10.1111/cobi.14046>)

Opportunities to contribute to NBSAPs using STAR

Targeting ocean conservation outcomes through threat reduction (Turner et al., 2024; <https://doi.org/10.1038/s44183-023-00040-8>)

STAR analysis for marine species

Box D

How STAR has already been used to explore potential contributions to the KMGBF

The context within which STAR can be used by companies to set biodiversity targets is explored in the following papers:

- **Global Metrics for Terrestrial Biodiversity:** A review of possible metrics for use by companies
<https://doi.org/10.1146/annurev-environ-121522-045106>
- **How will better data (and better use of data) enable us to save the planet?:** A review of how extending and upgrading the data underpinning STAR will support better business decisions
<https://doi.org/10.1371/journal.pbio.3002689>
- **Corporate disclosures need a biodiversity outcome focus and regulatory backing to deliver global conservation goals:** Recommendations for how company contributions to nature positive require regulatory support
<https://doi.org/10.1111/conl.13024>
- **The importance of using metrics like STAR to assess business related biodiversity risks and opportunities:** Bottom-up global biodiversity metrics needed for businesses to assess and manage their impact
<https://doi.org/10.1111/cobi.14183>

STAR is accessible via the Integrated Biodiversity Assessment Tool (IBAT) as a set of global data layers showing STAR scores in 1 x 1 km grid cells. The STAR global data layers include all Threatened and Near Threatened amphibians, reptiles, birds and mammals – the major taxon groups that are comprehensively assessed and mapped. These data layers currently only cover terrestrial vertebrate species, but work is underway to extend STAR to the marine and freshwater realms, and to expand the coverage to other well-assessed taxon groups.

STAR has two complementary elements: STAR for threat abatement (STAR_T) and STAR for restoration (STAR_R). These can be used to identify areas where actions to abate threats or undertake restoration can help reduce species extinction risk and contribute to conservation goals.

High threat abatement (STAR_T) scores indicate areas that currently contain relatively high numbers of threatened species, a large proportion of individual species' ranges, and/or species that are severely threatened. These are locations where interventions could make a large contribution to reducing global species extinction risk and where developments that increase threats to species need to be mitigated. The IUCN RHINO approach is based on the use of STAR_T as this is the most effective mechanism to reduce the loss of biodiversity, through the mitigation of threats in places where biodiversity still occurs.

Areas where historical impacts have occurred represent a foregone opportunity for threat reduction or restoration to reduce species extinction risk. Given that the impact has already happened, it is difficult to calculate the change in STAR_T caused by the impact. Existing impacts should therefore be assessed using STAR_R, for

restoration, although management options to compensate for existing impacts could be in the form of threat abatement in areas of similar or greater biodiversity value, for instance in protected areas in the Area of Influence surrounding a site. Such compensations should be guided by the Business and Biodiversity Offsets Programme Design and Implementation Handbooks.

Restoration of habitats to reduce extinction risk of species may take many years to generate positive impacts and, while a crucial component of the Nature Positive goal, should generally be a second priority after mitigation of threats. Hence STAR_R is not referred to otherwise in the IUCN RHINO approach, except in the case of identification of areas for restoration of historical ranges (Box E).

a) Maintaining and extending the STAR scientific base

- The Estimated STAR layer is calculated using the first update of the IUCN Red List in 2025, and will be updated with each issue of the Red List (currently twice yearly)
- The Estimated STAR layer will include marine species towards the end of 2025, freshwater species early in 2026, and the results of the Global Tree Assessment in mid-2026.
- Two papers describing the calibrated STAR process are in preparation; one describing the technical approach and the other describing the practical application of the methodology in Costa Rica (Mair et al., in prep a, b).

STAR is calculated in a standardised way, using global and spatially-explicit data, meaning that scores can be assessed, compared, and added for any site, country or region for a particular company activity. This supports the aggregation

of company activities that have different levels of spatial information.

STAR scores can also be broken down to show the contributions of individual threat types or company activities. STAR's scalability lends itself to prioritisation and the setting of science-based targets, as it enables identification and comparison of opportunities and risks across assets and types of company activity.

STAR can be calculated at different scales, using national, regional or global Red Lists, but only the version based on the global IUCN Red List is comparable across the world. STAR scores based on the global Red List have a skewed distribution, where many grid cells have relatively low scores, and a few have relatively high ones. Effectively, STAR focuses attention on places with high species diversity, endemism, and threat. Such places are often in the tropics and especially in centres of endemism.

The current global STAR layer is generated from the IUCN Red List, and provides an estimated value of the potential for reducing species extinction risk at a site or across a range of sites. While the data in the IUCN Red List is as up-to-date as resources permit, there are two significant potential sources of error for these estimated values. First, the Area of Habitat calculation for each threatened species is based on habitat requirements of the species documented in the IUCN Red List, which are then matched to relevant classes in land-cover maps derived from satellite imagery. However, a species may not be present everywhere within its mapped Area of Habitat. Second, the threats that apply to the species may vary from place to place – not all threats may impact the species at all sites throughout its distribution.

Box E

How STAR_R can be used to identify areas for restoration of historical ranges

The *IBAT Disclosure Report* provides both STAR_T and STAR_R scores. In IBAT, STAR_R scores are adjusted for the expected improvement in condition during a 10-year restoration period, based on average observed annual rates of habitat condition improvement in restoration projects (2.9%) (Jones et al., 2018). For impact assessment, the ‘full’ STAR_R scores (that assume potential for eventual complete restoration) are needed. These can be found by multiplying scores from IBAT by 3.45 (Mair et al. 2021).

To align with the mitigation hierarchy, interventions that contribute to restoring a proportion of existing impacts should, as far as possible, occur in locations ecologically similar to the impacts, so that negative and positive impacts are for the same suite of species. Where spatial locations are known, this will usually mean interventions in the same landscape. Where there is imprecise spatial information, interventions should usually be located within the same spatial unit used for impact assessment, and ideally in the same ecosystem functional group within the same ecoregion (i.e. in the same biogeographical ecotype).

In some cases, it may not be feasible to maintain ecological equivalence, for instance when there are no good options available for conservation and restoration actions. STAR is a fungible metric, so the required gains in STAR units can in theory be achieved by interventions elsewhere. The ‘like for like or better’ rule constitutes good practice for ecological compensation and should be applied here, for instance through targeting compensation to an area with a higher mean STAR value than where impacts took place. This allows potential use of biodiversity credits, where credible and ecologically-equivalent credits are available. However, since biodiversity values are often place- and context-specific (i.e. not fully fungible in practice), robust stakeholder engagement processes are essential to ensure high integrity in terms of process and distributional justice (WEF, 2022), where youth/children, IPLCs, and women need to be fully integrated as key stakeholders (Löfqvist et al., 2023).

When assessing options to meet STAR targets, both STAR_T and STAR_R scores are relevant, and interventions can involve both threat abatement and restoration. STAR scores and species and threat lists can be obtained for candidate intervention sites. These are a starting point, as many other aspects (e.g. technical feasibility, potential impacts on local communities, opportunities for community, NGO or government implementation partnerships, costs, risks of leakage) will need to be considered before deciding on preferred options. STAR scores for preferred sites will need calibration, and baseline levels and monitoring for threats will need to be established.

Guidance for designing and implementing compensatory interventions is available in the Business and Biodiversity Offsets Programme Design and Implementation Handbooks [here](#).

For a STAR user to verify reductions in species extinction risk resulting from their positive interventions, it is necessary first to establish whether the species and the threats that apply to it are present in a given area. This process of verification or ground-truthing enables the generation of the 'calibrated STAR' value for a site. The calibrated value can then be used to set targets for the reduction of threat levels, which are then delivered through management actions over time. 'Target STAR' is the STAR score expected to be achieved through the implementation of the management actions. 'Realised STAR' values refer to the reductions in extinction risk resulting from validated reductions in the threat levels that are generated through these actions.

High restoration ($STAR_R$) scores indicate areas that previously supported relatively high numbers of threatened species, a large proportion of individual species' ranges, and/or species that are severely threatened. These are locations where restoration activities could make a relatively large contribution to reducing species extinction risk. For the moment, the web resource provided for the IUCN RHINO approach focuses on the use of $STAR_P$, as calibration of $STAR_R$ is still under development. In the meantime, $STAR_R$ can be used to identify complementary conservation action that can compensate for historical impacts.

b) Species excluded from the IUCN RHINO approach

Around 35 threatened species are not included in the STAR metric due to location sensitivities. Such species may have high economic value, be threatened by trade, or have important sites that are generally not well known (i.e., an internet search engine such as Google cannot find these sites). In these cases, the decision was taken to exclude them from the STAR metric. These species can be added during the calibration process, but they will not contribute to the STAR score.

STAR does not provide a means to evaluate the changes in the status of common species that may play key roles in ecosystems and their accompanying processes. Other species metrics that may contribute to the measurement of these functions would be desirable but are beyond the scope of the IUCN RHINO approach.

c) IUCN RHINO piloting

The approach is being piloted with companies and other actors around the world, to ensure that its application is as relevant to companies as possible. Figure 4 shows the geographical distribution of these pilots.



Figure 4 IUCN RHINO pilots

4.6.2 Ecosystem methodology: collapse risk reduction

Ecosystems are critically important components of Earth's biological diversity and the natural capital that sustains human life and well-being. Assessing risks of biodiversity loss at the ecosystem level, and using this to implement the Mitigation Hierarchy, accounts for broad scale ecological processes and important dependencies and interactions among species. It addresses trends in common species and in turn ecological form and function on which many of nature's contributions to people depend. For these reasons, societal goals seek to increase ecosystem integrity and reduce risk of ecosystem collapse.

At this time, the IUCN RHINO approach does not allow users to define quantified outcomes related to ecosystems. This is because comprehensive spatially-explicit datasets for identifying priority ecosystems and actions within them that would permit users to deliver verifiable IUCN RHINO contributions are not yet available. It is not yet possible to consult a global list of sources or map of status and threats to ecosystems. Once the results of the ecosystem state-of-nature metrics being piloted through the Nature Positive Initiative are available, the IUCN RHINO approach will be updated accordingly.

The IUCN Red List of Ecosystems (RLE) is a global, science-based standard for how we assess the risk status of ecosystems, applicable at local, national, regional and global levels. Supported by the Global Ecosystem Typology (GET) (Keith et al., 2020), more than 4,000 ecosystem assessments have been carried out, with more underway. Coverage of these assessments is shown in Figure 5. The IUCN RLE provides a methodology to assess the risk of ecosystem collapse (Keith et al., 2015). Red List of Ecosystem assessments thus provide an ecosystem-level, but not site-level, measure of change in integrity (condition).

However, both mapping of ecosystems and coverage of RLE assessments are not yet

sufficiently comprehensive to form the basis of a global Nature Positive framework. Given the ecological importance of assessing impacts and opportunities at scales broader than species and focus on ecological integrity in societal goals, IUCN, in collaboration with partners and under the leadership of the Commission on Ecosystem Management, will use the IUCN RLE and an associated metric to assess the potential for reducing the risk of ecosystem collapse to sit alongside STAR, once RLE assessments become more readily available. From this point, actions to reduce the risk of ecosystem collapse can be identified in a comparable way to how STAR is used to identify actions to reduce species extinction risk.

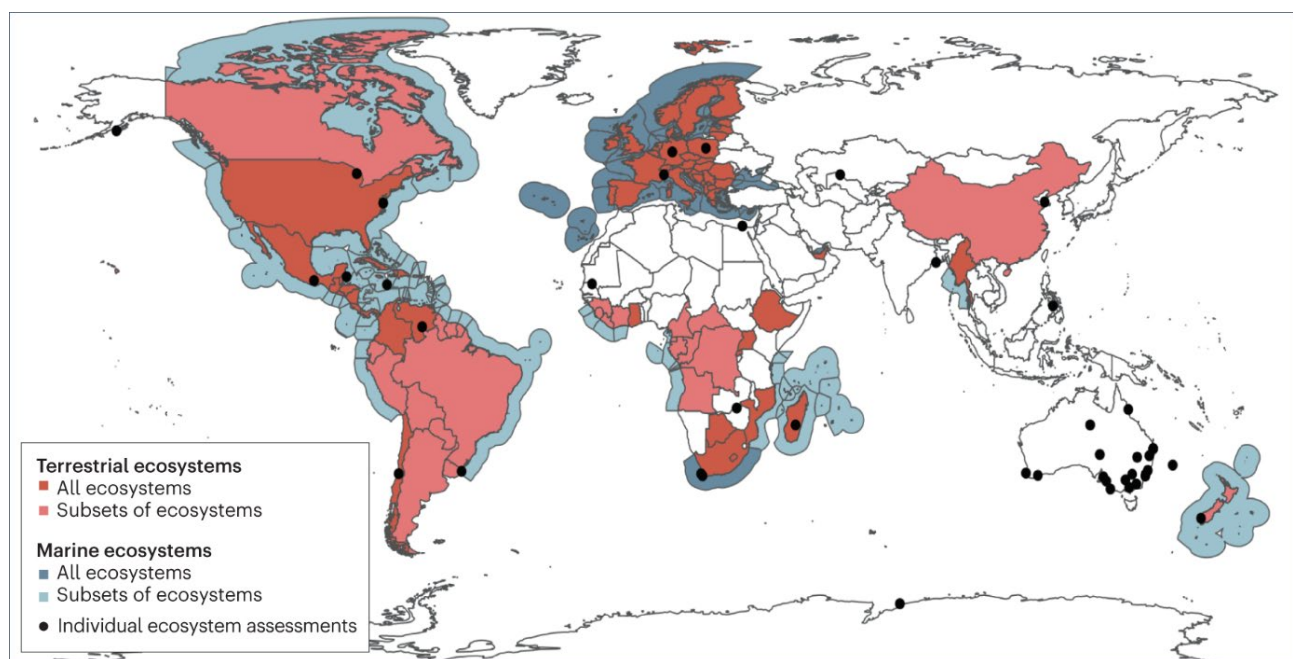


Figure 5 Coverage of the Red List of Ecosystems assessments

Source: Adapted from Nicholson et al. (2024).

The Nature Positive Initiative has developed guidance for piloting [State of Nature](#) (SoN) metrics for the terrestrial realm. This guidance, currently available to piloting companies, allows the user

to measure ecosystem extent and condition, but it does not take the user beyond this point to the identification and delivery of actions to improve the status of the ecosystems.

a) Other ecosystem approaches

Other ecosystem condition-related metrics currently in development include:

- Mean Species Abundance – based on the [GLOBIO pressure-impact models](#) (Alkemade et al., 2009; Schipper et al., 2020), a measure of the abundance of species compared to the reference state, assessed using a standard set of taxonomic groups. GLOBIO is derived from a limited number of reference points per ecosystem, so specific impacts of interventions cannot be tracked. Target setting and disclosure of impacts are therefore not possible.
- The [Biodiversity Intactness Index](#) (BII) uses abundance data on plants, fungi, and animals to assess how local terrestrial biodiversity responds to human pressures such as land-use change. These relationships are modelled and therefore require detailed local data collection to be useful in the orientation and implementation of management actions.
- The [Ecosystem Integrity Index](#) (EII) (led by UNEP-WCMC) is intended to support science-based targets for nature and include measures for structure, composition, and function. The EII is based on modelled and remotely-sensed data which may may require validation from data in the field. Its application to Nature Positive state of nature metrics is being assessed by Nature Positive Initiative piloting.
- The [Critical Ecosystems Area metric](#) (led by the Wildlife Conservation Society) combines assessment of pressures (as proxies for ecosystem condition) and systematic conservation planning, to identify the highest priority areas for conservation and restoration. This metric may be suited to identifying priority locations for interventions, rather than assessing losses and gains in the approach.
- IUCN also recognises the ecosystem extent and condition metrics used by the [System of Environmental-Economics Accounting Ecosystem Accounting](#) (SEEA), an international standard adopted in 2021 by the UN Member States (UN et al., 2024) which uses the IUCN Global Ecosystem Typology. IUCN Resolution WCC-2020-057 calls for the use of SEEA.

Application of these approaches to ecosystem state of nature metrics is being tested through the Nature Positive Initiative and some of these methods may provide guidance to allow companies to implement management to improve the status of ecosystems.

An aerial photograph of a vast forest. The lower portion of the image shows a dense, irregular canopy of trees in various shades of green. Above this, a distinct horizontal line separates the natural forest from a large area of plantation forest. The plantation consists of tall, thin, closely spaced trees with a more uniform green color. The text 'Direct Impact Track' is overlaid in white on the bottom left of the image.

Direct Impact Track

5. Direct Impact Track

This track is applicable to companies that have landholdings or have management agency for them. It is suited to direct impacts that occur at one-to-many sites, with low spatial uncertainty.

This section first outlines different types of impacts, either historical, ongoing or new, that should be identified and their relationship between

the IUCN RHINO approach and the Mitigation Hierarchy, which is used widely in industries with impacts on biodiversity. The different steps of this track are then detailed and their link with the TNFD LEAP approach explained. In addition, guidance on allocating impacts and responsibilities, preventing leakage, and managing relationships within a landscape are discussed.

5.1 Differentiating historical, ongoing, and new impacts

For any specific area, three different types of impact may need addressing through planned action, if the status of biodiversity in the area is

to be brought back to its natural state. These impacts are **historical** (sometimes called existing), **ongoing**, and **new**.

Table 2 Types of impacts and IUCN RHINO actions

Impact criteria	Description	Company actions contributing to IUCN RHINO outcomes and aligned with global goals
New impacts	- Impacts arising from expanded footprint or recurrent impacts, through expanded corporate activity - New impacts are an expansion of existing and ongoing impacts	- Application of Mitigation Hierarchy, starting with avoidance of impacts, e.g. <i>no future conversion of natural habitats</i> - Use offsets for residual impacts only as a last resort
Ongoing impacts (including periodic gain and loss)	- Recurrent and arising from continuing company activity - May result in diffuse and spatially extended impacts, e.g. via resource exploitation, pollution or disturbance	- Employ Direct Impact Track - Use Mitigation Hierarchy to identify Biodiversity Net Positive gains
Existing (historical) impacts (including accumulated positive and negative impacts)	Already existing, non-recurrent impacts from habitat conversion or degradation (e.g. on occupied working lands, or through cumulative disturbance or pollution)	- Identify what proportion of historical impacts are due to your actions. Make a proportional contribution towards restoration in areas of loss - Identify areas with similar ecosystem and species characteristics as lost areas and invest in conservation in those areas

Where an unavoidable **new impact** is within a company's direct operational control, then the company should apply existing standard approaches to deliver biodiversity net gain, by using the Mitigation Hierarchy and going beyond. In particular, companies should demonstrate, **before the impact occurs**, that it is feasible to align with the IUCN Policy on Offsets (IUCN, 2016), especially with paragraph 9 on limits to offsetting. If this is not feasible, the impact should not occur. Furthermore, it is worth acknowledging the UNESCO [World Heritage 'No-Go' commitment](#) – the recognition by a growing number of companies from the extractive, finance, insurance, and hydropower industries, as well as industry associations, to refrain from undertaking or funding harmful industrial or other large-scale development projects within UNESCO World Heritage sites, their buffer zones or broader setting which could negatively impact the sites and their Outstanding Universal Value.

Detailed guidance on planning and delivering project-level net gain is available from the [Business and Biodiversity Offsets Programme](#) and Cross-Sector Biodiversity Initiative (CSBI) (TBC, 2015).

There is no fixed timeframe for achieving project-level net gain. In line with this draft IUCN assessment framework and the Global Goal for Nature, projects should aim to achieve net gain within 10 years of impacts occurring. A time discount (typically 2% per year) could be applied for future gains achieved. It may be, however, that net gain cannot be assessed precisely over such time periods, should some impacts be compensated by restoration, which can take over 30 years to deliver significant outcomes, or offsets which may take similar periods to deliver. Compensation actions should therefore ideally be initiated before project impacts occur, or as close to initiation as possible.

In addition, plans for management of sites may evolve over time given changing commodity prices, regulatory or fiscal frameworks or company fortunes. The ultimate objective is the reduction of impacts to biodiversity on a continuous and incremental basis, over significant time periods such that biodiversity recovery is achieved.

Project net gain will focus on priority biodiversity features, but should include all impacts on biodiversity. Priority features could include, but may not be limited to, natural habitat, so that an ecosystem extent and condition metric can be applied as outlined in this assessment framework.

From the perspective of the IUCN RHINO approach, the key impact desired is for companies to start managing the most important threats to biodiversity in the Area of Influence as rapidly as possible, to reduce the ongoing loss of species and ecosystems. While the Mitigation Hierarchy allows for the different components and causes of impacts to be allocated to different actors, the essential outcome is that the overall pattern of biodiversity loss is changed as rapidly as possible, and that allocation of these contributions to different actors and steps in the Mitigation Hierarchy can be made in the course of the actions taken.

Ongoing impacts (also called dynamic impacts) are continuing periodic impacts, such as pollution and mortality caused by ongoing pesticide, clearance of land for mining operations or plantations, where ongoing impacts are frequently linked to existing, static impacts. However, they can also be diffuse and extend spatially beyond a physical footprint, typically acting via pressures, such as direct exploitation, pollution, and disturbance.

To align with global goals, the expectation is that companies will fully address ongoing impacts, first through actions to reduce them as far as feasibly

possible, and then through compensation for any residual impacts.

Existing (also called historical or static) impacts are linked to past conversion or degradation of habitats, where continuing occupation, disturbance or other factors are preventing natural recovery. Examples include land used for agriculture or marine benthic habitats damaged by bottom trawling.

Distinguishing between historical and ongoing impacts depends on the application of a cutoff date impacts are placed in the historical category. The choice of a cutoff date is at the discretion of the company, and may relate to the adoption of a specific commitment by the company (for instance, NNL) or the alignment of the commitment with global goals, for instance the baseline for commitments to the KMGBF or national policy goals.

5.2 Relationship of IUCN RHINO approach to the Mitigation Hierarchy

Actions for companies to address impacts on biodiversity at the site scale should be guided by the Mitigation Hierarchy, an approach that is widely used by companies with particular site-based impacts such as extractives and infrastructure. The implementation of the Mitigation Hierarchy is the expectation that companies mitigate their own impacts within a given Area of Influence through a sequenced process of: i) avoidance; ii) minimisation; iii) restoration; and iv) offsets.

The IUCN RHINO approach does not provide a complete accounting framework for delivery of Mitigation Hierarchy outcomes at the site or landscape level; in particular, positive impacts of avoidance are hard to quantify. Furthermore, the IUCN RHINO approach is broader than the Mitigation Hierarchy, because its implementation not only addresses a business' impacts, but also historical or geographically remote impacts from other entities within the Area of Influence. However, companies embarking on the IUCN RHINO approach can deliver the following outcomes that are relevant to the Mitigation Hierarchy site-based accounting framework:

- A quick, high-confidence entry point to start the implementation of the Mitigation Hierarchy, thus reducing the barriers to

entry to what may be perceived as an expensive, complicated process;

- A comprehensive picture of what will be required to reduce impacts on biodiversity (currently species, later including ecosystems) within an Area of Influence of a company, to enable all actors to work together in a collaborative framework, and contribute to global and national policy goals;
- Reduced impacts on threatened species (and in the future, ecosystems) as a result of mitigating threats and restoring habitat which can be included in the results of the Mitigation Hierarchy as quantified contributions;
- A means to identify, plan and implement offsets, that (as a last resort) are required to compensate for negative impacts that cannot be avoided, mitigated or restored;
- A track marked by clear steps that can be used as a measure of progress towards the delivery of NNL or Biodiversity Net Positive;
- A means to help other stakeholders in a landscape align themselves with specific outcomes, for instance the reduction of threats to species, to show how collective efforts can generate more of the overall impact required to deliver species

extinction or ecosystem collapse risk reduction;

- A means to include actions taken at a site scale in accounting frameworks for delivery of KMGBF targets and goals at country or global level.

There is one consideration relating to the mitigation hierarchy not covered by the IUCN RHINO approach: the mitigation hierarchy needs to be applied to all biodiversity (and especially all endemic species) threatened by the corporate actions, and not just those

comprehensively assessed species groups included in STAR.

The more recent concept of mitigation and conservation hierarchy (Milner-Gulland et al., 2021) places it within a broader framing encompassing all conservation actions. By supporting the choice of actions to conserve and restore nature, and evaluating the effectiveness of those actions, across sectors and scales, the concept appears is fully aligned with the IUCN RHINO approach.

5.3 Working at the landscape level

Collaboration with other actors within a landscape can take several forms, as described in Table 3. Such collaboration has significant advantages in terms of delivery of IUCN RHINO outcomes. Collaborating with other actors to identify actions can not only be more efficient, providing time and cost savings, but can:

- Support collective understanding and willingness to drive action across different actors, including IPLCs, local government, and private sector. This can increase the effectiveness and efficiency of subsequent action and increase the durability of outcomes.
- Enable greater understanding of the causes of positive and negative changes in a state of nature, improving diagnosis of potential solutions and opportunities. For example, if a species is declining at multiple points in a landscape, it could help identify a common practice that could be improved to halt those declines or with regard to migratory species, it could point to a cause beyond the landscape. Likewise, organisations who plan restoration efforts together can potentially deliver greater increases in landscape condition than by acting alone.
- More clearly support and align with national or regional goals for nature.

Table 3 The landscape approach

	Term	Explanation	Examples of business actions	Examples of complementary actions
Scale of action	Landscape	Recognises that a company is frequently one among many in a landscape. This can create risks for businesses if their actions for nature are undermined or diluted by the actions of other businesses or by wider societal impacts on nature. Involves working with other stakeholders and actors within a landscape to ensure positive outcomes at a landscape scale.	Support cumulative and strategic environmental assessments, for example by sharing data, supporting further data collection, and providing capacity and resources Support systematic landscape or watershed planning that considers appropriate targets and outcomes for all elements of nature Build the capacity of other actors, especially local communities, to engage with and address the drivers of nature loss Respect the rights, values, and contributions of Indigenous peoples and Local communities within the landscape	Company, sector groups and local government. coordinate landscape-scale planning Community participation in landscape-scale planning, to ensure positive social outcomes Academia contributes data and research to support science-based planning
	Sector	Recognises that while a company level action to avoid and reduce nature impacts is critical, the overall effect depends on the actions of others in the sector (e.g. a food business may commit to becoming 'palm oil free' to avoid deforestation risks). However, if doing so does not reduce the overall amount of biodiversity loss associated with palm oil production, there will be no positive outcome overall. Involves engaging at a sector scale or with specific nodes in the value chain to prevent leakage.	Engage in industry round-tables Increase capacity of suppliers to implement standards or commitments, to increase the overall total quantity of commodities that align with nature positive goals (e.g. certified or recycled)	Governments repurpose subsidies to support development of nature positive technologies

Building an effective landscape collaboration in a multi-actor landscape takes time and needs careful planning and resourcing to be effective. Thus, it may be that entirely new collaborations are more challenging to achieve in the early phases of implementation. Despite this limitation, companies are encouraged to explore opportunities for collaboration with others in the landscape, for example with neighbouring sites. Furthermore, when reviewing outcomes, companies are urged to consider the opportunities and potential benefits of

incorporating the state of nature metrics into future landscape collaboration and provide feedback on the feasibility of doing so.

Guidance on landscape collaboration can be found in the following resources:

- [ISEAL Core Criteria for Mature Landscape Initiatives](#)
- [Maturity matrix of SBTN's Step 3 Guidance for Land Targets](#)

5.4 Moving through the Direct Impact Track

The Direct Impact Track is currently focused on reducing the likelihood of species extinction risk, using the STAR metric, since methods to demonstrate rapid, high integrity IUCN RHINO impacts on biodiversity using ecosystem metrics are under development (see section 4.6.2). The steps of the Direct Impact Track presented can be used to support the application of the TNFD LEAP approach (TNFD, 2023).

The process required for users to generate rapid, verifiable contributions to IUCN RHINO involves screening opportunities, choosing interventions, setting baselines and targets, implementing actions, and measuring impacts. In this version of the IUCN RHINO approach, the STAR_T metric is used in various formats, to move down the track as summarised in Figure 6.

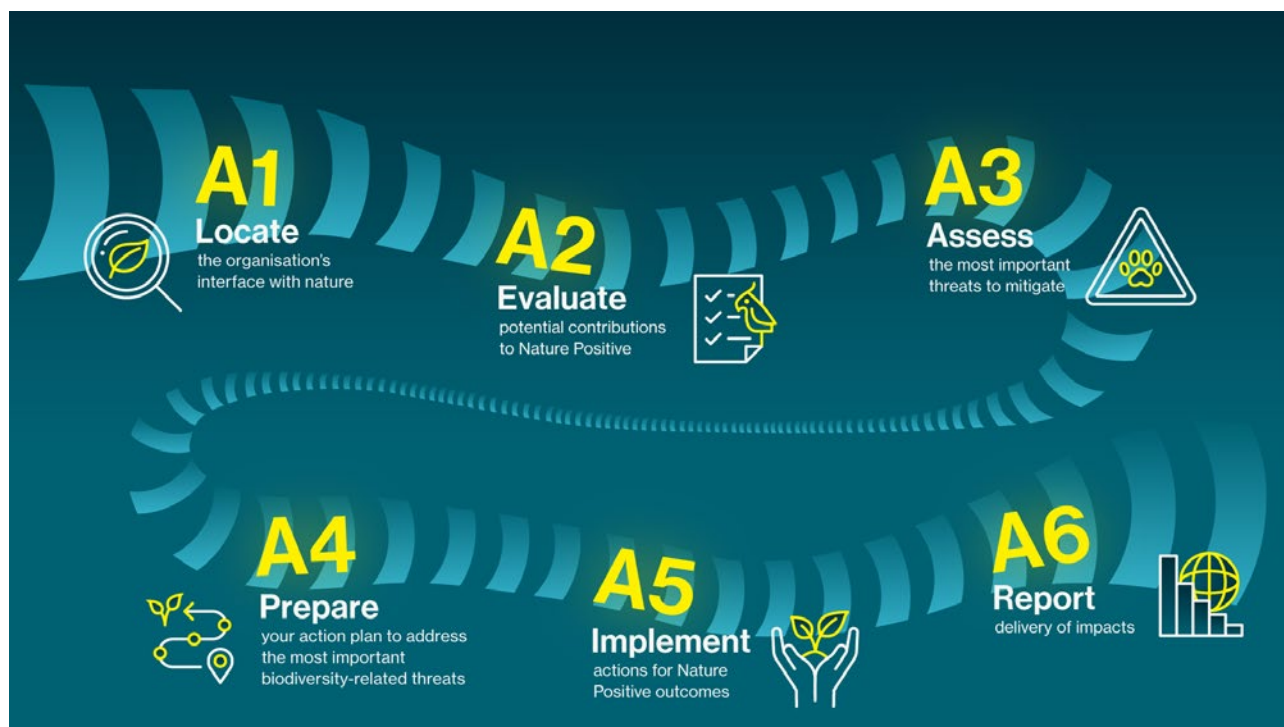


Figure 6 Overview of the Direct Impact Track

Box F

IFC Performance Standard 6: useful definitions to consider when identifying sensitive locations

IFC (PS6) features three useful definitions when considering potential impacts to sensitive locations:

Critical habitats are areas with high biodiversity value, including (i) habitat of significant importance to Critically Endangered and/or Endangered¹¹ species; (ii) habitat of significant importance to endemic and/or restricted-range species; (iii) habitat supporting globally significant concentrations of migratory species and/or congregatory species; (iv) highly threatened and/or unique ecosystems; and/or (v) areas associated with key evolutionary processes. (IFC, 2012, para. 16, p. 4 and associated footnote)

Footnote [11]: Where Critically Endangered and/or Endangered species are as listed on the International Union for the Conservation of Nature (IUCN) Red List of Threatened Species. The determination of critical habitat based on other listings is as follows: (i) If the species is listed nationally / regionally as critically endangered or endangered, in countries that have adhered to IUCN guidance, the critical habitat determination will be made on a project by project basis in consultation with competent professionals; and (ii) in instances where nationally or regionally listed species' categorizations do not correspond well to those of the IUCN (e.g. some countries more generally list species as "protected" or "restricted"), an assessment will be conducted to determine the rationale and purpose of the listing. In this case, the critical habitat determination will be based on such an assessment. (IFC, 2012, para. 16, p. 4 and associated footnote)

Legally Protected Areas

Footnote 16: This Performance Standard recognizes [sic] legally protected areas that meet the IUCN definition: 'A clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values.' For the purposes of this Performance Standard, this includes areas proposed by governments for such designation. (IFC, 2012, para. 20, p. 5 and associated footnote)

Internationally Recognised Areas

Footnote 17: Exclusively defined as UNESCO Natural World Heritage Sites, UNESCO Man and the Biosphere Reserves, Key Biodiversity Areas, and wetlands designated under the Convention on Wetlands of International Importance (the Ramsar Convention)." IFC, 2012, para. 20, p. 5 and associated footnote)

Source: IFC (2012).

A1: Locate

In TNFD [Guidance on the LEAP approach](#), the outcome of the Locate phase (A1) is a thorough understanding of an **organisation's** interface with areas important for biodiversity, including species and ecosystems. Such robust understanding of where a company interfaces with nature is also fundamental to achieving IUCN RHINO outcomes. Nature-related dependencies and impacts – the ultimate sources of risks and opportunities – are location specific. The IUCN RHINO approach also starts with the analysis of areas important for biodiversity.

TNFD LEAP refers to these as ecologically sensitive locations:

- Areas important for biodiversity, including species, and/or;
- Areas of high ecosystem integrity and/or;
- Areas of rapid decline in ecosystem integrity and/or;
- Areas of high physical water risks and/or;
- Areas of importance for ecosystem service provision, including benefits to Indigenous peoples, Local communities, and stakeholders.

When determining interface with sensitive locations, IFC's Performance Standard 6 offers several widely adopted definitions worth considering, such as critical habitat, legally protected areas, and internationally recognised areas (see Box F).

A1.1: Gather location information

As in the L phase of TNFD LEAP, the aim of this first step of the IUCN RHINO approach is to identify the geographic location – either with a point, although preferably with polygons – of direct operations. The company should then compile existing biodiversity assessment materials

for each location, such as surveys, Strategic Environmental Assessments, and Biodiversity Action Plans. This provides basic information on where the organisation operates and a collection of materials that will inform later phases.

A1.2: Screen and prioritise

This step of IUCN RHINO is to identify where the organisation may have significant impacts and/or face biodiversity risks and opportunities in business locations. This analysis will be used to prioritise ecologically sensitive sites presenting the highest opportunity for IUCN RHINO contributions.

There are various tools and resources available to support this step (see [TNFD Tools Catalogue](#) for an extensive list). Most relevant to the IUCN RHINO approach is generating an *IBAT Disclosure Report*, since this report provides STAR_T scores for each site, which can then be used as a first pass at prioritising sites. IBAT offers several other reports that can deepen an organisation's understanding of potential nature-related impacts: Proximity report; PS6 & ESS6 report; and Freshwater report.

Further guidance on generating these reports and interpreting the results are provided on the [IBAT website](#).

In terms of practical application, and being mindful of the value of being able to demonstrate early success, other operational factors beyond biodiversity information may also be considered as part of the prioritisation of sites. Such factors can include on-the-ground capacity and access to nature-expertise, presence within senior staff of champions for nature, existing collaborations with stakeholders or an existing track record on engagement on other sustainability issues.

A list of priority sites can be defined from these various information sources.

WORKED EXAMPLE: A1

A company has three sites in Madagascar, where it is planning to create plantations for agricultural products. The IBAT disclosure report revealed that the sites had STAR_T scores as follows

- Site 1: STAR_T score of 10
- Site 2: STAR_T score of 15
- Site 3: STAR_T score of 75

A1.3: Map stakeholders at the landscape level

For each priority site, a stakeholder mapping should be carried out. Arguably, stakeholder consultation features throughout the phase and should be undertaken routinely for all sites. However, featuring it as a distinct step highlights the importance of considering stakeholder perspectives to inform the final delineated Area of Influence (next step) as well as any planned actions. A useful resource to help with this activity is [IUCN's guidance on high-integrity approaches to stakeholder engagement](#) – an extract from IUCN's Environmental and Social Management System.

A1.4: Define the Areas of Influence

Since Nature Positive contributions should encompass landscape-level thinking (Baggaley et al., 2023), this step is to define the 'Area of Influence' for each priority site (see section 4.5). This refers to the geographic area where a site's

activities, including associated facilities, could potentially impact biodiversity and ecosystem services. Importantly, this area is not just limited to the physical footprint, such as the lease area or boundary of land holdings, but also encompasses zones of direct, indirect, and cumulative effects. This should therefore include areas adjacent to the site affected by emissions and effluents, power transmission corridors, pipelines, and others, as well as impacts to nature as a result of changing economic or social patterns influenced by the operational site. In this track we consider the Area of Influence a geographical area around a project site.

The process of delimiting the Area of Influence is sometimes complicated as there are several key considerations and questions to resolve. A non-exhaustive list of issues to consider is provided in Table 4 and additional consideration about addressing existing (historical) impacts are presented in Box G.

Further considerations on the identification of Area of Influence are in the [TNFD Sector Guidance for Metals and Mining](#) and the [UNEP-WCMC Technical Briefs on Direct and Indirect Areas of Influence](#). The preferred approach for delineating an Area of Influence is to draw a polygon using a Geographical Information System (GIS), with the boundary informed by appropriate broader landscape features, including freshwater catchments. This provides the greatest flexibility and precision and can help determine the location of the action plan put in place from the results of the STAR analysis. However, in the absence of a polygon, a point can also be used. In such circumstances, buffers should be used to estimate an Area of Influence. Nature Positive Initiative piloting experience shows that companies often require reports relating to the site boundary as well as the Area of Influence.

Table 4 Questions and considerations to inform Area of Influence determination

Issue type	Response	Where information could be found
Relevance to planning for IUCN RHINO contributions		
Known or predicted direct or indirect impacts by the operations on priority species and their habitats	Target biodiversity values relevant to the operations; set Area of Influence (AOI) at scale proportional to these	Environmental Impact Assessment (EIA)
The spatial influence of operations: • Direct operational footprint • The indirect influence of the operations (roads, ancillary infrastructure, etc.) • The communities or indigenous people affected	• Consider minimum buffer concomitant with spatial scale of impact • Consider 'edge effects' and need for appropriate buffer as part of AOI (see Proteus-Technical-Brief-Area-of-Influence-Indirect-Impacts.pdf)	EIA, legal permitting documentation
The temporal scale of historic, current and forecast negative impacts on priority biodiversity values	Consider site history and what species and habitats may have been affected and how this may inform Area of Influence delineation	Biodiversity management plan, EIA
Landscape context		
Whether the operation sits within a natural watershed or river catchment	• Consider whether the river catchment or river basin district is an appropriate scale for AOI • Consider potential influence on waterways and downstream impacts	Google Earth; regulator river basin district maps, site development plans
Site processing facilities' emissions and the prevailing wind conditions	Consider downstream and downwind impacts in defining AOI	EIA or live sources such as Windy.com
Define buffer extent to detect: • Priority natural sites – Key Biodiversity Areas, World Heritage Sites, Protected Areas – within vicinity of operations • Threats to priority species; role of seasonality (to understand threat severity and scope) • Cultural heritage sites	• Prioritise the main threats to the key KBA⁶ trigger elements • Determine absence (or otherwise) of impacts on these components to inform net gain goals (see Box H on Migratory Species and Proteus-Technical-Brief-Area-of-Influence-Indirect-Impacts.pdf for information on buffers)	IBAT IUCN Red List

6 <https://www.keybiodiversityareas.org/about-kbas>

From the perspective of developing and managing meaningful action plans to deliver IUCN RHINO outcomes with clear accountability mechanisms, it might be relevant for companies with very large landholdings to define sub-polygons within their Area of Influence as management and monitoring units. Sub-polygons can also be relevant when an Area of Influence spans across very

different habitats or requires collaboration with considerably different stakeholders, as this could have an impact on the delivery of IUCN RHINO outcomes.

A future area of development to further streamline this step will be an online tool to semi-automate the process of delineating an Area of Influence.

Box G

Considering existing (historical) impacts while delineating the Area of Influence

Because of the highly local nature of biodiversity, accurate impact assessment depends on accurate spatial information (e.g. TNFD, 2022). Preferably, the spatial footprint for impacts will be available in the form of GIS polygons for specific locations. Where this is not the case, the smallest well-defined spatial unit, including the impacts, can be identified along with an area estimate for the impact footprint. The area estimate will need to be based on relevant data sources, for example, information on amount of an agricultural commodity sourced from a country together with data on local or national crop yields.

The available spatial information can be combined with other available information to define the spatial footprint as precisely as possible. For example, when a specified quantity of an agricultural commodity is known to be sourced from a particular country, but with no other information available, the extent of the spatial footprint can be estimated from national yield information for that commodity.

For many company activities, including, for example, mines, infrastructure, large-scale agriculture, and renewable energy projects, there may also be existing (historical) impacts caused by indirect impacts outside the spatial footprint. Indirect impacts most typically arise through in-migration to the project area (IFC, 2009; see also the [TNFD Sector Guidance for Metals and Mining](#) and the [UNEP-WCMC Technical Briefs on Direct and Indirect Areas of Influence](#)). The risk of significant indirect impacts is higher in lower income countries, for large-scale projects and where the landscape around the project includes a large proportion of natural habitat. Assessing the scale of indirect impacts can be difficult, especially for long-established developments, where the human footprint in the wider landscape may have changed substantially over time. The important issue is that the loss of biodiversity caused by these impacts is remedied, so using the Direct Impact Track to identify and deliver reductions in the threats to affected biodiversity, no matter who was responsible for the original threat, is the key outcome desired.

A1.5: Compile preliminary threatened species and associated threat data

Once priority Areas of Influence are identified, information on the presence of globally threatened species and the threats impacting those species in each area should be compiled. This information should provide a thorough understanding of all potential nature-related impacts and a basis for the following steps towards identifying specific opportunities of IUCN RHINO contributions.

For the IUCN RHINO approach, the most straightforward way to compile such data is to generate an *IBAT Species Report (estimated STAR)* for each area. This report presents a list of globally threatened species and their associated threat data (defined in the [IUCN Threats Classification Scheme](#) at the second level), which can be used to *provisionally* identify the drivers causing impacts on biodiversity, and their relative importance based on estimated STAR_T scores.

Depending on the context of the sites identified, there may be species that are important to local stakeholders but are not globally threatened, such as flagship species, those of cultural importance or for tourism, or nationally threatened species identified using National Red Lists or during stakeholder consultation. In some administrations, the National Red Lists are part of regulatory requirements for conservation action. In these cases, the process to identify threats and subsequent mitigation actions will need to be undertaken independently for those species.

Results from this step can also be used to inform the TNFD LEAP L4 component 'Interface with sensitive locations'. An organisation will have a priority list of sites (including their Area of Influence), together with a preliminary list of globally threatened species, their associated threats and relative importance based on STAR_T scores.

A2: Evaluate

The Evaluate phase of TNFD LEAP aims to provide companies with a more detailed evaluation of their nature-related dependencies and impacts. During this phase, which is part of the IUCN RHINO approach, a company confirms species occurrence and threat presence on the ground (within the Area of Influence) for each priority site. The starting point for this phase is the IBAT Species Report from the previous Locate phase, with the preliminary results validated by data from the ground, leading to an updated assessment of species and threats from which a calibrated STAR_T score can be calculated. This score will then serve as a baseline for the species extinction risk.

Calculating the calibrated STAR_T score within the landscape involves confirming the presence

of species listed on the IBAT Species Report (estimated STAR), removing any that are not found within the Area of Influence, and adding those that were not included. The same applies for the threats, where not only must the presence of the threat be determined, but an evaluation of the scope and severity of each threat should also be completed.

The process of calculating the calibrated STAR_T score is described in detail (Mair et al., in prep a, b), with a worked example from Costa Rica. The mathematics of the calculation are not replicated here, as the recalculation process for calibrated STAR_T has been implemented in a tool available through IBAT.

A2.1: Confirm species

For a given Area of Influence, the first step of the calibration process is to confirm the presence or absence at the site of threatened and near-threatened species identified in the IBAT Species Report (estimated STAR). The IBAT tool provides the preliminary list of species that are expected to be present at the site, based on an overlay of the site polygon with the [Area of Habitat](#) (AoH) maps contained in the IUCN Red List. This tool can be used to confirm the presence of species.

The global STAR layers available through IBAT are based on maps of AoH for each species. These maps show where the species is *likely* to be present within its known range, based on existing knowledge of the range (the Red List range maps), ecological preferences (such as habitat requirements), elevational distribution, and land-cover maps derived from satellite imagery.

The presence of a species within a particular site thus requires confirmation. Presence in this context means of regular occurrence, such that the site is likely to be a significant component of the species range, not just a place where the species occurs irregularly or as a vagrant. If the species is found not to be present at a site, then action to reduce threats at the site will not contribute to reducing that species' global extinction risk.

Companies should ensure that the efforts made (ideally as many of these as possible) are documented. There are several possible routes to confirm a species' presence:

1. Consult with people knowledgeable about threatened and near-threatened species at the site, for example:
 - [IUCN Red List of Threatened Species](#) reviewers (listed on the relevant species page);

- [IUCN Species Survival Commission Specialist Groups](#) for the relevant taxa;
 - Local, national or international NGOs involved in species and site conservation, especially those with active conservation programmes in or near the Area of Influence. For example, [BirdLife International Partners](#) and local conservation groups, [IUCN local/regional offices](#) or [WWF local/regional offices](#);
 - Indigenous and local peoples with knowledge of species and threats- using the [IUCN Red List of Species guidance](#) and Indigenous conceptualisation of environmental issues (Coscieme et al. 2020);
 - Taxon specialists at national universities or research institutes;
 - Relevant site management authorities (for protected areas);
 - Local or regional environmental/ ecological consultancy companies.
2. Review threatened and near-threatened species information in [Global Biodiversity Information Facility](#) (GBIF) and citizen science databanks (for example, [ebird](#), [i-Naturalist](#))
 3. Identify species or ecological monitoring initiatives in and near the site, for example through the [IUCN Species Monitoring Specialist Group](#) or the relevant [IUCN Red List](#) page

In this process, companies should document how recent the information is and the sources (personal experience, reports) for each case. It is important to ensure that the expert input to the calibration process is as good as it can be, and to seek external validation confirming the analysis. Credentials of experts, including experience with the site and species/threats, should be archived for the validation process. Companies could consider paying a small honorarium for each contribution, especially if the source is from the global South or contributes significant information.

For threatened and near-threatened species for which no reliable, recent confirmation of presence is available, it may be necessary to carry out targeted surveys using appropriate methods that have a high chance of detecting the species. These should be conducted at the appropriate season, taking into account seasonal detectability or presence, for instance for migratory species. Technology, such as acoustic monitoring, camera trapping or e-DNA sampling, may provide both the evidence of the species' presence and (for the first two) data on abundance for the measurement of management impacts and target delivery. Further details of how to effectively plan this are available at the website of the [IUCN SSC Species Monitoring Specialist Group](#).

For threatened and near-threatened species that are not confirmed from the site, it is important to distinguish species that have been present in the past but have been extirpated, from those that never occurred in the site. For species that have been extirpated at the site (confirmation obtained through the information sources and

expert networks listed above), the site will form part of the historical AoH for the species that can be used to calculate the STAR Restoration Score (STAR_R) (see Section 4.6.1). If the species has never occurred at the site, this may be due to errors in the species' AoH resulting from errors in the range map, habitat preferences, and/or elevational limits, as coded in the IUCN Red List, or taxonomic differences. STAR is based on the taxonomy followed by the IUCN Red List, where there are sometimes delays between taxonomic recommendations for individual taxa being published in the scientific literature, these being adopted by the global taxonomic sources followed by the Red List, and updated Red List assessments being undertaken following the revised global taxonomic sources. (Conversely, the Red List may represent the latest taxonomic understanding, while alternative data sources may use older or less globally consistent taxonomic treatments.) Reconciliation of these taxonomic issues should be conducted in consultation with appropriate literature and experts (as listed above).

WORKED EXAMPLE: A2.1 AND A2.2

Given that one site had a much larger STAR_T than the others, showing that the opportunity to reduce species extinction was greater in that site than the others, a decision was made to select this site for priority action. At this site, the IBAT Species Report (estimated STAR) showed that four threatened species were likely to occur at the site, and the resultant STAR_T score was 75. The report showed that there were three threats applying to these species.

The three threats were scored according to their impact on the threatened species as follows:

- *Annual and Perennial Non-timber Crops (Shifting Agriculture)* (STAR_T score of 25)
- *Biological Resource Use (Hunting and Collecting Terrestrial Animals)* (STAR_T score of 35)
- *Energy Production and Mining (Mining and Quarrying)* (STAR_T score of 15)

A2.2: Confirm threats

The second step of the calibration process is to confirm the presence or absence of threats

identified in the IBAT Species Report (estimated STAR) that affect each threatened and near-threatened species. The IBAT tool proposes the preliminary list of threats to support the calibration

process. The list of threats is based on Level 2 of the [IUCN Threats Classification Scheme](#). The report features the Estimated STAR_T score for the site broken down by threats. Management of these threats is necessary to reduce extinction risk, and it will be important to manage the threats that contribute the most to the overall STAR_T score (where this is feasible) as a matter of priority.

The process of threat assessment in the IUCN Red List does not map threats, and so the assessment assumes that threats apply uniformly across the species' AoH. However, not all threats are necessarily present in particular localities. For calibrated STAR_T scores, it is thus necessary to assess whether individual threats are present at a site, at levels likely to be affecting the extinction risk of the species. An appropriate rule of thumb in assessing if a threat is significant at a particular site is that the threat affects more than approximately 5% of the surface area of the site (for instance for habitat loss or conversion), or if there are more than five instances of the threat reported in a year (for instance for hunting). If a threat is insignificant at a particular location, efforts to address the threat there will not reduce species extinction risk, so that threat should be removed from the STAR_T score for that site, and the overall STAR_T score reduced accordingly. It may be necessary to assess the significance of a threat for different species separately, as the same threat may affect different species in different ways. For instance, the presence of small numbers of an invasive species may not be important for some threatened and near-threatened species but very serious for others. The threat should remain in the analysis for any species for which it is significant.

For practical purposes, it is not necessary to confirm the presence of threats that will not be the focus of interventions at the site, because they contribute a relatively small amount to the overall STAR score.

There are several possible routes to confirm non-negligible presence of threat at a site:

- Local knowledge, using same sources as for confirmation of species' presence;
- Remote sensing, for instance from [Global Forest Watch](#) or other sources of land-use change imagery (land cover change, fragmentation statistics, habitat quality);
- Indigenous and local peoples with knowledge of species and threats- using the [IUCN Red List of Species guidance](#).
- Remote sensing + modelling (hunting, resource use);
- The [Environmental Impact Classification for Alien Taxa \(EICAT\)](#) is the IUCN global standard for measuring the severity of environmental impacts caused by animals, fungi, and plants living outside their natural range. The [Global Invasive Species Database](#) is managed by the IUCN Species Survival Commission Invasive Species Specialist Group (IUCN SSC ISSG) and the Global Register of Introduced and Invasive Species is an ISSG led initiative. The [IUCN Red List of Threatened Species™](#) also holds information on the impacts of invasive alien species (IAS). An analysis of how IAS contribute to species global extinction risk can be found [here](#).
- The [World Database of Key Biodiversity Areas](#), which contains extensive information about threats at particular sites of biodiversity importance.

Specialists should also be asked to score the local severity and scope of each threat per species within the Area of Influence. Scope (the extent to which the threat applies across the species' range) and severity (the impact of the threat on the extinction risk of the species) of each threat per species should be scored using the [IUCN Threats Classification Scheme](#). Specialists can be asked to quantify their confidence in the scores they provide. Where a threat is found to have negligible

impact on a species in a given site, the estimated STAR_T scores for this species-threat combination should remain to inform proactive management of the site.

Finally, local specialists, including Indigenous peoples and Local communities, may identify further threats to species at the site that were not identified in the estimated STAR scores. Such specialists should be asked to score the severity and scope of these threats, and their confidence in these scores.

In the case that species not globally threatened but locally relevant are identified during the consultation process – for instance species on National Red Lists or culturally or economically important species – the threat information contained in the National Red List species accounts, or threats relating to other categories of species obtained through expert consultation, may reveal that those that apply to these species also apply to globally threatened species found in the same area, in which case management

actions proposed to deal with threats to globally threatened species can also help with these other categories of priority species.

A2.3: Calculate first version of baseline

All adjustments to threat presence in each Area of Influence should be entered in the IBAT tool, that will calculate the calibrated STAR score based on ground-truthed information. After this phase, a new *IBAT Species Report (calibrated STAR)* can be generated that meets the requirements for species of the TNFD E3 phase related to measuring changes to the state of nature and E4 which recommends assessing the severity of impact for materiality assessment.

As part of future developments, the IBAT module will be adapted to collect information obtained from the consultation process to input back to the Red List for the species assessment to be updated.

A3: Assess

The Assess phase (A3) of TNFD LEAP aims to provide companies with an understanding of which nature-related risks and opportunities are material, should be disclosed by the organisation, and acted upon. Through this phase, as part of the IUCN RHINO approach, a company will identify the most important threats to mitigate, as informed by the IBAT Species Report (calibrated STAR).

Most threats are thematically connected with nature-related physical risks for the company, by triggering loss of species and ecosystem function. These physical risks can also induce nature-related transition risks wherever there is a misalignment of economic actors with actions aimed at protecting, restoring, and/or reducing

negative impacts on nature. These risks can be triggered, for example, by changes in regulation and policy, legal precedent, technology or investor sentiment and consumer preferences.

A thorough assessment of threats is therefore required to ensure the most important and pressing ones are addressed to avoid risks for the company and seize opportunities of contributions to nature-positive outcomes. The IUCN RHINO approach provides a preliminary understanding of how threats could be acted upon in the most efficient and effective manner, considering opportunities of synergies with other stakeholders at the landscape level. The dialogue with stakeholders can therefore lead to a revision of

the scope and severity of threats and to a revised calibration, with a refined perspective.

The outcome of this phase of IUCN RHINO can inform, for the species-related elements, the TNFD LEAP A3 'Risk and opportunity measurement and prioritisation' and A4 'Risk and opportunity materiality assessment', which aim to assess which nature-related risks and opportunities are material and should be disclosed, considering their current and anticipated effects on the organisation's financial position, financial performance, and cash flows.

A3.1: Assess most important threats

For each Area of Influence, the Assess phase starts with the review of the calibrated STAR_T results to analyse the most important threats. The first phase of this process should be an internal consultation, to ensure that the results are consistent with the understanding of project managers and technical specialists, and that any

disparities in understanding are resolved before the results are shared with outside stakeholders. At this point, the company may find it helpful to undertake a classification of the threats into those that are within their sphere of influence (entirely or partly) and those that require work with other stakeholders for threats beyond their direct sphere of influence. It is also important to consider the temporal variability in species presence, notably for migratory birds, fish, and marine mammals (see Box H). A further analysis of the specific manifestations of threats to particular species may help identify appropriate management responses.

For sites with high opportunity to address threats to biodiversity, it is recommended to identify the most important links between company actions and known threats to biodiversity at the site. Using these links, the risks and opportunities to the company caused by their involvement with impact drivers can be assessed, along with opportunities to mitigate these risks.

WORKED EXAMPLE: A3.1

At the site in Madagascar, work with stakeholders and experts to calibrate the STAR scores resulted in an increase in the number of threatened species occurring at the site from four to five, resulting in a calibrated STAR score increase from 75 to 100. The calibration process also resulted in reduction in the number of threats applying to threatened species at the site from three to two.

The two threats were scored according to their impact on the threatened species as follows:

- *Annual and Perennial Non-timber Crops (Shifting Agriculture)* (STAR_T score of 75)
- *Biological Resource Use (Hunting and Collecting Terrestrial Animals)* (STAR_T score of 25)

Box H

Migratory species

Some threatened species, especially birds and fish, may only be present at a site for a part of the year. The seasonal occurrence of a species at a site (for instance, if the species is migratory) is indicated in the species list generated in the IBAT Species Report (estimated STAR). In addition, a species may face different threats at different stages in migration, and species' AoH and density of individuals may also vary between breeding, passage and non-breeding areas. For example, some species have very extensive breeding grounds but concentrate in small areas during the non-breeding season, or vice versa; others show 'bottlenecks', where most of the population passes through a small area on migration. These interactions between varying population proportion and threat intensity pose some challenges for accurately calibrating STAR site scores for migratory species.

Future versions of the STAR global layer will make adjustments for migratory species STAR scores based on the geographic scale of breeding, passage, and non-breeding areas, and the threats applying to each. For the present, calibration of site STAR scores for migratory species should follow the same process as for non-migratory species. Where threats differ between the different components of migratory range, this approach may result in underestimates of the 'true' STAR value.

There are two verification steps to improve the accuracy of STAR scores for migratory species at a site:

- To confirm that particular threats to the species apply when the species is present at the site. The process is the same as for non-migratory species, outlined above, but particularly important because migratory species may face different kinds of threats at different points in their migratory cycle.
- For migratory species that only occur at the site in a particular season, it is necessary to assess whether the STAR score needs adjusting to reflect the maximum proportion of the species' global population that occurs at a site, particularly for species that concentrate at certain times of year. STAR calculates site scores based on the proportion of each species' AoH they contain, using this as a proxy for the proportion of population present. For migratory species, this approximation may not be accurate if, for example, the species concentrates at particular locations on passage or in the breeding or non-breeding season (e.g. bat species that aggregate when breeding, shorebirds that concentrate on passage, and monarch butterflies that congregate in the non-breeding season).

The most important threats may also only apply at certain points during its annual movement cycle, where conservation efforts will be most effective. Expert input is therefore recommended for calibrating STAR scores for migratory species at a site.

A3.2: Socialise results

The conservation of species and their habitat often requires complementary measures led by multiple actors at the landscape level. Therefore, in this step it is recommended to assess options of engagement with other stakeholders related to the Area of Influence, including, depending on the context, government or sub-national government, civil society, Indigenous people and Local communities, conservation experts and other companies.

Companies should socialise their calibrated STAR_T results with stakeholders, seek their input and validation of the results and start assessing opportunities to work together on co-ordinated action plans to tackle the threats identified. Process costs to set up and manage interventions can be considerable, but can often be reduced by aggregating interventions through collaboration with other companies or investors. Interventions designed to support agreed conservation plans and priorities (e.g. a National Biodiversity Strategy and Action Plan, or NBSAP) are likely to be the most effective contributions towards meeting global biodiversity goals, and to be best accepted by conservation stakeholders. Guidance on leading and contributing to landscape level outcomes is available from [ISEAL Core Criteria for Mature Landscape Initiatives](#).

Webinars or workshops involving multiple stakeholders can be an opportunity to discuss how stakeholders consider threats are being caused and which ones should be mitigated in priority for the best possible outcomes, considering the complementary perspectives and sources of information.

This step may also include an assessment of which constituency could be best involved in managing threats for optimised coordination and outcomes. An initial evaluation of synergies with existing conservation actions in the landscape will help in the design of efficient conservation strategies in the next phase. This process will benefit greatly from the refinement of the kinds of threat and the manner of their manifestation (for instance, identifying which constituents are likely to be involved in which form of agriculture or hunting).

A3.3: Recalculate baseline in response to new data and insights

As a result of the dialogue with stakeholders, new information will be gathered and some adjustments to the original evaluation of threats may be required. These adjustments should be well documented and entered in the IBAT tool to re-calculate the calibrated STAR_T score for the concerned sites. This score will serve as a baseline for target-setting and monitoring progress towards nature-positive outcomes. Box I presents a few key considerations about baselines in the context of the KMGBF and the Global Goal for Nature.

By the end of this phase, a company will have assessed and confirmed, working with all stakeholders, their most important nature-related risks for the species-related elements, and the threats to mitigate to achieve the greatest species extinction risk reduction.

Box I Baselines

In the IUCN RHINO approach, baseline refers to the point against which progress is measured. There are two contexts where baselines are important:

1. **At a global scale, in reference to delivery of contributions to the Kunming-Montreal Global Biodiversity Framework (KMGBF) through Nature Positive actions, the baseline is the state of biodiversity in 2020**, and the Goals and Targets of the KMGBF (for instance, Target 4 aims to halt human-induced species extinction by 2030, and to reduce extinction risk, in particular for threatened species). The KMGBF Targets and Goals are not specifically linked to a particular baseline, even though Goal A specifies that “by 2050, the extinction rate and risk of all species are reduced tenfold”, it does not give a baseline against which that reduction is measured. With this in mind, the Global Goal for Nature was established in 2023 to “halt and reverse nature loss by 2030 on a 2020 baseline, and achieve full recovery by 2050”. While the Global Goal for Nature is not a formal part of the commitment by nations to the **KMGBF**, it does provide a baseline for the delivery of the Goals and Targets.

2. **On the ground, baselines are important in the implementation of actions to contribute to the Global Goal**. These differ markedly for threat abatement and restoration.

For the **threat abatement** to reduce the species extinction risk, the baseline is the intensity of the threat to the species that occur in the Area of Influence that is identified by a potential contributor for management. For STAR, this is established during the calibration phase. The baseline is usually measured at the point at which a management intervention starts, and the target is the percentage reduction in threat intensity that is intended as a result of the management over the period of the intervention.

For practical purposes, the project baseline may not be equivalent to the Global Goal baseline, for two reasons: Firstly, if interventions are planned after 2020, the intensity of the threat in 2020 may not be known; Secondly, even if the company knows the intensity of the threat in 2020, it may not have been able to affect that intensity in the period since 2020 because actions to reduce the threat have not yet started or started after 2020. One way in which a company can align its actions with the Global Goal baseline is to use the threat intensity in 2020 (if known) or to estimate the threat intensity in 2020 and make contributions to reducing the level of threat to below 2020 levels.

The situation regarding **baselines for species and ecosystem restoration** is more complex. For the STAR_R calculation, the baseline from which species distribution (Area of Habitat) is calculated is ‘before human impact’, which for many parts of the world is many thousands of years ago. For the Green Status of Species, the recommended baseline is 1750, with the potential for modification to 1500 at the earliest or 1950 for the most recent, depending on circumstances. For the Red List of Ecosystems (RLE), the notional reference date of 1750 is used as the baseline for Red List assessment.

The lack of alignment between the Global Goal baseline and a threat abatement at the project scale is important to understand. In practice, it does not mean that actions undertaken after 2020 are less important, as in most cases it is unlikely that threat intensity has been reduced significantly between 2020 and the start of an intervention. Thus, any intervention that is undertaken will represent a worthwhile contribution to the overall reduction of threat levels to the species concerned. The important step that contributors to the Global Goal can make is to start interventions as rapidly as practically possible, using a project initiation baseline to evaluate performance, rather than trying to adjust to global baselines such as 2020. For restoration project baselines, a 10-year horizon, as used in the KMGBF, is not appropriate, as very little positive impact can be expected.

A4: Prepare

The Prepare phase of TNFD LEAP supports users in deciding how the organisation should respond to the material nature-related issues identified in the Evaluate and Assess phases, including setting targets and defining what and how to disclose on these matters. During this phase, as part of the IUCN RHINO approach, a company should consider how to respond to the material impacts on nature identified in the Evaluate phase and risks to the organisation identified in the Assess phase: the outcome will be the formulation of an action plan to address the most important threats, thereby delivering the greatest contribution to Nature Positive outcomes. The action plan can be translated into a science-based target for the reduction of the threats that cause species extinction risk.

A4.1: Define priorities and compile threat response and action plan

To start the process of reducing impacts on biodiversity as quickly as possible, implementation of management should be the priority rather than spending many years collecting data before starting management. Selecting the target threats (those that are prioritised for urgent action) is not necessarily simple. The threat with the highest STAR_T score resulting from the final calibrated STAR_T calculation is clearly the place to begin, although it may be that the potential strategies for mitigating the most important threat will require a strong set of partnerships with landscape actors, while other threats can be dealt with quickly and efficiently within the immediate area of a project site. These approaches should be initiated in parallel, in order that impacts are generated as rapidly as possible.

A full understanding of the specific manifestations of threats will enable the company to conduct a rapid internal mapping of the appropriate consultation required to identify a management response. It is likely that particular threats with varying manifestations (for instance hunting with guns and hunting with traps) will involve different stakeholders and a varying management response. You can use the [IUCN Conservation Actions Classification Scheme](#) (Version 2.0) to guide this analysis.

As an integral part of creating the action plan, the company should actively engage with stakeholders and determine actions to mitigate impacts based on the threats identified and selected. Once the initial internal mapping is completed, a full knowledge of the specific manifestations of threats will help stakeholders to identify the most appropriate management responses to particular threats. The process of engagement with stakeholders to discuss management responses is potentially problematic, and may require a sympathetic and diplomatic process, backed by adherence to a comprehensive safeguard policy, for instance IUCN's [Environmental and Social Management System](#).

As part of the engagement with stakeholders, the company should identify collaborative opportunities to design coordinated conservation action at the landscape level. It is recommended that each project develops a theory of change demonstrating how conservation interventions will reduce the intensity of particular threats, and through that the particular stressors acting on species.⁷ This clarifies the assumptions being made and helps ensure that the project is following a logically robust approach that has good chances to succeed.

⁷ See <https://www.iucnredlist.org/resources/stresses-classification-scheme>

Once the threat and response mapping has been completed with stakeholders, actions to manage priority threats can be identified, using the IUCN [Guidelines for species conservation planning](#). Further options for threat management, including analysis of effectiveness, is found at the Conservation Evidence [website](#) and using the set of resources developed for protected areas in [IUCN Panorama](#).

Once appropriate methods have been identified, further negotiation and discussion could include proposals for joint management and monitoring with local communities, authorities, and the academic sector. If issues such as natural resource governance, restriction of access to resources, or benefit sharing are likely to be involved, consider referring to IUCN guidance on [Environmental and Social Management System](#) and [TNFD Guidance on Engagement with Indigenous People, Local Communities and affected stakeholders](#). The IUCN [Natural Resource Governance Framework](#) focuses specifically on aspects of governance and justice. Of particular importance is that such issues are fully explored with stakeholders, using the principle of Free Prior and Informed Consent (FPIC).

It is also worth considering that some species may warrant specific conservation action. The most important species for global targets can be identified based on how much of the percentage of STAR score they account for, for instance if three species account for 90% of the STAR score, consider focusing threat abatement and conservation actions on those species. Species on National Red Lists, or economically or culturally important species, may also warrant specific conservation action.

A4.2: Identify resources

As priorities of actions are defined, TNFD LEAP's component P1 also recommends identifying resources needed to implement management actions. In the IUCN RHINO approach, management actions will aim to reduce the scope and severity of threats to species (and, in time, ecosystems).

The resources necessary to implement conservation actions across a landscape will vary according to local conditions, the threats to be managed and the degree of collaboration required to implement the management. Some guidance on the methods is found in the IUCN Conservation Actions Classification Scheme, and in [Guidelines for species conservation planning](#). [Guidance for using the IUCN Global Standard for Nature-based Solutions](#) contains useful material relating to the maintenance of ecosystem services of benefit to local stakeholders.

A4.3: Quantify threat baselines and index measures

Once priorities of actions are defined for priority threats, the expected outcome of the improved management plan is quantified to estimate the IUCN RHINO contribution the company can expect to deliver. This outcome will be reflected in Target STAR_T score, following three steps:

- 1) assess baseline levels of priority threat using appropriate index measures;
- 2) set outcome targets for expected threat reduction through priority actions – more specifically assess the % of threat reduction that is expected;
- 3) calculate corresponding Target STAR_T value by adapting the threat values used in calibrated STAR_T

Appropriate threat index can be used to assess the baseline level of threat intensity in the Area of Influence. In the case of conversion to agriculture, for instance, the appropriate baseline might be the annual rate of conversion in hectares averaged over the preceding five years. The selection of a single point in time or a longer period for estimating the baseline should be informed by an understanding of temporal variation in threat impact (longer periods would be appropriate for threats with considerable inter-annual variation, for example).

For threats assessed using a few time samples, it will be desirable to collect some trend data. In the example detailed in the Worked Example below, *Biological Resource Use: Hunting and Collecting Terrestrial Animals* was measured using an established assessment protocol giving an intensity per unit area or unit survey effort (guidelines on planning constant survey effort can be found [here](#)).

The choice of index will vary according to the way in which the threat is manifested, and the impact on the individual threatened species. For instance, *Invasive and other Problematic Species, Genes and Diseases* might be manifested on one species by direct predation and on another by degradation of habitat, and would therefore require different indices. The impacts of invasive plants at a site would need very different measures compared to measuring predation by rats on islands, and many threats would need a specifically-tailored *in situ* index measure. For invasive alien species,

the IUCN [website](#) on the subject contains specific guidance and resources on impacts and management strategies.

Other threats may vary substantially seasonally or between years, (for instance *Agriculture and Aquaculture: Annual and Perennial non-timber crops* or *Pollution: Agricultural and forestry effluents*), thus may require a longer time-series of samples to permit the calculation of a mean rate of threat occurrence per time period, for instance:

- Mean hectares of forest cleared for cultivation of oil palm per year over last five years;
- Mean concentration of sediment in river per year over last five years.

Some of these trends can be estimated from remotely-sensed data, which is often available over historical time-series, reducing the need for delay in implementing management. IUCN is developing guidance on the use of remotely-sensed data which will be incorporated into this document when available.

As part of the preparation to target-setting, and for transparency purposes, the company should engage with stakeholders to share and discuss the baseline levels of threat and index measures that were selected, to inform target setting. Such dialogue will be particularly needed if stakeholders collaborate to reduce particular threats, as questions of accountability could arise and need to be discussed.

WORKED EXAMPLE: A4.3

At the site in Madagascar, with a Calibrated STAR_T score of 100, two threats were assessed and found to be occurring at a significant scale. They were:

- *Annual and Perennial Non-timber Crops (Shifting Agriculture)* (STAR_T score of 75)
- *Biological Resource Use (Hunting and Collecting Terrestrial Animals)* (STAR_T score of 25)

The first threat causes loss of forest, and so can be measured using remote sensing. It was found that the pre-intervention rate of forest loss, caused almost entirely by shifting agriculture, was 50 ha/year, equivalent to 1% of the site per year. The second threat was focused on trapping of lemurs, given that this threat applied almost entirely to this group of animals. Potential index measures appropriate for this threat in the Madagascar example might be:

- lemur traps found per year over constant survey effort;
- detection of hunters per unit time by audio sampling (gunshots) or camera traps;
- appropriately designed household surveys aimed to assess the level of consumption of lemurs (information available [here](#)).

The index of intensity chosen was the number of lemur trap sites found per year across the site. The pre-intervention value for this index was 100.

Local experts and community members were employed to implement management initiatives (agricultural activities to compensate for the loss of products from shifting agriculture, and employment of hunters as monitoring agents for the hunting intensity).

A4.4: Set threat reduction targets, objectives, and indicators for actions

Based on the ambition defined and discussed in the previous steps, the company can now formulate their objectives, targets, and indicators.

For each action of its improved management plan, Specific, Measurable, Achievable, Relevant and Time-bound (SMART) objectives should be defined ([Stephenson & Carbone, 2021](#)). The corresponding Key Performance Indicators (KPIs) should quantify measures of performance over time for each objective. Following the discussion with landscape-level stakeholders, the company should be in a position to set target(s) for each KPI.

Targets for threat reduction can be set and expressed in terms of a Target STAR_T score, and

secondly through the creation of roadways in the plantations facilitating access of hunters to areas of habitat for lemur species.

Target STAR_T scores calculated for each Area of Influence can be aggregated by the company into a corporate science-based target, in which case the Target STAR_T scores and associated KPIs for each action meet the requirements of TNFD LEAP component P2, Target setting and performance management.

The company can then decide to move forward to TNFD LEAP Component P3 on Reporting, in which a company decides what they want to disclose, and to P4 on Presentation which addresses the question of where and how to present nature-related disclosures. Users of IBAT can make use of the *IBAT Disclosure Report* to inform reporting compliant with location and

evaluation requirements of TNFD, GRI, and the EU CSRD. Companies that are more advanced in the implementation of the IUCN RHINO approach can disclose their targets and action plans for nature-positive outcomes.

Going beyond nature-related risks and focused on delivering nature-positive outcomes, the IUCN RHINO approach proposes, beyond the LEAP phases, two additional phases dedicated to Implementation and Reporting the actual delivery of IUCN RHINO outcomes described below.

WORKED EXAMPLE A 4.4

The company decided to intervene to reduce the intensity of both threats at the site. This was because their investment (to cultivate agricultural products) could be linked to both these threats—firstly through employees at their plantations practising shifting agriculture in the Area of Influence.

The targets chosen were to reduce forest loss from 50 ha/year (1%) to 5 ha/year (0.1%) over 5 years, and to reduce incidence of lemur trap sites from 100 per year to 5 over the same period. This is equivalent to a target of 91.25 STAR_T units (75 STAR_T units*0.9) + (25 STAR_T units*0.95) = 67.5 + 23.75 = 91.25 STAR_T units.

A5: Post LEAP – Implement actions to deliver targets

While TNFD Prepare component P2 is about being aligned with the core principles set by monitoring, reporting and reviewing targets, the following steps focus on the requirements for the delivery of rapid high-integrity Nature Positive outcomes for species.

A5.1: Implement and monitor management actions

Once the indices have been identified and objectives established, management actions to achieve the targets can be implemented and monitored. The techniques employed to achieve the targets will vary according to the specific circumstances at the site; considerable expertise and literature on the subject is available from a range of sources. The primary IUCN source of information is the [Conservation Planning Specialist](#)

[Group](#), with tools and workshop processes, and training materials available.

Interventions that are planned and implemented should be categorised according to the [Conservation Actions Classification Scheme](#), to enable comparisons of actions between sites. This website has further [details on definitions and actions for each response](#). The IUCN [PANORAMA](#) website has a wealth of information on conservation solutions, and Conservation Evidence [website](#) reviews the effectiveness of different approaches. The [Conservation Planning Specialist Group Project Inventory](#) lists species-focused interventions which can be consulted in relevant cases. For response options related to protected areas, the [Good Practice Guidelines](#) of the World Commission on Protected Areas has developed practical suggestions, many of which can be applied to areas managed for conservation outcomes that are not regarded as protected.

A5.2: Work and manage adaptively at the landscape level

For business, it will often be essential to work in close partnership with local communities, national and international NGOs, and/or local and national government. It may be practical to determine a lead implementation partner with the necessary skills in conservation project design, management, and monitoring. For long-term sustainability, projects should also consider capacity-development needs and how to help meet these through project actions.

The process of target-setting and monitoring will benefit not only the company, but also the

landscape collaboration engaged with their stakeholders. By providing effective KPIs based on actual outcomes for nature, using the state of nature metrics within landscape collaboration can provide an objective basis for tracking progress, encouraging buy in and reducing the risks of empty 'talking shops'. It also increases accountability and provides useful information for adaptive management of action, based on monitoring results, to continuously refine and improve actions. Guidance on adaptively managing actions, to continuously refine and improve outcomes is available at [IUCN Managing evaluations: a guide for IUCN programme and project managers](#) and in Garibaldi et al. (2020)

WORKED EXAMPLE: A5.1 AND 5.2.

Local experts and community members were employed to implement management initiatives (agricultural activities to compensate for the loss of products from shifting agriculture, and employment of hunters as monitoring agents for the hunting intensity). At the landscape scale, collaboration with local authorities and other companies operating in the area ensured that development and conservation actions were shared among stakeholders and changes in threat levels monitored across the landscape.

A5.3: Avoid adverse effect of species threat management

While implementing and monitoring actions with stakeholders to reduce threats to species, adverse effects may occur that need to be identified and managed adaptively to ensure the delivery of Nature Positive outcomes.

Leakage of threats

Apparent gains from interventions to address impacts can be undermined by potential *leakage* of impacts. Leakage occurs when reducing threats in one place leads to increased threats in another,

either through shifting of activities or market effects (Ewers & Rodrigues, 2008).

Leakage is a well-known issue in carbon markets. The Voluntary Carbon Standard's Jurisdictional and Nested REDD+ (JNR) Framework includes methods for evaluating both primary and secondary leakage ([Verified Carbon Standard, 2014](#)). Leakage can be detected through monitoring pressures within and outside project boundaries, and when it occurs may require discounting of assessed gains.

The risk of leakage needs to be considered when planning project interventions. For some interventions, the risk is likely to be higher (e.g.

actions to reduce illegal hunting) than for others (e.g. control of invasive plant species). When leakage risk is high, interventions at a particular site may not succeed in reducing threats overall unless they are part of broader conservation efforts that may involve local communities and local and national governments. A landscape-level rather than single-site approach should help mitigate this risk.

Linking changes in threat intensity to status of threatened species

The process of reducing threat intensity should be accompanied by confirmation of the impact of these measures on the threatened species present. This process can be simple, if the species are easy to detect, such as large savanna herbivores, or potentially very difficult, if the species concerned are cryptic, immobile, highly seasonal, small, nocturnal or silent.

Conversely, demonstrating improved species status may be easier for species with small populations and small ranges, such as some Critically Endangered, range-restricted species. For such species, site-level actions on the overall status of the species will impact a larger proportion of the species' range, thus reducing leakage issues and minimising the risk that threats impact the species outside the Area of Influence of the site-based action.

Consider potential issues and risks associated with reducing threats

There are several additional issues relating to the link between threat management and the status of underlying species. These include:

- non-linear relationships between threat intensity and impacts on species, for instance if invasive predatory species, such as rats, are present even at low intensity they may have a high level of

impact on a threatened species, which may cease only at the point when all the rats have been removed;

- inter-linked and synergistic threats, for instance infrastructure development, such as road-building or dam construction, may lead to the emergence of additional threats such as the arrival of invasive animals and plants and increased hunting pressure;
- scale effects – a given level of threat reduction might have greater benefit in a small site than a large one (or the reverse, depending on circumstances). For instance, interventions to reduce the intensity of unsustainable harvest on a species in a small site might be more valuable if the species is a colonial nesting species that only has a small number of colonies.

The [IUCN SSC Species Monitoring Specialist Group](#) maintains a list of species monitoring projects that can be used to explore possibilities for linking changes in threat intensity to the status of species, including ways to deal with the additional issues listed above.

A5.4: Monitoring threat intensity

Beyond monitoring actions themselves, the IUCN RHINO approach requires monitoring changes in threat intensity over time. These should be monitored at the Area of Influence to assess success in threat reduction. Monitoring strategies should be capable of detecting increases in existing threats that are not targeted for intervention, and emergent threats, particularly considering any proactive management needs identified during calibration.

In practice, the change in threat intensity can be calculated in two ways:

- Measured against a pre-intervention trend at the site (see worked example): To establish a trend, it is best to have more than two time points where possible, although delaying management action to permit the establishment of a time series is likely to increase the probability of species extinction.
- Compared to a control site (a counterfactual): Use of a control site (to show trends in pressures when no interventions take place) may provide a more robust approach to assessing trends in pressures at the intervention site. In practice, the choice of a counterfactual site presents significant problems, including the difficulty of finding a comparison site where appropriate ecological and social conditions are comparable. Such difficulty has plagued the use of counterfactuals in the carbon emissions market, but [studies](#) show

that it is possible, with enough effort, to set up an experimental framework that can accommodate these issues. Ideally conservation efforts would be extended to all sites in a landscape with potential to deliver significant STAR gains. Further details of control site selection, and monitoring are to be found in a range of publications relating to biodiversity offsets.

Monitoring of threats should be designed to account for the potential for leakage (the displacement of threats to areas outside of the Area of Influence) (Ewers & Rodrigues, 2008), which will likely require a landscape-scale approach. Such comprehensive monitoring is also required as a counterfactual (Ferraro & Pattanayak 2006; Grace et al., 2021) to ensure that threats would not have reduced in the Area of Influence without intervention (e.g. from policy or legislative changes impacting the wider landscape).

Box J

Survey effort bias

Indices of intensity such as trapping frequency are subject to bias caused especially by survey effort. There are recommended methods to minimise this effect, as well a database of sampling techniques, available at [Species Monitoring Specialist Working Group](#).

Box K

How often should I monitor threats?

In general, threat monitoring should be repeated in accordance with the reporting needs of the funding source, with a maximum period of three to five years. Some threats may be dealt with rapidly and others may take much longer to manage, so an overall management investment of at least five years is recommended. Annual and seasonal fluctuations need to be borne in mind when planning the timing and frequency of monitoring.

A6: Report delivery of impacts

In this final phase of the IUCN RHINO approach, the delivery of impacts against targets is quantified then reported to stakeholders, government, internal company audience, and shareholders/board.

A6.1: Quantify impact of actions on extinction risk

The impact of actions on the species extinction risk is measured with Realised STAR_T units. 'Realised STAR' values refer to the reductions in extinction risk resulting from validated reductions in the threat levels that are generated through these actions.

To generate Realised STAR_T units, the progress in reducing threats is measured against the calibrated contribution of individual threats to the site STAR_T score used for the calibrated STAR_T value. In terms of process, Realised STAR_T is equivalent to re-assessing the baseline levels of threats using appropriate index measures, as performed in A4.3 for target-setting.

Worked example 6.1 below presents a simple example of calculation of Realised STAR_T score. In real life, new threats undetected during the STAR calibration, or non-prioritised threats should be considered in the calculation of Realised STAR units.

WORKED EXAMPLE 6.1

Following management interventions over 5 years, the forest loss was reduced to 10 ha/year, an 80% reduction instead of the 90% target, and the incidence of lemur trapping was reduced to 2, a 98% reduction instead of a 95% target.

The Realised STAR_T scores achieved were therefore

$(75 \text{ STAR units} \times 0.8) + (25 \text{ STAR}_T \text{ units} \times 0.98) = 60 + 24.5 \text{ STAR}_T \text{ units} = 84.5 \text{ STAR}_T \text{ units}$, or 84.5% of the total STAR_T units available.

The interventions implemented were shown to reduce the level each threat at an approximately equal rate over the 5 year period. For reporting purposes, an equal proportion of this total was achieved in each of the five years of management, equal to 16.9 STAR_T units per year.

The example in the Worked Example box above shows the methodology to be applied in calculating the Realised STAR_T units generated as a result of the management. These Realised STAR_T units can be validated by external evaluators as evidence of contributions to global conservation targets, and can be added up across interventions to provide a summary of the impact on species extinction risk generated by a company, NGO or government.

A6.2: Report as contributions to national and global targets

An important source of information about national priorities for conservation action, specifically in relation to the KMGBF, is the [National Biodiversity Strategy and Action Plan \(NBSAP\)](#). While not all countries have NBSAPs, and the mechanisms to incorporate corporate contributions to the NBSAP vary widely, it is important to ensure that where possible the results of actions implemented under

the IUCN RHINO approach are communicated to the government agency responsible for formulating and delivering the NBSAP. The [WWF NBSAP Tracker](#) is a useful source of information to help guide this.

In future developments, a standard based on the methodology used could be developed and outcomes assessed through calculation of Realised STAR_T values verified against it. The units generated may be held on a registry, ensuring that institutions cannot claim credit for units that have already been registered. IUCN will evaluate the potential for establishing a

certification programme for Realised STAR within the developing NbS certification programme, and/or with appropriate partners, such as the major emissions reduction certification initiatives (e.g. Verra, Gold Standard, ISO).

Outputs from the reporting process will be specifically tailored to the final formulation for the species extinction risk reduction and ecosystem goals (Nicholson et al., 2021) under the KMGBF and SDG Goal 15, and for appropriate corporate reporting frameworks. This will provide a clear means for articulating and communicating corporate contributions to global goals.

5.5 Case study: Extractives – Anglo American

Anglo American has been working to strengthen its biodiversity standards for the application of the mitigation hierarchy at all stages of its operations since 2018, when the global mining company publicly committed to achieving a net positive impact. As an early adopter of the TNFD framework, Anglo American was interested to pilot the IUCN RHINO approach and to understand how using a science-based metric like STAR could further inform their biodiversity management programme (BMP) to contribute to Nature Positive outcomes and to the KMGBF.

Out of 22 Anglo American mining sites screened in Africa, South America, and Oceania, the selected Minas-Rio site presented the highest estimated STAR_T score (1,486.5 centi-stars) and therefore the highest potential of IUCN RHINO contributions. Minas-Rio is located in the Southern Espinhaço Mountain Range that stretches through Minas Gerais, Brazil and is a designated Biosphere Reserve.

The pilot project was implemented over a five-month period in 2024 with Anglo American global and local teams, as well as IUCN and UNEP-WCMC teams. During this time, the Locate, Evaluate and Assess phases of the IUCN RHINO approach were completed. In 2025, a new phase of the project will focus on the Prepare phase, with the aim to agree on an action plan shared with the other relevant stakeholders at landscape level to quantify targets and the possible contributions of Anglo American to the KMGBF and to Brazil NBSAPs in the area.

The detailed case study of Anglo American in Minas-Rio can be found and downloaded from the IUCN RHINO website.

Source: Anglo American - Implementing the IUCN RHINO approach in Minas Rio, Minas Gerais state, Brazil

Contributed by: Barbara Almeida Souza, Josimar Daniel Gomes, Heather De-Quincey, Warwick Mostert (Anglo American), Alex Ross (UNEP-WCMC), Florence Curet, Beatriz Barros Aydos, Randall Jimenez Quiros (IUCN)

5.6 Case study: Forestry – Suzano

Suzano, the Brazilian leader in biomaterials and largest pulp manufacturer in the world, is committed to produce and consume natural resources in a sustainable manner. In 2024, Suzano started to work on a new integrated nature strategy and wanted to ensure their alignment with the delivery of contributions to the SDGs and KMGBF. Suzano was interested to pilot the IUCN RHINO approach, to explore how STAR could further inform the setting of science-based targets for their strategy and of a meaningful action plan to deliver IUCN RHINO contributions.

The company manages a significant forestry base in Brazil, with around 1.7 million hectares of eucalyptus mosaic plantations and 1.1 million hectares of protected native forest. These areas are located essentially in the Atlantic Forest, Cerrado, and Amazon biomes and managed in compliance with Suzano's zero deforestation policy in wood supply. As conversion from native forests into eucalyptus plantations is prohibited, new planting mostly takes place on degraded pastureland. The company is also committed to connect, through ecological corridors, 500,000 hectares of fragments of Cerrado, Atlantic Forest, and Amazon. Both the scale of Suzano's landholdings and the diversity of biomes suggested meaningful opportunities to contribute to species survival.

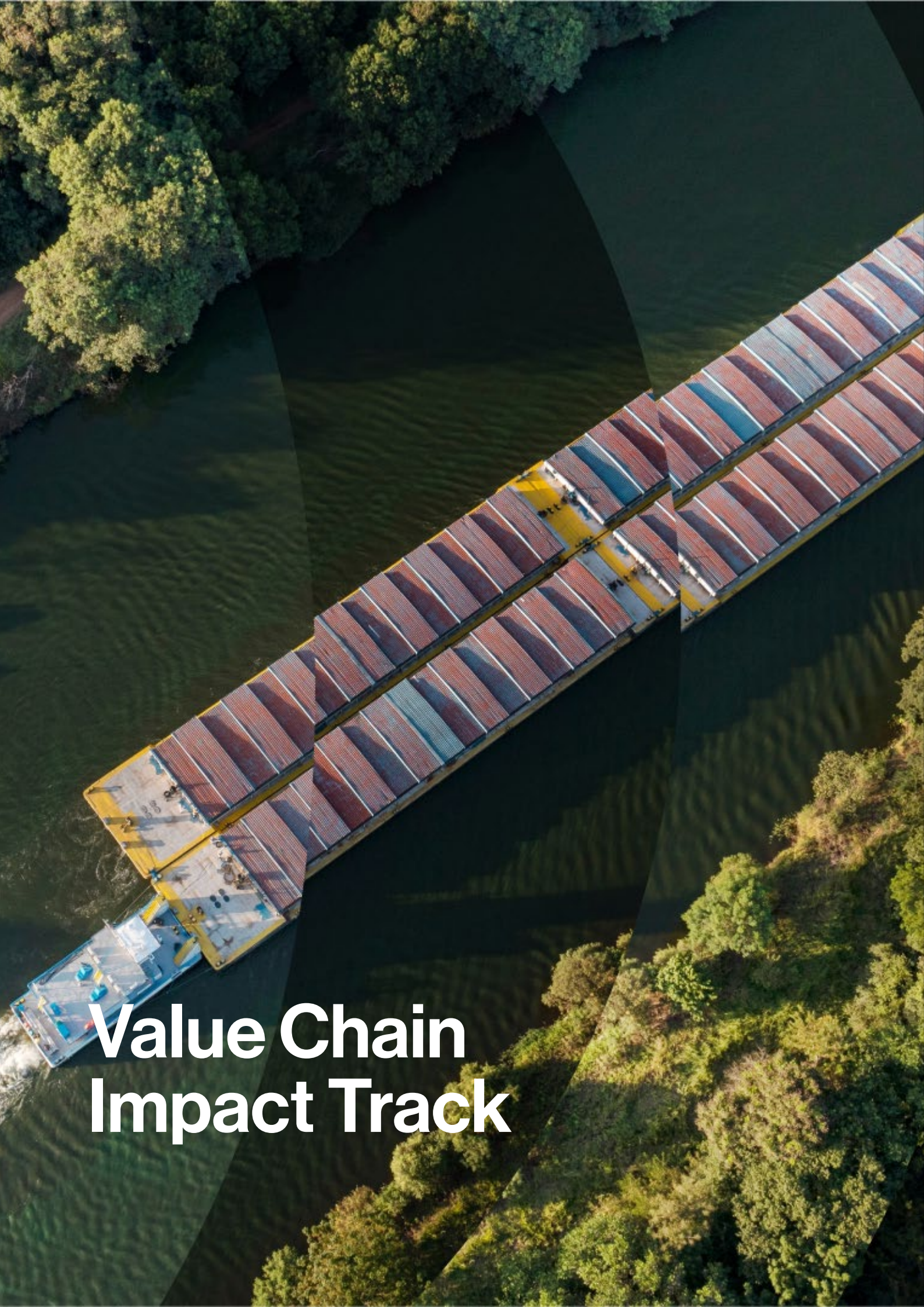
Launched in October 2024, the pilot project is still ongoing and is mobilising a project team combining conservation knowledge, data analysis capacity, and spatial analysis skills from Suzano and IUCN teams. As part of the IUCN RHINO Locate phase, sensitive areas were identified in the different biomes and in all business units of Suzano. During the IUCN RHINO Evaluate and Assess phases, data collection and analysis of the species and threats were performed. The consultation with stakeholders resulted in the recalculation of the initial baselines (step A3.3). The project team is now working on the IUCN RHINO Prepare phase to work on their action plan and the definition of targets.

The detailed case study of Suzano in Brazil can be found and downloaded the IUCN RHINO [website](#).

Additional case studies with high-impact companies are on-going and will also be shared on the website.

Source: Suzano - Implementing the IUCN RHINO approach in forest areas across several biomes in Brazil

Contributed by: Mariana Orichio Mello Appel, Beatriz Barcellos Lyra, Yhasmin Paiva Rody, Renan Tarenta Meirelles Brazil, Guilherme Cardoso de Barros Fornari (Suzano), Cecilia Dante de Almeida (consultant), Florence Curet, Olivier Schär, Randall Jimenez Quiros, Beatriz Barros Aydos (IUCN)



Value Chain Impact Track

6. Value Chain Impact Track

This track is applicable to companies with value chain connections to land holdings, through purchase and processing of commodities with impacts on biodiversity at the site of production or extraction, but for which the company does not have direct authority over spatial planning decisions. It also applies to companies which combine a direct footprint through their productive or extractive activities with the sourcing of materials with inputs (energy for instance).

Identification of site-based impacts of commodity production can be challenging where the value chains are long and/or obscure, as reviewed in section 4.5. While some commodities have clear impacts in particular places, this information is not consistently available to commodity buyers. In such cases the application of the Locate phase of the TNFD LEAP approach and of the IUCN RHINO approach requires some adaptations. For best outcomes for biodiversity, a common

recommendation in all cases for companies in this track will be to work with their suppliers to improve their traceability to the finest level and to include traceability and requirements in terms on biodiversity impact disclosure and management in their procurement requirements wherever possible. Another pragmatic approach would be to encourage or enable certification bodies to include state of nature metrics into their assessments.

An example of a methodology to connect production with impacts, using coffee in Brazil, is included in section 6.2. Until the time when all such commodities' production impacts are freely available, in order that buyers can ask questions to their suppliers, the IUCN RHINO approach follows the guidance of the Nature Positive Initiative summarised in Figure 7, and will be updated once the piloting of Nature Positive Initiative value chain approaches is complete and conclusions available.

6.1 Moving through the Value Chain Impact Track

For companies with precise sourcing information for all or part of their value chain, they can follow the Direct Impact Track for all relevant sites within their upstream value chain.

Option A: For companies with sourcing information to the sub-national jurisdiction or national level (Levels 3a or 3b in Figure 7), the track is as follows:

1. Identify geography/commodity combinations associated with significant biodiversity impacts. This summarises the opportunity to deliver impact reduction actions based on existing knowledge of commodity impacts, especially administrative units;
2. Estimate amount of impacts caused by production of the commodity in relevant geography. Case study on Brazil illustrates

- this approach for coffee, using municipality level information;
3. Evaluate proportion of the commodity produced in this geography that is applied by the company, and use a weighting system (for instance, divide the STAR score for the commodity production in the relevant geography by the proportion of the total commodity purchased by the company, (as in the case study on coffee in section 6.2) to quantify company impacts;
 4. Across relevant commodities, identify the combination of geography and commodity that enable greatest threat reduction, and work with producers in areas of highest opportunity to deliver threat reductions;
 5. In areas where there is no good-practice management, work with commodity suppliers to increase the precision of sourcing information, and refine potential to deliver threat reductions based on increased knowledge;
 6. For areas presenting the highest opportunities of nature-positive contribution, identify relevant landscape-level partners able to take action for biodiversity with commodity suppliers;

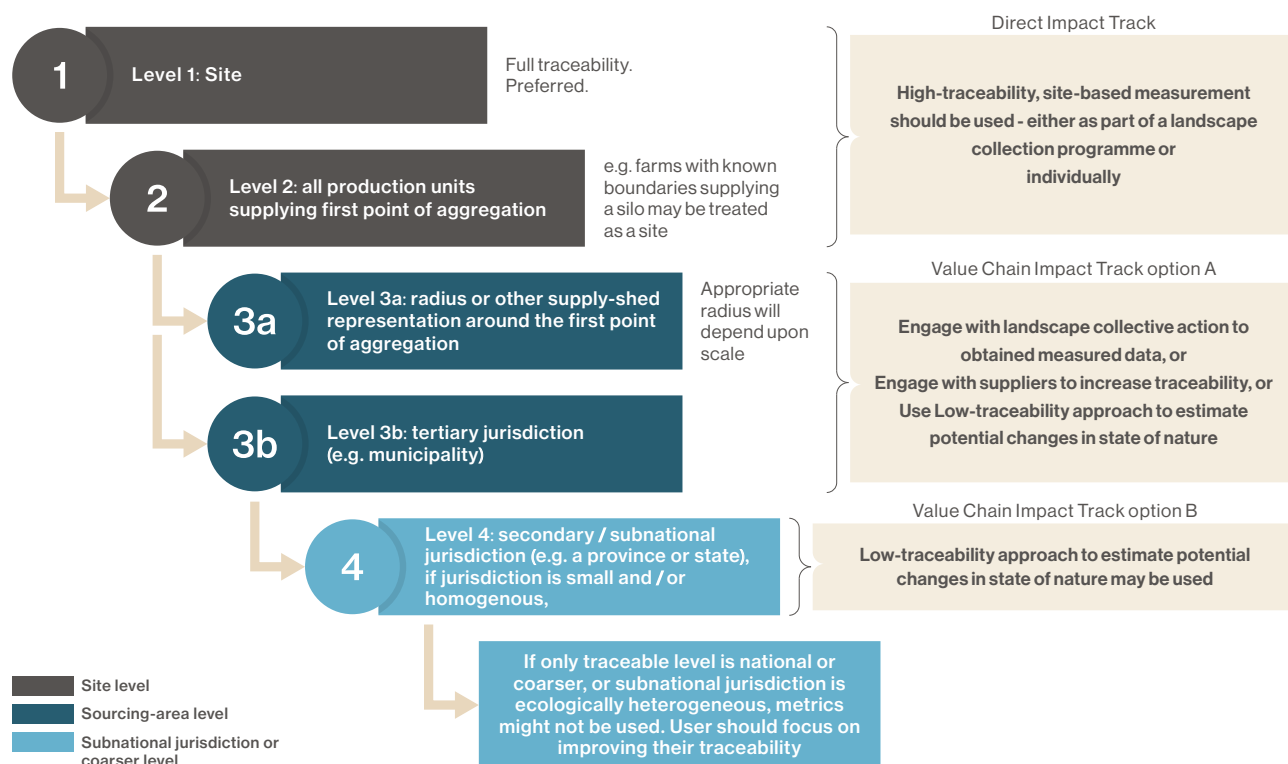


Figure 7 Summary of the components of the Nature Positive Initiative value chains approach, which emphasises the importance of chain-of-custody linkages for all intermediary agencies along value chains. Once the chain-of-custody responsibilities are established, arrangements can be made to conduct the steps outlined in the Direct Impact Track. Where impacts occur at many sites, and knowledge of sourcing sites is imprecise, a commodity-based approach is taken. STAR can be used to estimate the potential global significance of a company's value chain impacts, when used in combination with an extent X condition footprint analysis.

Source: Adapted from *The Biodiversity Consultancy*, with permission

7. Implement steps A2 to A6 from the Direct Impact Track to calibrate and deliver realised outcomes.

Option B: For companies with no spatially-explicit sourcing information for part/all of their value chain (beyond Level 4 in Figure 7):

- List the top five producing companies, or companies that make up >80% of global production;
- Use 80th percentile estimated STAR_T score of highest STAR_T scoring country across production countries;
- Identify extinction risk reduction targets in ecologically relevant landscapes in top producing countries;

- Identify relevant partners at the landscape level for the areas presenting the highest opportunity of nature-positive contribution;
- Implement conservation actions following IUCN RHINO Direct Impact Track Steps A3-A6 to deliver realised STAR_T contributions.

This track will require further testing and piloting with commodity consolidators, consumer product companies in sectors with significant reliance on commodities with heavy biodiversity footprints, retailers, and wholesalers to refine the IUCN RHINO approach.

6.2 Case study: Potential impacts of coffee bean production on biodiversity in Brazil

This study aims to enable buyers of coffee from Brazil to explore the geographical areas where that production was most likely to be linked to impacts on biodiversity. This knowledge could then be used to engage with suppliers to ensure that either a) the coffee purchased was not from an area linked with high impacts on biodiversity, or b) if the source of the coffee was in a high-impact area, that steps to reduce these impacts could be taken, in collaboration with the supplier and potentially with other purchasers from that supplier.

The steps involved were:

- identifying major coffee production municipalities in Brazil using land cover and supply chain data;

- linking commodity production to the IUCN threat classifications;
- calculating STAR for threats associated with coffee production.

The geographical analysis is based on the [GADM](#) dataset of municipality boundaries across Brazil. This was intersected with the MAPBIOMAS landcover product (Souza et al., 2020) showing where coffee is produced, and the [TRASE](#) dataset which identifies the coffee production volume. Table 5 shows that of the 853 municipalities in Minas Gerais, the province with the largest proportion of coffee production in Brazil, only 10 were associated with more than 0.5 STAR units of possible risk of species extinction.

Table 5 Top 10 coffee-producing municipalities in Minas Gerais province, Brazil, associated with potential biodiversity impacts

Municipality (GADM* Level 2)	Proportion of volume ^{a)} (Source: Trase)	Area of the municipality ^{b)} (ha)	Proportion of the area of the region identified as coffee land cover ^{c)}	Total STAR Threat Abatement Score (entire municipality)	Total STAR Threat Abatement Score (coffee land cover)
Manhuacu	1.7%	62 832	25.0%	13.838	3.599
Patrocinio	3.6%	287 434	13.6%	23.620	2.425
Varginha	1.0%	39 540	20.6%	6.417	1.502
Campos Gerais	1.8%	76 950	29.7%	2.367	0.685
Monte Carmelo	1.4%	134 304	11.1%	7.267	0.662
Boa Esperanca	1.7%	86 067	19.0%	2.868	0.598
Tres Pontas	1.7%	68 979	31.5%	1.885	0.561
Rio Paranaiba	1.1%	135 235	7.9%	5.755	0.543
Machado	1.8%	58 596	22.1%	2.326	0.485
Carmo de Paranaibo	1.1%	130 786	7.8%	5.258	0.477

a) Source: Trase (embed this link in Trase: <https://trase.earth/about>; b) Source: GADM (embed this link in GADM: <https://gadm.org/>; c) Source: Souza et al. (2020)

For many of the municipalities, the direct impact of coffee production (estimated by the component of the total STAR score attributable to threat “2.1 Annual & perennial non-timber crops” was a limited proportion of the total. However, much of the remaining STAR score for the municipality could also be related or attributable to coffee production, for instance through introduction of invasive species or hunting. This knowledge could give buyers of Brazilian coffee the opportunity to ask of their suppliers the following questions:

Are you producing or sourcing coffee from any of these municipalities?

If so, are you aware of any effort by producers to reduce likely impacts on biodiversity?

If not, would you be willing to engage with these producers to reduce this impact?

The buyers could then form a consortium with other buyers to work with suppliers to implement the approach described in the Direct Impact Track (section 5). The relative portion of investment from each consortium partner in reducing potential threats to biodiversity in the source municipality could be calculated from the proportion of the coffee produced in the municipality that they each purchase.

Contributed by: Frank Hawkins (IUCN) and Joe Taylor (The Biodiversity Consultancy)



A low-angle, upward-looking perspective of several modern skyscrapers with glass facades. The buildings are curved and reflect the bright blue sky and white clouds. The perspective creates a sense of height and architectural grandeur.

Investor Impact Track

7. Investor Impact Track

This track applies to financial institutions that generate impacts via their investments. Such companies will likely have difficulty measuring the exact magnitudes and locations of their impacts, and until more comprehensive data is available on biodiversity impacts of commodity production at small geographical scales, direct evaluation of the impacts of portfolios will be difficult. Many proposals for finance institutions rely on high-level, coarse assessments of sector risks to biodiversity (known as footprinting) and these do not in general help investors make clear judgements about what companies are contributing to biodiversity risk, nor do they permit the companies to identify actions to reduce these risks. TNFD has produced an [analysis](#) of this situation highlighting the limitations of footprinting, and advising companies on the level of analysis feasible with different approaches.

Given these limitations, we recommend that investors offer the opportunity for investee

companies to explore the IUCN RHINO approach, for the Direct Impact Track for companies with relevant land or sea use impacts, and the Value Chain Impact Track in other cases. This approach is described in more detail in Principles for Responsible Banking: Guidance for banks (UNEP-FI/UNEP-WCMC, 2025).

The response of individual companies to this opportunity can be used as a measure of the investee company's assessment of the materiality of biodiversity-related impact risk, and therefore can be used as a means to evaluate the viability of an investment in that company. Portfolio managers can track where investee companies across a portfolio are on the track to addressing the impacts and delivering verified IUCN RHINO contributions, and thereby generate an 'IUCN RHINO progress score' for the portfolio based on these disclosures.

7.1 Track for evaluating the progress of investee companies

Investment firms introduce disclosure and reporting requirements for the companies with direct and value chain impacts they invest in, to ensure they are implementing their own 'within value chain' actions.

The proposed approach to evaluate progress of investee companies is as follows:

1. Screen and score investees according to their progress along the IUCN RHINO track, and compile statistics on relative performance of investees and performance of portfolio overall.
2. Incentivise investees to adopt the

appropriate IUCN RHINO track through direct engagement, divestment or loan covenants.

3. Investee companies implement steps from the Direct Impact Track and Value Chain Impact Track above according to company type, and report on progress to investors.
4. Monitor performance of investees and portfolio using track scoring and realised outcomes.
5. Report on performance and disclose aligned with the TNFD recommendations

This track will require further refining and piloting with investment firms.



IUCN RHINO approach and government and civil society actions

8. IUCN RHINO approach and government and civil society actions

Contributions to the KMGBF will need to be an ‘all-of-society’ approach (see section 2), thus IUCN RHINO needs to be relevant to other components of society than just companies. The IUCN RHINO guidance presented here is therefore

relevant for national and sub-national government institutions and agencies that are making and implementing decisions affecting nature, and civil society organisations who can contribute significant value to outcomes.

8.1 Governments

National and sub-national government institutions and agencies have crucial roles to play in influencing IUCN RHINO outcomes, in particular by making and implementing policy decisions with direct impacts on nature, and corporate actions relating to biodiversity. They may act to deliver national policy outcomes with relevance to national or global policy frameworks. These institutions include:

- Those with a direct environmental focus, such as environmental ministries and regulators, or management authorities for natural resources and protected areas;
- Those whose decisions indirectly affect nature, in (among others) economic and development planning, agriculture, infrastructure, land-use planning, and local or provincial government.

There are, in addition, government agencies whose role is to help those institutions in formulating and delivering policy, for instance academic

institutions, policy agencies, working groups, and advisory bodies. Many of these government institutions, as well as the governments themselves, are Members of IUCN.

At the national scale, implementation of the KMGBF will be based on National Biodiversity Strategies and Action Plans (NBSAPs). Contributions by companies will be essential to delivery of KMGBF goals and targets, and this will require mainstreaming and proportional contributions across different sectors of society. This mainstreaming process is critical, since key challenges in delivering the CBD’s former Strategic Plan for Biodiversity for 2011–2020 related to insufficient progress on incorporating local and non-state perspectives and accounting for their contributions to NBSAPs, and shortcomings in integrating NBSAPs into broader economic and development processes (Forest Peoples Programme, 2022; Milner-Gulland et al., 2021; Whitehorn et al., 2019). The IUCN RHINO approach can support this mainstreaming

process by offering metrics for biodiversity losses and gains that can be disaggregated and attributed to different sectors' institutions for sub-national target setting at multiple scales, and later aggregated to track progress towards sectoral, national, and global targets, while staying within the KMGBF monitoring framework. The IUCN RHINO approach (for the moment, just the component related to STAR) aligns with the KMGBF monitoring framework in satisfying the indicator criteria:

1. Data and metadata related to the indicator are publicly available;
2. Methodology underpinning the indicator is either published in a peer reviewed academic journal or has gone through a scientific peer review process and validated for national use;
3. Data sources and indicators are compiled and regularly updated with a time lag of less than five years between updates, if possible;
4. Mechanism exists for maintaining the indicator methodology and/or data

generation, including providing nationally applicable guidance on the use of the indicator;

5. Indicators should be able to detect trends relevant to the components of the goals and targets of the KMGBF;
6. When possible, indicators are aligned with existing intergovernmental processes.

As yet, there is no globally agreed metric that fills all these criteria. However, STAR is identified as a complementary indicator for the number of companies reporting on risks and impacts on biodiversity (Target 15), and the Red List of Ecosystems is a Headline indicator for Goal A and Target 1. Bland et al. (2019) shows how the RLE is influential in the realms of conservation policy and practice, underlining how valuable a full RLE will be to the achievement of the KMGBF.

Table 6 describes how STAR can be used to structure responses to other Targets in the KMGBF.

Table 6 How STAR can be used to structure responses to other targets in the KMGBF

KMGBF 2030 Target	Summary of relevant elements	Potential use of STAR
Target 1	Ensure biodiversity-inclusive spatial planning to minimise loss of areas of high biodiversity importance.	STAR global maps can inform integrated spatial planning for land and sea, and guide zoning and development decisions, through highlighting areas with high potential to reduce species extinction risk via threat abatement and restoration.
Target 2	Ensure at least 30% of degraded terrestrial, inland water, coastal and marine ecosystems are under effective restoration	STAR _R maps, and on-ground calibration of STAR _R scores, can guide where and how to restore ecosystems, to maximise the benefits of restoration for extinction-risk reduction.

Target 3	Effectively conserve and manage at least 30% of terrestrial, inland water, coastal and marine areas, especially those of particular importance for biodiversity	STAR _T maps, and on-ground calibration of STAR _T scores, can inform identification and prioritisation of areas of particular importance for biodiversity, including Key Biodiversity Areas (KBAs), as the focus for improved management effectiveness or expansion of protected area and other effective area-based conservation measures (OECM) networks.
Target 4	Halt human-induced extinction of known threatened species and reduce extinction rate and risk tenfold by 2050	STAR Units total 2,204,100, distributed across the world. Target 4 is therefore equivalent to 90% of this figure or 1,983,000 STAR Units. These units can be disaggregated across countries, administrative units and company activities, footprints and landscapes. STAR can therefore directly quantify and aggregate the potential and achieved contributions of actions to reducing species extinction risk, providing a measurable metric for national progress towards this core KMGBF goal.
Targets 5, 6, 7, 8, and 10	Ensure that the use, harvesting and trade of wild species is sustainable, safe and legal Eliminate, minimise, reduce and or mitigate the impacts of invasive alien species on biodiversity Reduce pollution risks and the negative impact of pollution to levels that are not harmful to biodiversity Minimise the impact of climate change and ocean acidification on biodiversity, and increase biodiversity resilience Ensure that areas under agriculture, aquaculture, fisheries and forestry are managed sustainably	STAR quantifies the relative contribution of different threats to species extinction risk. STAR can be used to identify and prioritise species and locations where actions to address particular threats will have the most impact on reducing species extinction risk.

Target 14	Ensure the full integration of biodiversity and its multiple values into policies, regulations, planning and development processes, poverty eradication strategies, strategic environmental assessments, environmental impact assessments and, as appropriate, national accounting	As a standardised, quantified and scalable biodiversity metric, STAR has wide potential applications to inform policy and planning, including integrated spatial planning, sectoral policies, strategic assessment and biodiversity accounting.
Target 15	Encourage and enable businesses to monitor, assess, and transparently disclose biodiversity risks, dependencies and impacts	Private sector use of STAR helps to standardise and quantify biodiversity risk assessment and disclosure of both positive and negative impacts. Encouraging and enabling businesses to use STAR can make it easier for governments to track corporate commitments, actions, disclosure, reporting and outcomes and integrate them into national targets and reporting.

National contributions to global goals and targets under the KMGBF will be determined according to national circumstances, priorities, and capabilities through the updated NBSAPs. These will result in country-level targets, to which country governments will be accountable. However, country-level targets also need to be disaggregated at sub-national levels. Based on this, national governments may divide their biodiversity contributions into sector- and/or geography-specific targets, with sub-targets, e.g. for agriculture, energy, and others (Figure 8). Such sub-targets will cover both private and public sector contributions within those sectors; and national and sub-national governments will need to monitor and aggregate positive and negative contributions from each sector to confirm they are in line with sectoral and national targets. Importantly, national and sub-national goals and targets need to sit within an overarching united framework that includes both specific impact mitigation measures and the broader actions needed to achieve IUCN RHINO at the societal level, and enables contributions to be

aggregated across sectors and geographies to track overall process (Figure 8). The mitigation and conservation hierarchy offers a potential mainstreaming framework, which can be used to scale down overarching goals and targets into specific targets for different sectors, locations and actors; and also scale up mitigation and conservation contributions, if it is paired with suitable metrics (Milner-Gulland et al., 2021) (see Box A).

Relevance to other policy goals

STAR can be used in combination with existing policy and planning tools to quantify the potential contribution of action targets towards species conservation outcomes. The proposed post-2020 framework includes an action target for the protection of sites of particular importance to biodiversity. Key Biodiversity Areas www.keybiodiversityareas.org; identification is ongoing, correspond to such sites. Key Biodiversity Areas so far cover 8.8% of the terrestrial surface, but already capture 47% of the global STAR_T score

for the vertebrate groups analysed (Mair et al., 2021). STAR_T scores can also support target setting at national and sub-national scales to help meet international policy goals. The control and eradication of invasive species forms one of the CBD's proposed post-2020 action targets. New Zealand has already set a Predator Free 2050 goal that aims to eradicate three invasive mammal species by 2050. New Zealand contributes 0.8% to the global STAR_T score for the three vertebrate groups included in this study. Achieving the Predator Free 2050 goal would contribute 30% of the total STAR_T score for New Zealand, amounting to 0.2% of the global STAR_T score (Mair et al., 2021). At the global level, an equivalent

to 55.9% of the global STAR_T score for vertebrates could be achieved by restoring lost habitat within the current range. Ecosystem restoration objectives have been identified in many national biodiversity strategies for the CBD, as well as in many countries' commitments under the Bonn Challenge, and as part of Nationally Determined Contributions under the United Nations Framework Convention on Climate Change. The use of the STAR metric can support restoration initiatives alongside species conservation targets by quantifying the potential benefit to particular species of restoring habitat in specific places (Mair et al., 2021).

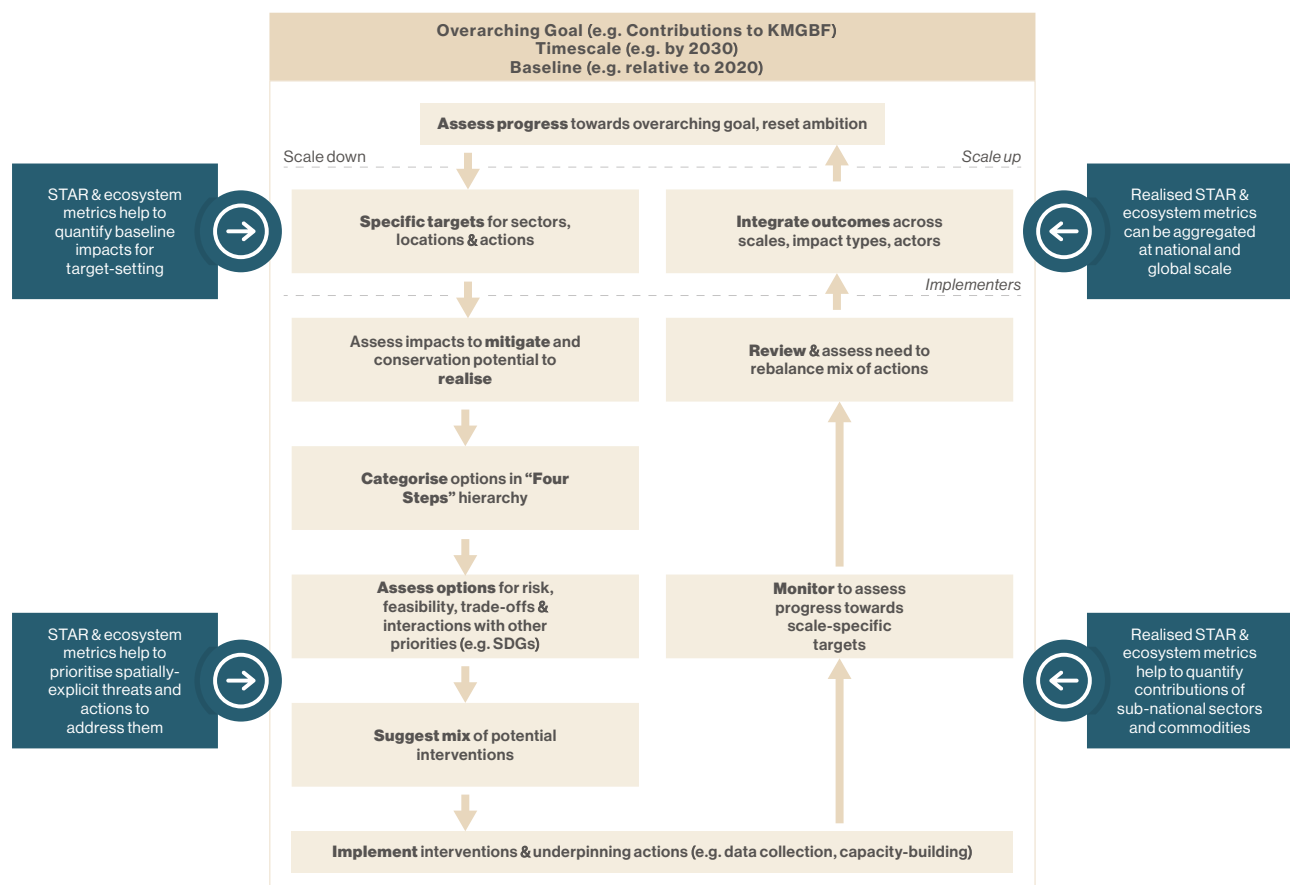


Figure 8 Application of the mitigation and conservation hierarchy within an adaptive management approach to biodiversity target setting, where an overarching goal is set with a timeline and a baseline, which is scaled down to specific targets for different sectors, locations and actors, and realised contributions are then scaled up to monitor progress. The 'Four Steps' Hierarchy refers to the four steps in the mitigation hierarchy: avoidance, minimisation, restoration, and compensation/offsetting. Specific opportunities for metrics from the IUCN RHINO approach highlighted with blue arrows

Source: Adapted from Milner-Gulland et al. (2021).

There is a significant additional opportunity for regional cooperation among governments to develop policies to support business action for biodiversity. The European Union has various mandates on farm practices and protection of biodiversity (e.g. [Natura 2000](#)) that have had major positive impacts, and these initiatives merit expansion into other regional government bodies.

The IUCN RHINO approach offers several opportunities, including standardised metrics for biodiversity losses and gains that can be disaggregated at different spatial scales and attributed to different institutions (Figure 8). This means that national targets can be scaled down to sub-national and sectoral levels, to support target setting, while standardised disclosure and reporting by companies and sectors can be scaled up, to help agencies track contributions within sectors and administrative regions (Figure 8). For instance, the total number of STAR units for mammals, birds amphibians and reptiles across the world is approximately 2.4 million.

Based on this information, governments can then monitor whether sectoral sub-targets are being met, and subsequently appropriately incentivise sectors to decrease emissions via institutional arrangements and policy instruments (e.g. regulations, incentives, taxes). Similarly, it would be possible for corporations to set institutional-level targets which are in line with sector sub-targets and proportional, for example, to their historic share of impacts relative to the sector overall.

Direct investments by governments towards the KMGBF, for instance through creation or improved management of protected areas, can also be measured using the IUCN RHINO approach. These contributions can then also be aggregated with company (and other actors'/ sectors') contributions in a meaningful way (e.g. under the mitigation and conservation hierarchy) through adoption of the same metrics. It may also be possible to track the impact of institutional

arrangements and policy instruments which facilitate company actions to deliver positive contributions.

Guidance for regulators

Regulators, sitting between governments and the private sector, can be influential in achieving KMGBF targets, by supporting the development of tools and standards to understand nature-related impacts, dependencies, risks, and opportunities, and identifying transition plans to help realise sectoral change. For example, the Finance for Biodiversity Foundation recently suggested [13 actions to governments to align global financial flows with KMGBF's targets](#). Action 1 calls for governments to mandate nature-related disclosure requirements for companies, with regulators tasked with outlining disclosure requirements and provide guidance to companies, for instance, how to integrate TNFD recommendations into the International Sustainability Standards Board.

In general, however, while the KMGBF includes a target for governments to *encourage* businesses and financial institutions to disclose their impacts and dependences on biodiversity, this is not likely to be sufficient to incentivise companies to do so. While transparent biodiversity disclosures could help shift business operations away from activities that harm biodiversity, the weak target wording implies voluntary and unstandardised disclosures, which tend to be low quality and ineffective. Disclosures led by businesses may therefore prioritise short-term business and investment interests while neglecting biodiversity outcomes. Mair et al. (2024) make recommendations about how regulatory backing can help companies disclose relevant risks and opportunities that are oriented towards the delivery of KMGBF outcomes. Hawkins et al. (2023) make some suggestions about how these disclosures can be based on metrics, such as STAR, that are aggregated from the bottom up rather than modelled from global data sets.

8.2 Civil society

Civil society has played a key role in advocating for the KMGBF and its implementation across the world. IUCN Members have been present at key moments in the development of the KMGBF, and their advocacy power influences the position of governments and companies. In addition, NGOs play key roles in conservation research and practice, and in both holding the private sector and governments accountable for biodiversity impacts and working with the private sector and governments through constructive partnerships to improve outcomes for biodiversity.

In addition to the components of IUCN RHINO that relate to governments, outlined above, there are three additional ways that civil society can support the delivery of outcomes:

1. Ensuring that company activities and their impacts are identified and tracked, and that companies are held accountable for their actions (or lack of them);
2. Working with companies to provide technical advice and support to the STAR calibration (and subsequent calibration of an ecosystem metric) and formulation and delivery of IUCN RHINO outcomes by the company;
3. Ensuring that government policy and action is oriented towards delivery of IUCN RHINO outcomes, and their subsequent inclusion in national NBSAP reports

The first step in supporting the delivery of IUCN RHINO outcomes is to create awareness of the framework, advocate for its adoption, and build technical capacity for implementation across corporate partners, industry forums, consultancies, government regulators, and agencies. Once this awareness is built, civil society can help companies uphold the principles and tracks of the IUCN RHINO approach by engaging with them in

places where impacts are likely to occur. Direct engagement of companies by IUCN Members can be facilitated through the national or regional IUCN offices, or through other major conservation NGOs where IUCN has a lower presence. The important characteristic of IUCN RHINO is that it provides companies with a rapid and relatively simple way to deliver disclosure and reporting requirements, and ensure that their contributions are compatible with KMGBF outcomes. Companies may not be aware of this opportunity, so ensuring that they are informed of the resources on the IUCN RHINO web resource will increase their ability to deliver outcomes.

It will be important to ensure that corporate commitments to IUCN RHINO are aligned with existing NGO activities. NGO contributions to the KMGBF are already being tracked using the STAR metric through the [IUCN Contributions for Nature](#) platform, and these could also be used to show NGO and civil society contributions to sub-national, national, and global goals as outlined above.

As indicated in the section on STAR calibration (section 4.6.1) it will be extremely important for IUCN Members and Commission Members to contribute to STAR calibration processes. In general, the simplest way for this to happen is through the relevant IUCN Commission, which provides a simple track for companies to identify the necessary expertise, for instance to help with identification of difficult species or make recommendations for management. Use of the IUCN RHINO web resource provides a simple way for companies and civil society members to connect for this purpose.

Following support to companies in the calibration of STAR, longer term relationships to implement threat abatement interventions will also be essential – helping companies to understand and

navigate social and governance issues, broker engagement with local and national governments and agencies, support use of evidence-based methods, and delivering effective monitoring and adaptive management interventions.

Governments may equally be unaware of the IUCN RHINO resources that can help companies deliver outcomes consistent with KMGBF goals and targets. Ensuring that relevant technical agencies and ministries within government are aware of how IUCN RHINO outcomes can be

delivered, and that national policy frameworks are aligned with corporate contributions, will simplify the task of government in delivering on their KMGBF policy outcomes.

Transparent disclosure and reporting by different companies and governments also allows civil society and the public to hold institutions accountable for their impacts, and make more informed decisions regarding responsible consumer choices and ensuring that leaders are delivering on commitments.

8.3 Case study: Sub-national priority setting in India

Achieving the KMGBF targets and goals requires a concerted effort across society, including the active involvement of sub-national authorities and local governments. For India, a large, megadiverse country, an estimated global STAR was used to map the potential for species extinction risk reduction across all 36 states and 666 districts, and across different types of threat. The full paper is available at [Chaudhary et al. \(2022\)](#).

India's total national STAR_T score of 41,817 represents 3.4% of the total global estimated STAR_T score (for mammals, birds, and amphibians). Notably, 20% of India's states contribute 80% to the national STAR score. These are the southern states of Kerala (20%), Tamil Nadu (18%), and Karnataka (13%); the north-eastern states of Arunachal Pradesh (6%) and Assam (5%); the western state of Maharashtra (5%); and the Andaman and Nicobar Islands in the Indian Ocean (12%). These results are shown in Figure 9. Similarly, the top 10% of districts contribute 83% to the national STAR score. These patterns are related to concentrations of threatened and/or restricted-range species rather than just the size of states or districts.

Some states, such as West Bengal, have high species richness but relatively low STAR_T scores. Such states still have important biodiversity responsibilities, and can prioritise conservation investments to prevent habitat loss and degradation and ensure that species currently assessed as Least Concern do not become threatened.

Three key threats, from annual and perennial non-timber crop production, biological resource use, and residential and commercial development contribute nearly 80% of the total STAR score, and are the overall priorities to address nationally.

For STAR_R, geographic patterns for high-scoring states are partly complementary to those for STAR_T. The states with highest STAR_R scores include several that are relatively low-scoring for STAR_T, including Madhya Pradesh, Uttar Pradesh, and Andhra Pradesh, which indicates the potential of targeted habitat restoration in these states for reducing extinction risk. It also illustrates how considering both threat abatement and restoration provides a more complete picture of conservation opportunities. At the national level, not only the area of habitat being restored matters but also where exactly it is carried out.

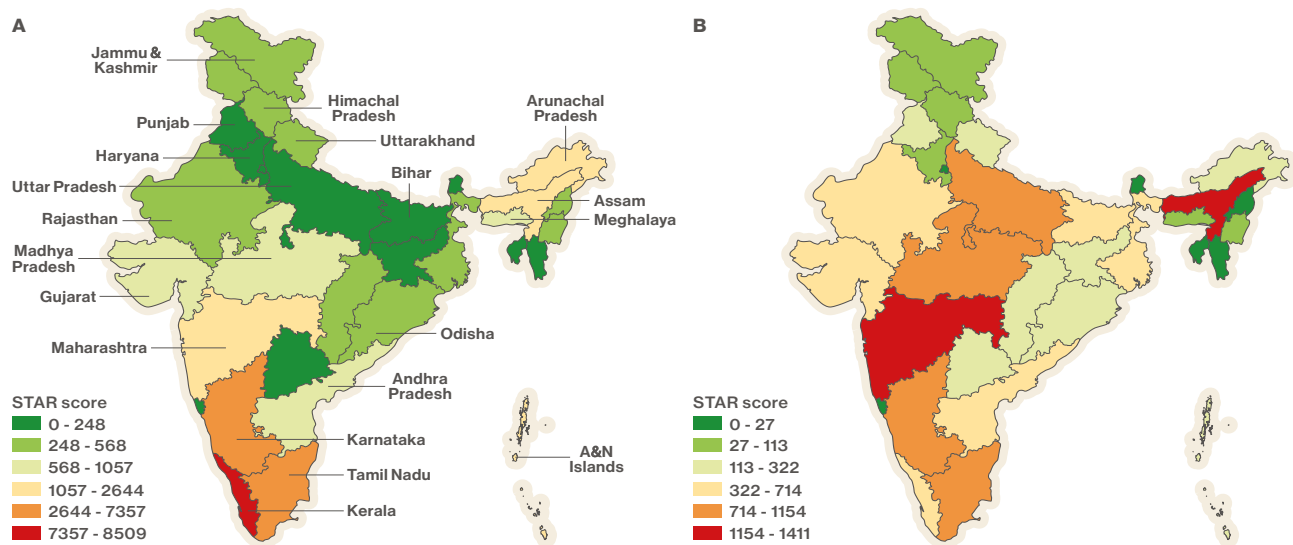


Figure 9 Total estimated global STAR metric scores for threat abatement (A) and restoration (B) for India's 36 states

Source: Adapted from Chaudhary et al. (2022).

Of the 25 individual threatened species that contribute the most to STAR scores, around 10 are endemic to a single district, highlighting the need for focused conservation attention in the respective state/district to prevent their global extinction.

The results of this study provide Indian policymakers at national, state and district levels

with crucial information for devising effective biodiversity conservation policies. Within each district and state, detailed STAR maps, together with mapping of existing conserved areas, can further guide spatially targeted conservation interventions.

Source: Chaudhary et al. (2022)

8.4 Case study: San José Northern Subcatchments landscape STAR calibration, Costa Rica

Context

The International Union for Conservation of Nature (IUCN), in collaboration with the Sistema Nacional de Áreas de Conservación (SINAC), in Costa Rica, led a process to calibrate global STAR estimates for the San José Northern Subcatchments (SJNS) landscape, an area of 957 km² located within the central mountain range of

Costa Rica that includes the northern region of the country's capital, San Jose. This is a key water catchment area where a water fund, Agua Tica, is co-ordinating Nature-based Solutions for water protection across public and private actors. The STAR metric was used to identify the potential contributions towards KMGBF Goal A from specific actions across the SJNS landscape.

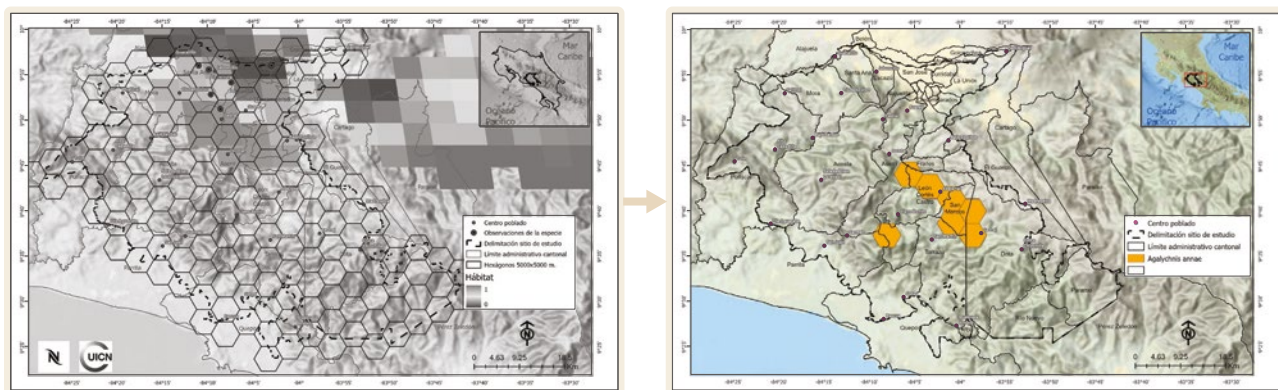


Figure 10 The increased precision of the potential for reducing species threat extinction risk generated by the STAR calibration process in the San José Northern Sub catchments landscape of Costa Rica. The Area of Habitat (AOH) of a threatened frog species (*Agalychnis annae*) in the IUCN Red List of Species is the grey area in the map on the left. The new calibrated AOH is the orange area on the map on the right.

Process

Specialist consultation was used to validate the presence of species and the presence and intensity of threats. A first round of consultation involved 15 volunteer specialists selected based on their taxonomic expertise and relevant research experience in the landscape, and working separately to each other. A second and third consultation round involved a small number of paid national specialists, to fill gaps in data for certain species and then to combine the consultation results with additional information from the literature and compile a consensus view. Figure 10 shows the change in results generated by this consultation process. In parallel, to separate certain threat types more clearly, a land-use change analysis was undertaken to estimate natural habitat loss over the landscape in the period 1998–2019 related to different drivers.

The calibration process was carried out over an eight-month period and involved around 100 working days for project staff to complete and coordinate data collection, analysis, and calibration, in addition to specialist inputs.

Results

The key results of the consultation process are:

- Eight of the 43 threatened or near-threatened species included in estimated $STAR_T$ were considered unlikely to be present, either because of local extirpation or because they did not in fact occur in this part of their mapped AoH;
- Relatively low intensity (compared to global averages for estimated $STAR_T$ species) for threats from invasive alien species, in particular related to chytrid fungal disease affecting amphibians;
- Identification and intensity scoring of one or more new threats (for example, agricultural and forestry effluents) for nearly all of the estimated $STAR_T$ species thought to be present;
- Identification of nine additional threatened species thought likely to be present but not originally included in estimated $STAR_T$.

Calibration adjusted the total $STAR_T$ score for the SJNS landscape from 898 STAR units to 768 STAR units. This calibrated score does not include the additional threatened species identified, as

the method to incorporate these had not yet been developed when this study was carried out.

As well as calibrating potential contributions to extinction risk reduction from addressing ongoing threats, the study also highlighted the need for proactive management to reduce potential future threats to amphibians from chytrid fungi.

Lessons

Other lessons from this exercise for future estimated STAR calibration include:

- For efficiency, information gathering efforts can be prioritised for the species and associated threats that make the greatest potential contribution to the area's estimated STAR_T score;
- Use of multiple information sources, from expert input, geo-spatial analysis, and literature and database review, generated valuable complementary information for calibration;
- Future calibration exercises could also consider spatial variation within the landscape in the presence of species, and the presence and intensity of threats;
- Using structured expert elicitation techniques could have provided clearer indications of confidence in the calibration findings. Documentation of data sources and uncertainty, and incorporation of publicly available species occurrence records, are also important.

Contributed by: Tony Nello, IUCN.

8.5 Case study: Using STAR to maximise benefits and minimise costs of conservation investment in Colombia

A study by [Guerrero-Pineda et al. \(2022\)](#) applied STAR alongside other datasets to investigate trade-offs between conservation and economic development in Colombia. This study mapped the opportunity cost of conserving forest rather than using the land for agriculture. The results were combined with STAR_T maps to produce a prioritisation map that guides policymakers to target conservation actions toward regions where conservation benefits are high and economic impacts are low.

The approach demonstrates how to use the STAR metric as a benefit layer in a return-on-investment analysis, together with a proxy to inform biodiversity conservation spending, while ensuring the economic benefits of agriculture.

The authors developed a predictive spatial model for the risk of forest conversion and the probability

of different types of agricultural activities following conversion. To assess the opportunity cost of conservation, this model was combined with the expected annual returns of each agricultural activity. Opportunity costs varied widely across different regions of the country, but relatively small proportions of currently forested areas (14% and <1%) were assessed as having 'medium' or 'high' opportunity costs, respectively.

Next, the agriculture-related threats component of estimated STAR_T was used to map expected benefits of conservation investment. Of areas of the country that were forested in 2017, 31% had medium STAR scores and 6% high STAR scores, showing a concentration of potential conservation benefits in relatively small regions.

Using a simple classification of STAR and Opportunity Cost of Capital (OCC) scores, regions

could be identified with high potential benefits for conservation and low opportunity costs, and vice versa (see Figure 11).

These findings are directly relevant for policy decisions, as they guide approaches to maximise the biodiversity benefits from investments using limited conservation funding while ensuring

that landowners maintain returns equivalent to agricultural development. The approach can be adapted and applied in other contexts to optimise trade-offs between conservation and development objectives.

Source: Guerrero-Pineda et al. (2022)

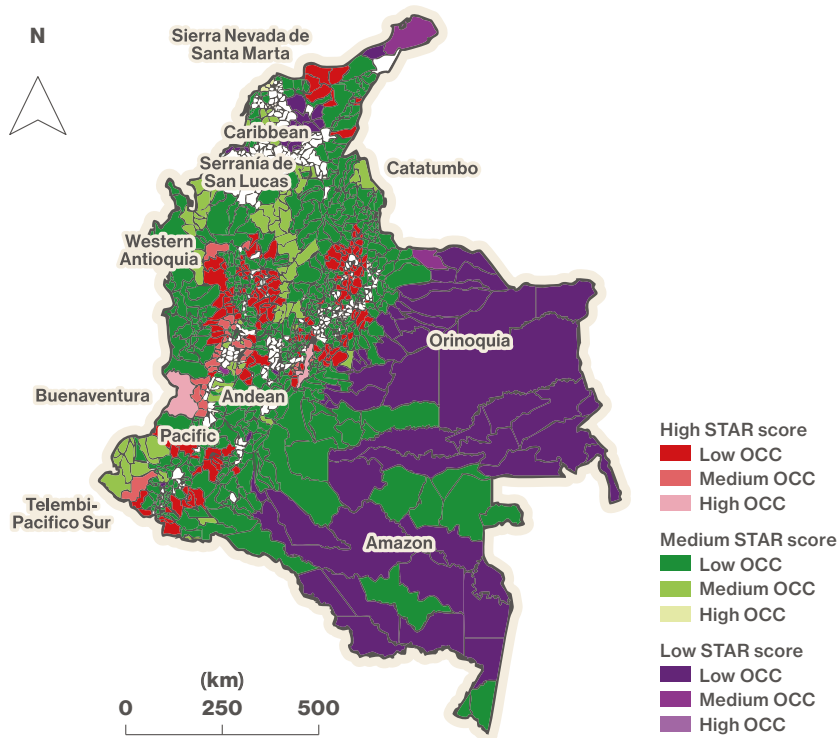


Figure 11 Map of results from the forest conversion and opportunity cost for conservation model to target conservation funding across Colombia. Maps of forest conversion risks in Colombia: (a), OCC at 10% discount rate; (b) and classification of municipalities by STAR scores; and (c) OCC.

Source: Adapted from Guerrero-Pineda et al. (2022).



**Concepts
and principles
underpinning the
IUCN RHINO approach**

9. Concepts and principles underpinning the IUCN RHINO approach

The IUCN RHINO approach is anchored in a set of concepts and framings that ensure contributions generated using the approach are as robust and constructive (of social fabric as well as in terms of impacts on nature) as possible. These framings are not necessary to work through the tracks but provide the basis for a more complete understanding of the approach. The concepts consist of the following:

- Key building blocks: the characteristics of the components of the approach, including the metrics, assessment frameworks, the guiderails and safeguards, guidance, and disclosure;
- The components of integrity, at local and system scales;
- Concerted effort across society with allocated impacts and responsibilities;
- Ensuring social equity and well-being while providing safeguards.

9.1 Key building blocks and development status

An overview of the key building blocks for the IUCN RHINO approach is outlined in Table 7, together with an indication of current status and IUCN's components. A priority is to enable

companies to set initial, short-term targets and begin making contributions to a Nature Positive future as soon as possible.

Table 7 Key building blocks for the IUCN RHINO approach for companies

Building block	Importance and key requirements	IUCN components	Status
Suitable metrics and data	• Reliable, science-based metrics and data that are feasible for companies to use and which provide an effective connection between societal goals and companies' positive and negative impacts are critical for designing effective action. • The underlying data must be open to independent scrutiny, but to provide confidence to companies, data provision must be based on a sustainable business model. The need for a sustainable business model must be balanced with accessibility and low barriers to enable the use of metrics and data and scale up rapidly enough to resolve the biodiversity crisis.	• IUCN has developed the STAR metric for species extinction risk based on the IUCN Red List. • IUCN will develop a complementary ecosystem metric. In the meantime, this document provides an initial conceptual framework for a complementary ecosystem metric.	• A web-based resource to support the IUCN RHINO approach (focusing on the STAR component used at site level) is available and will be integrated into IBAT. • Freshwater and marine STAR versions will be available later in 2025/2026. • This paper provides a conceptual foundation for an ecosystem approach.

Building block	Importance and key requirements	IUCN components	Status
Assessment framework and tools	• Clear guidance and tools are needed to enable effective use of data and metrics. • Companies need a clear framework for conducting assessments. As far as possible this should build on assessments companies are already doing, for example for setting climate targets, to avoid duplication of effort and reduce barriers to entry. • The framework needs to be compatible with the types of information companies have available about their value chains and allow iterative improvement for priority areas as more data becomes available.	• This document sets out how an assessment framework can work for species extinction risk using STAR, and the initial conditions for an ecosystems approach. It requires testing and refinement, which is occurring through piloting with partner companies. IUCN has developed functionality, including an interactive website, which will help users navigate the steps on a track for direct impacts. • The framework is closely aligned with the TNFD LEAP approach. Piloting of the IUCN RHINO approach is being conducted in collaboration with the Nature Positive Initiative. IUCN will continue to engage with other initiatives in this space to ensure alignment and complementarity of approaches. Ongoing research programmes in academia can also inform this component.	• The draft assessment framework using STAR is ready for piloting. • The ecosystem element will be ready for piloting once the interim metric is developed. At the point at which the Red List of Ecosystems is ready, the IUCN RHINO approach will consider how to apply it to the Assessment Framework. • IUCN is actively engaged with other relevant processes, including as Knowledge Partners with TNFD and as members of the Nature Positive Initiative Core Stewardship Group.

Building block	Importance and key requirements	IUCN components	Status
High integrity principles and guardrails	• Implementation of companies' contributions to IUCN RHINO needs to ensure both: local-scale integrity – does an action actually reduce impacts or deliver biodiversity gains, in an appropriate, socially equitable way, and system-scale integrity – individual actions must contribute to societal goals and positive actions should not replace avoiding and reducing impacts in the first place. • Companies need actionable principles and steps to follow to ensure this. • A key theme will be to set out principles on when and how much companies could engage in company- or sector-scale transformation versus positive contributions.	• IUCN has drawn on existing standards such as the Nature- based Solutions Standard, and forthcoming certification method, the IUCN Green List of Protected and Conserved Areas and the IUCN Environmental and Social Management System to inform key principles for local-scale integrity. • The expertise of its Commissions and Specialist Groups, for example the Commission on Ecosystem Management Impact Mitigation and Ecological Compensation Thematic Group, the Species Survival Commission Conservation Planning Specialist Group, and the World Commission on Protected Areas Connectivity Conservation Specialist Group, has been used to ensure system-scale integrity.	• This document provides an outline of some of the key required safeguards some key principles and an outline of how existing IUCN standards can be used to ensure high integrity outcomes. • This is the component that needs continuous work and engagement with key internal and external stakeholders and processes.

Building block	Importance and key requirements	IUCN components	Status
Target-setting methods and guidance	• Companies need to know which impacts must be avoided entirely, how much residual impacts must be reduced, and what level of positive contribution is equitable. The overall outcome must clearly meet the high integrity principles described above. • The method and process must take account of local conditions and contexts, as well as overall societal goals, allowing for bottom-up as well as top-down input. • As the window of opportunity to resolve the nature crisis is short, it is imperative to enable companies to set short-term targets to begin making contributions to a Nature Positive future as soon as possible. Companies need to be aware and ready for an iterative approach to target setting.	• IUCN recognises that setting targets will need to be iterative and will evolve as societal goals are agreed. • The proposed approach is based on reducing threats and promoting restoration, informed by an analysis of biodiversity state. • As well as addressing impacts, the IUCN RHINO approach must also catalyse transformational change. IUCN will continue to work with its Members and partners, including forward-looking companies, on this issue, which is outside the scope of the current source document.	• This document provides an outline of a target-setting approach using STAR. • Subsequent phases of work, in collaboration with academia and other stakeholders, will test and validate the IUCN RHINO approach. • IUCN continues to engage with partners to ensure alignment and complementarity of approaches.

Building block	Importance and key requirements	IUCN components	Status
Implementation guidance and frameworks	• Once companies have targets there is a need for clear and actionable guidance on implementation. • Guidance needs to cover the full scope of Nature Positive contributions: i) impact avoidance and reduction; ii) restoration, regeneration and offsets; iii) positive contributions; and iv) transformative actions. • This needs to build from the principles of adaptive management, and include guidance on appropriate levels of monitoring.	• The IUCN RHINO approach is integrated with the Mitigation Hierarchy, the TNFD LEAP approach and the Nature Positive Initiative recommendations to ensure that companies following the IUCN RHINO tracks are delivering maximum value from their efforts. The components of the IUCN RHINO approach will ultimately include tracks for value chain and finance impacts, as well as in freshwater and marine realms.	• For positive contributions, IUCN has a wealth of guidance and standards around the successful design of conservation interventions and appropriate safeguards. IUCN is developing systematic support mechanisms for companies across the different ways that companies interact with nature, including in the marine and freshwater realms. IUCN will build from these to develop comprehensive guidance for companies.
Commitment, disclosure and verification	• To be credible, company contributions need to be documented and transparent. • A verification process will be required to ensure commitments are credible and actually delivered. This will need to balance rigour with practicality.	• IUCN will engage with its Members and external stakeholders to develop and support appropriate verification and reporting protocols and processes. The web-based IUCN RHINO resource and IBAT compliance and reporting tools will provide companies with appropriate tools.	• IUCN recognises that initiatives like the Nature Positive Initiative and TNFD are developing and identifying processes that will allow companies to commit and disclose to global reporting frameworks. IBAT and the IUCN RHINO web-based resource provide some of this reporting and compliance output.

9.2 The high-integrity aspects of the IUCN RHINO approach

The stated aspiration of the IUCN RHINO approach is that the contributions that result are high-integrity. By this we mean that they create real, additional and verifiable positive outcomes for nature, whilst enabling social justice.

Integrity can be defined at local scale and system scales (TBC, 2022):

- *Local integrity* (or supply-side integrity) is the extent to which a given business action, at a specific location, avoids or reduces negative impacts, or achieves positive impacts, on local biodiversity values in a socially equitable way.
- *System-scale integrity* (or demand-side integrity) means that the combined overall effect of individual actions by a company or companies within a sector contributes tangibly and proportionately to societal goals (promoting synergies for nature, climate and people); and actions are aligned with the mitigation hierarchy and corporate good practice principles for managing biodiversity impacts.

This section sets out key considerations for IUCN RHINO as an approach to deliver Rapid High- Integrity Nature-positive Outcomes and identifies some options for operationalising them.

9.2.1 Local-scale integrity

For the IUCN RHINO approach to deliver effectively for nature, it needs to provide integrity at both local and global scales. Local-scale integrity ensures that biodiversity gains are demonstrably delivered and maintained, locally appropriate, and socially equitable.

Previous approaches to business and biodiversity have developed a series of key principles for ensuring local-scale integrity of actions for biodiversity, which are codified in the IUCN Policy on Offsets (IUCN, 2016) and the Business and Biodiversity Offsets Programme (BBOP) principles (BBOP, 2012b). Although the approach described here is much broader, these core principles remain relevant and could be adapted to the approach as set out in Table 8.

Table 8 Opportunities for adapting existing offsets principles to an IUCN RHINO context

Key existing principles of net gain approaches ⁸	Description of existing principle	Relevance to the IUCN RHINO approach proposed here and potential adaptations
Adherence to the mitigation hierarchy	All appropriate avoidance, minimisation, and on-site restoration measures will be implemented or explored and reasonably ruled out.	The mitigation hierarchy remains a fundamentally important basis for an approach, at both local and system scales. However, there are some differences from previous site-based approaches: 1) The need to stop and reverse nature loss, that is a far more ambitious target than just local no-net-loss, places greater emphasis on avoiding and reducing impacts in the first place than the existing IUCN offsets policy. In alignment with the Nature Positive goal (Locke et al., 2021), climate science (Cook-Patton et al., 2021; Dooley et al., 2022; Matthews et al., 2022), and stakeholder expectations (AFI, 2019; SBTN, n.d.), the objective should be zero conversion of natural habitats by companies where feasible. This raises equity concerns, for example for countries which have historically protected natural habitats (Maron et al., 2020), so guiding principles need to be developed around where and when conversion may be appropriate. 2) The principle needs to be expanded to include the extended mitigation hierarchy, including regeneration, transformation, and positive contributions for nature. For example, there is a need for guiding principles and objective criteria for when companies should avoid impacts by changing supplier or sourcing location (which risks leakage and splitting the market) and when they could instead engage with suppliers to reduce impacts. The principle could be extended to incorporate thinking on 'least-cost' implementation of the mitigation hierarchy by applying principles from marginal abatement cost curves for emissions reduction to nature conservation and restoration (Squires & Garcia, 2018), in which mitigation hierarchy steps are deployed not as a hierarchy but through the identification of the most cost-effective management strategies (Booth et al., 2020; Milner-Gulland et al., 2021).

⁸ Adapted from BBOP (2012a) & IUCN (2016).

Limits to what can be offset	There are situations where residual impacts cannot be fully compensated for by a biodiversity offset because of the irreplaceability or vulnerability of the biodiversity affected.	This is as applicable for the approach proposed here as for traditional net gain approaches, despite the limited role for offsets in this approach. A focus on zero conversion of natural habitats greatly limits the scope of this principle in this approach.
Equivalence	Biodiversity gains from offsets must be 'like for like or better'.	Where offsets are used to compensate for unavoidable residual new impacts, then the principle of equivalence needs to apply, as otherwise there is a risk of 'hidden trades' and unintended consequences for biodiversity (Pilgrim & Ekstrom, 2014; zu Ermgassen et al., 2020a). However, for broader positive contributions to nature recovery, and where value chain data are less precise (so it is impossible to identify the precise type of biodiversity impacted), a less strict definition of equivalence is likely to be more practical and appropriate. Nevertheless, a minimum level of equivalence (e.g. in same ecosystem functional group in the same ecoregion, otherwise known as a 'biogeographic ecotype') is appropriate and guidance will need to be developed.
Net gain	A biodiversity offset should be designed and implemented to achieve in situ, with measurable conservation outcomes that can reasonably be expected to result in a Net Gain of biodiversity.	The IUCN RHINO approach has alignment with societal goals as a core element, whereas this principle focuses on local net gain. It needs updating to focus on outcomes aligned with jurisdictional or societal targets (Simmonds et al., 2020).

Additionality	Conservation gains will be clearly attributable to the project's actions and will be demonstrably above and beyond results that would have occurred if the offset had not taken place.	This principle remains relevant but could be extended to apply to all positive impacts, not just offsets. Furthermore, the existing language implicitly allows for biodiversity gains relative to a counterfactual (which may be declining), which is not compatible with an approach seeking absolute gains from a fixed baseline. This principle therefore needs updating to take account of that key design element, and also of recent experience evaluating counterfactual scenarios (Maseyk et al., 2020), as well as the growing body of work on robust evaluations of conservation project effectiveness (e.g. Devenish et al., 2022).
Landscape context	Offsets will be designed, accounting for connectivity across the landscape, avoiding fragmentation, and maintaining flows of ecosystem services.	This principle can be generalised for any positive contribution, and not just for offsets. This criterion is implicit in the IUCN Global Standard for Nature-based Solutions Criterion 2 but could be made more explicit.
Precautionary approach	Estimates of gains and losses will be conservative and include a margin of safety proportional to the risks involved in offset delivery.	This principle is even more important in a IUCN RHINO context, given the coarse resolution of much value chain data. It can be generalised to cover all assessments and be informed by risks to achievement of societal goals. Concepts in the IUCN technical considerations for offsets (Pilgrim & Ekstrom, 2014) concerning multipliers and risk management can be adapted, as can approaches from carbon credits such as buffer pools and leakage multipliers.
Long-term outcomes	Biodiversity offsets will use an adaptive management approach, incorporating monitoring and evaluation, to secure outcomes that last at least as long as project impacts.	A key principle for IUCN RHINO contexts.

Equity	The sharing among stakeholders of the rights and responsibilities, risks, and rewards associated with a development project are offset in a fair and balanced way, respecting legal and customary arrangements. Special consideration must be given to respecting both internationally and nationally recognised rights of Indigenous peoples and Local communities.	A critically important issue (see section on high-integrity approaches)
Stakeholder participation	Offsets will be based upon appropriate, extensive, and transparent stakeholder consultation.	A critically important issue, which needs broadening to cover aspects other than offsets, in a scalable way.
Transparency	The design, implementation, and monitored outcomes of biodiversity offsets will be transparent and communicated in the public domain.	This is a fundamental part of mainstreaming, a core component of the IUCN RHINO approach, which needs expanding to cover the whole process, and not just offsets.
Science and traditional knowledge	Both kinds of information will be used, where appropriate, to underpin an offset.	This issue is as applicable for the IUCN RHINO approach as for offsets. Incorporation of the key insights from recent years into revised equity principles should include: the importance of respecting local knowledge systems; alternative cultural ways of relating to nature (e.g. biocultural perspectives); and traditional governance approaches.

A key consideration when deriving principles will be to ensure that the process remains sufficiently scalable to allow implementation at the scale and

speed that is required to effectively address the nature crisis, while addressing critical issues such as social equity effectively.

9.2.2 System-scale integrity

System-scale integrity means that IUCN RHINO contributions are undertaken as part of a corporate management system that promotes global nature recovery. System-scale integrity has two parts: i) a high integrity corporate management system that strictly adheres to the mitigation hierarchy and good practice guidelines for managing companies' impacts on nature; ii) a high integrity global governance system that ensures corporate activity contributes to global societal goals for nature, climate and people, and embeds the global economy within a recovering environmental system.

A high integrity corporate performance management system requires recognising and accounting for a company's impacts on nature across the company's value chain and addressing impacts through rigorous adherence to the mitigation hierarchy. Addressing these indirect corporate impacts on nature requires proactive collaboration with other companies to transform value chains towards IUCN RHINO trajectories. High integrity corporate performance management systems therefore need to readily interface with other companies, taking a whole value chain approach. They also need to ensure that all key elements of nature and climate are considered in an integrated way – to promote synergies and minimise trade-offs – and are fully embedded within all forms of organisational decision making.

A high integrity global system means increasing corporate accountability for global nature recovery by building connections between corporate activity and global-scale outcomes. This includes

setting corporate targets that are aligned with the scale of ambition required by global societal goals. A high integrity global governance system for IUCN RHINO contributions sets transparent scientific criteria an accounting practices, and requirements for third-party verification and limits of IUCN RHINO claims, in relation to corporate activity to avoid greenwashing and ensure tangible contributions to global nature recovery. This includes guidance on governing criteria when company action can take direct restoration steps, versus sector wide transformation steps (e.g. where there is a high risk of impact shifting – or leakage – then a focus on sectoral transformation may be more appropriate than moving immediately to positive contributions). It should also set clear rules and guidelines on linkages between IUCN RHINO targets and, for example, emissions reduction targets under the Paris Agreement, to promote synergies (e.g. via NbS) while minimising trade-offs and guarding against risks such as double counting. These guiding principles will have to be developed for future versions of this document.

Rules on use need to include transparent disclosure of corporate IUCN RHINO contributions and registration of linked actions that underpin these claims on publicly available platforms. Verification of IUCN RHINO contributions should be made by an independent third party, supported by clear rules on retirement of IUCN RHINO contributions that are aligned with corporate reporting timeframes, to avoid double counting of contributions.

The Nature Positive Initiative are currently assessing need and building consensus on claims guidance.

9.3 Allocating impacts and responsibilities

Achieving global goals for nature requires a concerted effort across society. Contributions may be delivered at a site (or landscape) scale by a range of different actors. In many cases, the most important contribution to IUCN RHINO is that for which a company is responsible, or for which it can take responsibility through participation in a value chain or investment. However, of course this contribution will be made doubly valuable when it is complemented and augmented by contributions of other companies in the same landscape or sector.

It will be particularly important, therefore, for companies to identify other companies, government agencies or civil society actors who are potential partners in the landscape. If the company can build working relationships with these other actors and by doing so, induce wider positive impacts on nature in the landscape, then that action could also be considered a Nature Positive action. In the case where a combination of actors generated a collaborative impact, some practical rules about how benefits can be attributed among them are necessary. Guidance on attribution is available [here](#).

9.4 Social equity and safeguards

To align with emerging definitions and global goals, IUCN RHINO contributions should facilitate social justice and equity at both local and global levels, to help the world stay within safe and just planetary boundaries (Rockström et al., 2023) according to the principles of interspecies justice and Earth System Stability (that is averting species extinction and ecosystem collapse), intergenerational equity (ensuring future generations can benefit from biodiversity), and intragenerational equity (ensuring people around the world alive today have fair access to resources and the benefits of biodiversity). IUCN RHINO contributions should operationalise this by ensuring that it: i) respects and protects human rights (recognition justice); ii) provides a fair process and governance structure for delivering those outcomes (that is process/procedural justice); and iii) delivers socially equitable outcomes (consequential and distributive justice).

A human rights-based approach to conservation (Boyd & Keene, 2021) recognises that there are universal, inalienable, unconditional and non-discriminatory rights to life, liberty and security

that are held by all human beings (Newing & Perram, 2019). This means that companies and institutions hold legal and moral obligations to ensure that IUCN RHINO contributions avoid exclusionary approaches; are founded on free, prior and informed consent (FPIC); and ensure full respect for the rights and wishes of IPLCs.

Beyond the moral imperatives of taking human rights-based approaches, undertaking socially equitable and collaborative approaches supports the achievement of biodiversity outcomes (Hajjar et al., 2021; Oldekop et al., 2016). A systematic review comparing different forms of governance (Dawson et al. 2021) found that when Indigenous peoples and Local communities have a substantive role in decision-making, these projects are more likely to deliver both effective conservation outcomes and improved well-being outcomes compared to externally controlled projects. In contrast, when interventions are governed by external organisations and involve strategies to change local practices and override customary institutions, they tend to result in relatively ineffective conservation and produce negative

social outcomes. Therefore, the IUCN RHINO approach can promote positive outcomes for people and nature by ensuring the central importance of IPLCs is recognised and that socially equitable processes are followed.

Existing guidelines and frameworks can be applied for promoting positive well-being outcomes alongside biodiversity outcomes, such as NNL for people and biodiversity (Bull et al., 2018) and Net Gain: Seeking Better Outcomes for Local People when Mitigating Biodiversity Loss from Development (Jones et al., 2019). These include considering social impacts in terms of locally defined measures of human well-being, thereby ensuring that social impacts consider both economic or non-economic aspects of peoples' lives, and that any unintended negative impacts are accounted for and addressed (Loveridge et al., 2020; Woodhouse et al., 2015). In doing so, it is important to define the spatial scale for considering social impacts as the area encompassing all people directly or indirectly affected by project activities, commonly referred to as the project's 'area of influence' (Bull et al., 2018).

Specific resources to support the integration of Indigenous peoples into IUCN RHINO outcomes include the resources available through the [PODONG](#) network, the [Reimagining Conservation](#) forums, promoting Indigenous leadership. The [GEF CSO Challenge Programme](#) provides resources for civil society bodies to be involved in conservation actions including with companies. The IUCN Red List of Species has developed guidance on the integration of [Indigenous and Local Knowledge in Red List assessments](#).

Other frameworks and standards include the IUCN Natural Resource Governance Framework (Springer et al., 2021), which requires assessment of the role of actors in improving effective and equitable natural resource governance; the International Finance Corporation's Performance Standards on Environmental and Social Sustainability (IFC, 2012), particularly IFC Performance Standard 5 (Land Acquisition and Involuntary Resettlement) and IFC Performance Standard 7 (Indigenous Peoples) requiring FPIC; and the Global Environment Facility's Policy on Environmental and Social Safeguards that emphasises access to grievance and conflict resolution systems for affected persons (GEF, 2019). The Accountability Framework also provides useful guidance on socially equitable actions to address nature impacts across value chains (AFI, 2019).





**Alignment with
societal goals and
other nature-related
frameworks**

10. Alignment with societal goals and other nature-related frameworks

The IUCN RHINO approach is designed to contribute to the delivery of global sustainable development frameworks and goals and as such, is aligned with societal goals. It aligns as well with

other processes and frameworks relevant to the delivery of these goals, such as for the definition of Nature Positive interventions, commitment to Net Zero, and disclosure frameworks.

The vision of the KMGBF is a world living in harmony with nature where “by 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people.” This vision is accompanied by the mission of the KMGBF: “To take urgent action to halt and reverse biodiversity loss, to put nature on a path to recovery for the benefit of people and planet by conserving and sustainably using biodiversity and by ensuring the fair and equitable sharing of benefits from the use of genetic resources, while providing the necessary means of implementation.(CBD, 2021, p. 4).

10.1 Alignment with societal goals

The IUCN RHINO approach is intended to support and enable effective delivery of societal goals (for instance the KMGBF or the SDGs) for species and ecosystems, through the collective efforts of governments, civil society, and companies. This vision is intended to align with the KMGBF and other relevant targets under the SDGs.

Delivering societal goals for nature must involve non-state actors, and the business and finance sectors have a key role to play. Quantitative contributions to the KMGBF goals and targets,

including those for reducing species extinction risk and increasing the area and integrity of ecosystems, can be made by companies and financial institutions, working with local communities, NGOs and governments. Assessed outcomes can be calculated and aggregated as needed across geographical areas, investment sectors, spatial footprints, and value chains. The IUCN RHINO approach therefore focuses on the contribution that can be made by companies (including the finance sector considered as a subset of ‘companies’ in this document).

Table 9 Policy goals regarding species and ecosystems which will be supported by the IUCN RHINO approach

Policy framework	Relevant goals
KMGBF	Goal A: The integrity, connectivity and resilience of all ecosystems are maintained, enhanced, or restored, substantially increasing the area of natural ecosystems by 2050
	Human induced extinction of known threatened species is halted, and, by 2050, the extinction rate and risk of all species are reduced tenfold, and the abundance of native wild species is increased to healthy and resilient levels
SDGs	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss (SDG 15, including specific targeting of preventing extinctions (Target 15.5))
	Conserve and sustainably use the oceans, seas and marine resources for sustainable development (SDG 14) (<i>metrics for the IUCN RHINO approach initially cover the terrestrial realm, but are being further developed to encompass marine application</i>)

Accompanying goals and targets included in the KMGBF relate to mechanisms to enable these biodiversity-related goals to be delivered. Of particular relevance to the IUCN RHINO approach are the following goals and targets, in that the

approach described here provides a means to quantify and track contributions to them. Specific relationships between the IUCN RHINO approach and the KMGBF goals and targets are discussed in more detail under section 8.1.

10.2 Relationship with nature-related corporate regulatory, guidance, and disclosure frameworks

High integrity systems will need to be supported and underpinned by enabling policy, regulatory and market environments. Such environments will be created through government commitments, and domestic institutional arrangements and instruments for delivering the KMGBF (see section 8.1 on how governments can use the IUCN RHINO approach), however companies and finance also play a role in advancing government agendas and driving transformation.

The IUCN RHINO approach aligns with a range of regulatory, disclosure and guidance frameworks, as listed in Figure 12. Some of these alignments are discussed in greater detail in the next sections. The IUCN RHINO approach

also builds on and integrate a range of IUCN experience, methodologies and standards, as outlined in Section 3.2. This includes the ongoing, closely related work of the IUCN Commission on Ecosystem Management [Impact Mitigation and Ecological Compensation Thematic Group](#), in particular its Nature Positive Working Group.

The most important platform to align efforts around nature positive contributions is the Nature Positive Initiative. The IUCN RHINO approach aligns closely with the Nature Positive Initiative guidance, as described below.

Public disclosure of impacts on biodiversity and progress towards Nature Positive goals, through

voluntary corporate-led initiatives, such as the Taskforce on Nature-related Financial Disclosures (TNFD) and the Science Based Targets Network (SBTN) or through regulatory pressure, such as the CSRD, which obliges companies to report according to the European Sustainability Reporting Standards (ESRS). These initiatives can help to reform corporate governance and increase the capacity for external stakeholders (including investors and consumers) to drive society-wide

change to Nature Positive. To a large extent, the ESRS E4 is built upon and aligned with the GRI sustainability reporting Standards. GRI is working closely with TNFD to ensure the same high level of alignment between the voluntary reporting standard(s) and the TNFD Framework. For this reason, we have structured the IUCN RHINO tracks, specifically the Direct Impact Track, on the TNFD LEAP approach.

How does the IUCN RHINO approach relate to you?					How does it align with other frameworks?				
Who are you?	Company			Government	Civil Society	SBTN	TNFD	CSRD (ESRS E4)	GRI (101)
	Direct control (e.g., Mining)	Indirect control (e.g., corporates)	Financial Institutions						
What can you do?	1. Locate Phase				Research and advocacy	Commitment	Commitment		101-4 and 101-5 Identification and location of impacts + 101-6 Direct Drivers of Loss
	2. Evaluate phase					Step 1. Assess + Step 2. Prioritise		SBM-3 & IRO-1	
	3. Assess Phase			Support, amplify, enable	Support, amplify, enable	Step 3. Set Targets	Step 1. Scoping + Step 2. Locate + Step 3. Evaluate + Step 4. Assess	E4.1-E4.4	101-7 State of biodiversity + 101-8 Ecosystem Services
	4. Prepare phase								101-7 State of biodiversity + 101-2 Manage impacts
	5. Implement phase			Hold accountable (regulation)	Hold accountable (civic action)	Step 4. Act	Step 5. Prepare	E4.5-E4.6	101-1 Halt and reverse biodiversity loss + 101-2 Manage impacts
	6. Report Delivery of Impacts					Step 5. Track	Disclose		101-3 Access and benefit-sharing
What do you gain?	Address risk from biodiversity loss	Improve access to markets		Track contributions within sectors, and administrative regions	Greater transparency of private sector's contributions to nature				
	Reduce reputational risk	Catalyse sectoral change		Incentivise sectors to decrease emissions via institutional arrangements and policy instruments	Informed decisions regarding responsible consumer choices				
	Contribute to (sub)national, regional and global targets (KMGBF; SDGs)								
This diagram above presents how the IUCN RHINO approach is related to companies by outlining the six steps of the approach, as well as the benefits they obtain from adopting it. It also shows how key stakeholder groups including government and civil society – both necessary to achieve a Nature Positive future – are involved in each step where relevant. Understanding where there are alignments and integration between the IUCN RHINO approach, and other nature-related standards, frameworks and regulations is crucial for its usability and complementarity. The IUCN RHINO approach will directly inform initiatives such as the Science Based Targets Network (SBTN), and the Taskforce on Nature-related Financial Disclosures (TNFD), regarding species and ecosystems, while complementing other nature-related frameworks including the Corporate Sustainability Reporting Directive (CSRD) and the Global Reporting Initiative (GRI) - specifically the standards relating to biodiversity (CSRD-ESRS4 and GRI 101, respectively), thus overall enhancing its positive impact on global biodiversity efforts and goals as set out by the Kunming- Montreal Global Biodiversity Framework.									

Figure 12 The correspondence of the IUCN RHINO Direct Impact Track (left) with various reporting and disclosure approaches. Correspondence with the Value Chain Impact Track and Investor Impact Track may be more complicated.

The IUCN RHINO approach also builds upon other existing guidance for business, including the Partnership for Biodiversity Accounting Financials (PBAF) standards, on impact assessment and footprinting and guidance documents from the United Nations Environment Programme Finance

Initiative (UNEP-FI), to provide a framework that helps companies make targeted contributions to the KMGBF, using the best available metrics for assessing positive and negative impacts through their contributions to species extinction risk and ecosystem collapse.

10.2.1 Alignment with the Nature Positive Initiative

The [Nature Positive Initiative](#) is providing guidance and alignment around contributions to the Global Goal, in particular in the definition of the components and metrics around Nature Positive. The approach presented here is consistent, with and can form part of, the Nature Positive Initiative Measurable Nature Positive Goal for the CBD mission, by proposing tracks, metrics and mechanisms for setting and delivering targets on

two aspects of the Nature Positive global goal: extent and ecological integrity of habitats (in the future), and extinction risk of species. Nature Positive Initiative partners are currently supporting piloting of metrics, including ecosystem extent and integrity, and species extinction, with companies, and the results of this piloting will be available in early 2026.

Table 10 shows how the IUCN RHINO approach is consistent with core principles of the Nature Positive approach as defined by IMEC (2023).

Table 10 Alignment of IUCN RHINO with the Nature Positive Initiative approach as defined by IMEC (Baggaley et al. 2023) and Maron et al. (2021), Milner-Gulland (2022), and zu Ermgassen et al. (2022a)

Principle	Source	Alignment with IUCN RHINO approach
1. Nature as a whole – Adopt targets which capture all realms of nature upon which the business has impacts, balancing trade-offs to ensure that nature benefits.	Baggaley et al. (2023)	The initial version of the IUCN RHINO approach presented here focuses on reducing species extinction risk as this is a tractable, representative, and measurable metric for living nature. For other components of nature-related risk, see Box B.
2. Avoid and mitigate – Apply the Mitigation Hierarchy and focus on impact avoidance and minimisation measures, and work to achieving a net gain for all elements of nature negatively impacted by operational activities and material impacts in the value chains.	Baggaley et al. (2023)	Consistent (see Figure 8 on relationship between IUCH RHINO and Mitigation Hierarchy)
3. Holistic actions – Extend actions to encompass landscape-level thinking, up- and down- stream impacts and dependencies; and include sector-wide efforts to ‘transform’ and drive systemic change.	Baggaley et al. (2023)	Consistent (see Step A5 of the Direct Impact Track; Table 4 on Area of Influence considerations, Value Chain Impact Track, and sector-wide efforts; and Box B on approaches for assessment of dependencies)

4. Aligned with global goals – Apply measurable, science-based targets that are consistent with global goals (e.g. the Kunming-Montreal Global Biodiversity Framework and Sustainable Development Goals).	Baggaley et al. (2023)	Consistent (see Boxes D and I; and section 10.1 on global goals)
5. Mainstreaming – Integrate nature and the importance of biodiversity into the decision-making processes of the business, from board room down, into the operations, risk and financial decision making, and into the value chains.	Baggaley et al. (2023)	Guidance in boxes C, D, and F; and sections 10.1–10.5, for alignment of IUCN RHINO with other popular corporate risk assessment and transition planning approaches)
6. Collaborative – Identify and engage with stakeholders within landscapes, sectors and value chains that will enable and support nature positive outcomes.	Baggaley et al. (2023)	Consistent-(see Step A5 of the Direct Impact Track; Table 4 on Area of Influence considerations)
7. Adaptive – Apply effective monitoring of the state and pressure on nature across landscapes and value chains with a clear process for triggering adaptive management responses.	Baggaley et al. (2023)	Consistent (core process within IUCN RHINO approach (see section 5 on Direct Impact track)
8. Transparent – Introduce commitments and targets that are externally communicated and backed up by credible, clear, and replicable approaches to measurement.	Baggaley et al. (2023)	Consistent (focused on disclosure and reporting consistent with TNFD and national reporting (see Tables 9, 10 and 11, Boxes B, C, D, and F; sections 10.1 to 10.5; and section 4.6 on measurement approach.
9. Just – Deliver safeguards and activities that respect the important role, contributions, rights and livelihoods of Indigenous peoples and Local communities as custodians of biodiversity and partners in the conservation, restoration, and sustainable use.	Baggaley et al. (2023)	Consistent (see section 9.2 on high-integrity components to the approach)

10. Measurable	Baggaley et al. (2023)	Consistent (see section 4.6 on measurement approach)
Adopt clear and demonstrable measurement and accounting of losses and gains, for operational level commitments (e.g. net gain or net positive impact) and within the value chain.		
11. Ambition	Maron et al. (2021), Milner-Gulland (2022), and zu Ermgassen et al. (2022a)	Consistent (see section 4.6 on measurement approach)
Overall, the wider Nature Positive framing requires that nature will be in an improved state a decade in the future. Human activities will continue to have some unavoidable negative impacts on nature, but these must be prevented and reduced as far as possible, and then appropriately compensated for to ensure overall gains.		
12. Scope of impacts and actions	Maron et al. (2021), Milner-Gulland (2022), and zu Ermgassen et al. (2022a)	Consistent (see Direct Impact and Value Chain Tracks)
Progressing towards Nature Positive requires a concerted effort across society to address the direct and indirect drivers of biodiversity loss. This necessitates that companies broaden their scope of action in two dimensions (zu Ermgassen et al., 2022a).		
First – the vertical scope – companies need to think and act beyond their direct operational footprint, working at the landscape scale around places where they operate and encompassing supply chain and end-of-life impacts. Second – the horizontal scope – companies need to engage in sector-wide efforts to increase industry sustainability, working with other stakeholders and with government to improve regulatory frameworks and reform economic structures and incentives.		

13. A fixed and measured baseline This ambition implies increases in nature relative to a fixed baseline, rather than the declining counterfactual that is often embedded in biodiversity compensation frameworks (Simmonds et al., 2022).	Maron et al. (2021), Milner-Gulland (2022), and zu Ermgassen et al. (2022a)	Consistent (see section 4.6 on measurement approach; and Box G)
14. Integration across other components of nature, climate and social justice	Maron et al. (2021), Milner-Gulland (2022), and zu Ermgassen et al. (2022a)	The initial version of the IUCN RHINO approach, presented here, focuses on reducing species extinction risk as this is a tractable, representative and measurable metric for living nature. For other components of nature-related risk, see Box A. For alignment with climate risk, see Table 9 and alignment with Nature-based Solutions (section 10.7.2)

10.2.2 Relationship with Science Based Targets Network

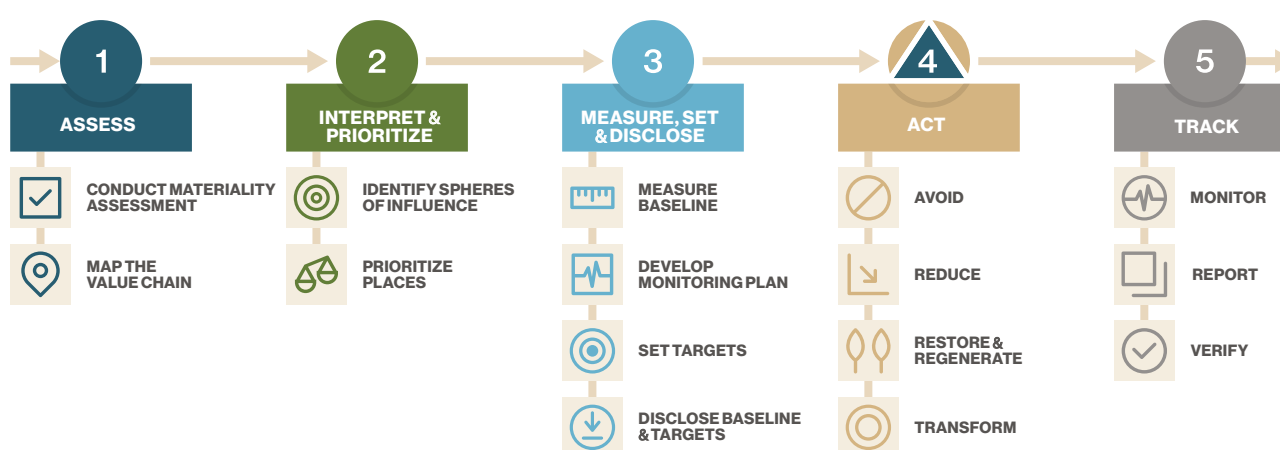


Figure 13 The five steps in the Science Based Targets Network approach

Source: Adapted from SBTN (2020, Figure 5, pp. 14–15).

The IUCN RHINO approach is largely complementary and additional to the five SBTN steps (Figure 13), but uses the TNFD naming and descriptions for the first three (Assess, equal to the TNFD/IUCN RHINO Locate), Interpret and Prioritise (equal to the TNFD/IUCN RHINO Evaluate and Assess), and Measure, Set and

Disclose (equal to the TNFD/IUCN RHINO Prepare). IUCN RHINO then has steps equivalent to the SBTN Act step (in IUCN RHINO Post LEAP-Implement actions to deliver targets) and the SBTN Track step is covered in IUCN RHINO Post LEAP-implement actions to deliver targets and Report Delivery of impacts.

Version 1 of SBTN includes targets for land and freshwater realms. For the land realm, the three target mechanisms identified relate to no conversion of natural ecosystems by 2025, as defined by the Natural Ecosystem map, the Land Footprint reduction target, relating to restoration of previously occupied agricultural land, and a target relating to engagement in ecological improvement plans at landscape scale.

The IUCN RHINO approach does not require a ‘no conversion of natural ecosystems’ target, as it is clear that this target cannot be delivered by industry that depends on land conversion for its business, for instance mining companies. The application of the mitigation and conservation hierarchy, quantified using the IUCN RHINO approach, is better adapted to the needs of the mining sector. The zero land conversion target of SBTN can deliver positive impacts on biodiversity, which could be quantified by the use of the IUCN RHINO approach.

We also do not include targets related to participation in ecological improvement plans, as this is a process (one of many) that can help companies to deliver targets rather than an action related to improving the status of underlying biodiversity, which is the focus of the IUCN RHINO approach.

The SBTN Water realm target-setting process relates to delivery of water, especially in water-stressed areas, and pollution. Companies addressing water stress contributes to the reduction of dependence on nature, although recent analysis (Sayer et al., 2025) has shown that actions to reduce water stress are not associated with reductions on threats to biodiversity. As the IUCN RHINO approach is not concerned with dependencies, but only the reduction of impacts, we do not include targets relating to water-stress.

SBTN is developing a biodiversity coverage analysis that identify ways in which the current set of targets can be completed by further metrics and target-setting processes, in particular relating to species and threats that are not covered by the current target set (e.g. invasive species and overexploitation). The approach presented here is designed to deliver this extra target-setting capability and is thus complementary to the existing and proposed SBTN approach.

10.2.3 Relationship with other relevant corporate commitment and policy frameworks

Table 11 Other initiatives relevant to Nature Positive alignment by companies, and how the IUCN RHINO approach can support or complement them

Existing initiative	Description	How the IUCN RHINO approach can support or complement
Biological Diversity Protocol	A practical tool that contains guidance on setting boundaries for impacts, guidance on impact measurement, and accounting and validation.	The IUCN RHINO approach offers a simple framework for measuring and validating impacts that can provide inputs to biodiversity accounting using the Biological Diversity Protocol.

<u>Business For Nature (BfN)</u>	BfN provides companies with the key actions they can take to signal they are making meaningful contributions to help reverse nature loss and contribute to an equitable, Nature Positive world, where positive impacts outweigh negative ones. The high-level actions include actions to assess, commit, transform and disclose.	The IUCN RHINO approach can provide a means of operationalising Business for Nature targets.
<u>Capitals Coalition</u>	Produced process-based guidance for companies to integrate natural capital inputs and impacts into corporate risk assessments, procurement, operational delivery plans and board guidance. Suggests commissioning research into which metrics might fit best with the specific business case.	The IUCN RHINO approach can provide metrics for measuring and valuing impacts.
<u>Finance for Biodiversity (F4B)</u>	A sign-up pledge platform to ‘reverse nature loss in this decade’, including a component on target setting to ‘increase significant positive and reduce significant negative impacts on biodiversity’	The IUCN RHINO approach can provide a means of operationalising F4B targets.
<u>Global Reporting Initiative Biodiversity Standard</u>	New <u>sustainability reporting standard</u> published (but only operational in 2026) containing disclosures for organisations to report information about their biodiversity-related positive and negative impacts (including Nature Positive), and how they manage these impacts.	The IUCN RHINO approach can provide companies with a track to delivering disclosures under GRI. Public disclosure of positive and negative impacts on biodiversity (including Nature Positive) through globally-accepted GRI reporting standards, to accelerate scaling up and change of corporate governance and help organisations and stakeholders to drive society-wide change to Nature Positive. The Standard offers the reporting requirements for organisations reporting their impact on biodiversity including guidance on selecting indicators, methods and frameworks.

World Business Council for Sustainable Development	A <u>process</u> /set of ‘building blocks’ (assessment and prioritisation, setting baselines, measuring and valuing, acting and transforming), where the measuring and valuing component uses the Pressure-State-Benefit-Response model.	The proposed building blocks are good guidance for companies, and the IUCN RHINO approach can fill the specific gap on metrics for process and results.
World Economic Forum: Sector Transitions to Nature Positive	A series of sector-specific to help inform the most material impact and dependencies the sector has on nature, and the priority actions that companies can take to transform their operations and value chains. It is a collaboration with Business for Nature and WBCSD.	The sector specific actions are good guidance for companies to start taking actions and the approach can fill the specific gap on metrics for process and results.

10.3 Linking IUCN RHINO approach with innovative financial mechanisms

The process of delivery of positive contributions beyond the mitigation hierarchy offers the potential for the IUCN RHINO approach to form the framework for innovative financial mechanisms such as biodiversity credits and certificates. The IUCN RHINO approach could also provide a means of measuring outcomes from other innovative financial mechanisms such as sovereign debt restructuring instruments and impact bonds. Proposed approaches to crediting emphasise quantified positive impacts that can be measured using metrics derived at the ecosystem level, which may then be hard to relate directly to the delivery of KMGBF goals and targets. IUCN RHINO contributions, as described here, could add to the roster of crediting frameworks and provide investors a means to connect their investments to global policy goals, as well as providing a means to validate credit yield in a standardised manner. Biodiversity certificates, having a broader and less market-focused purpose, are less susceptible to application as offsets, but the IUCN RHINO approach could still be used to quantify or verify certificates.

IUCN will work with the various initiatives developing biodiversity credit assessment frameworks and constituency networks ([Verra](#), [Biodiversity Credit Alliance](#), [Coalition for Private Investment in Conservation](#), and others) to ensure alignment with the IUCN RHINO approach, relate any contribution to the mitigation hierarchy (credits should only be additional to the Mitigation Conservation Hierarchy). These synergies also ensure that key stakeholders, in particular marginalised populations, such as IPLCs, people likely to be subject to gender discrimination, in particular women and youth, are fully involved in the development of standards and benefit-sharing mechanisms.

An additional possible source of increased corporate involvement in the delivery of KMGBF goals and targets could be done through the reorientation of incentives and subsidies under Target 18. Work by [BfN and the B team](#) has gone some way to exploring these opportunities. Companies could thereby be motivated to implement Nature Positive business practices more quickly and obtain support from subsidies, for instance to cover the costs of associated monitoring.

10.4 IUCN RHINO and Corporate Nature Transition Plans

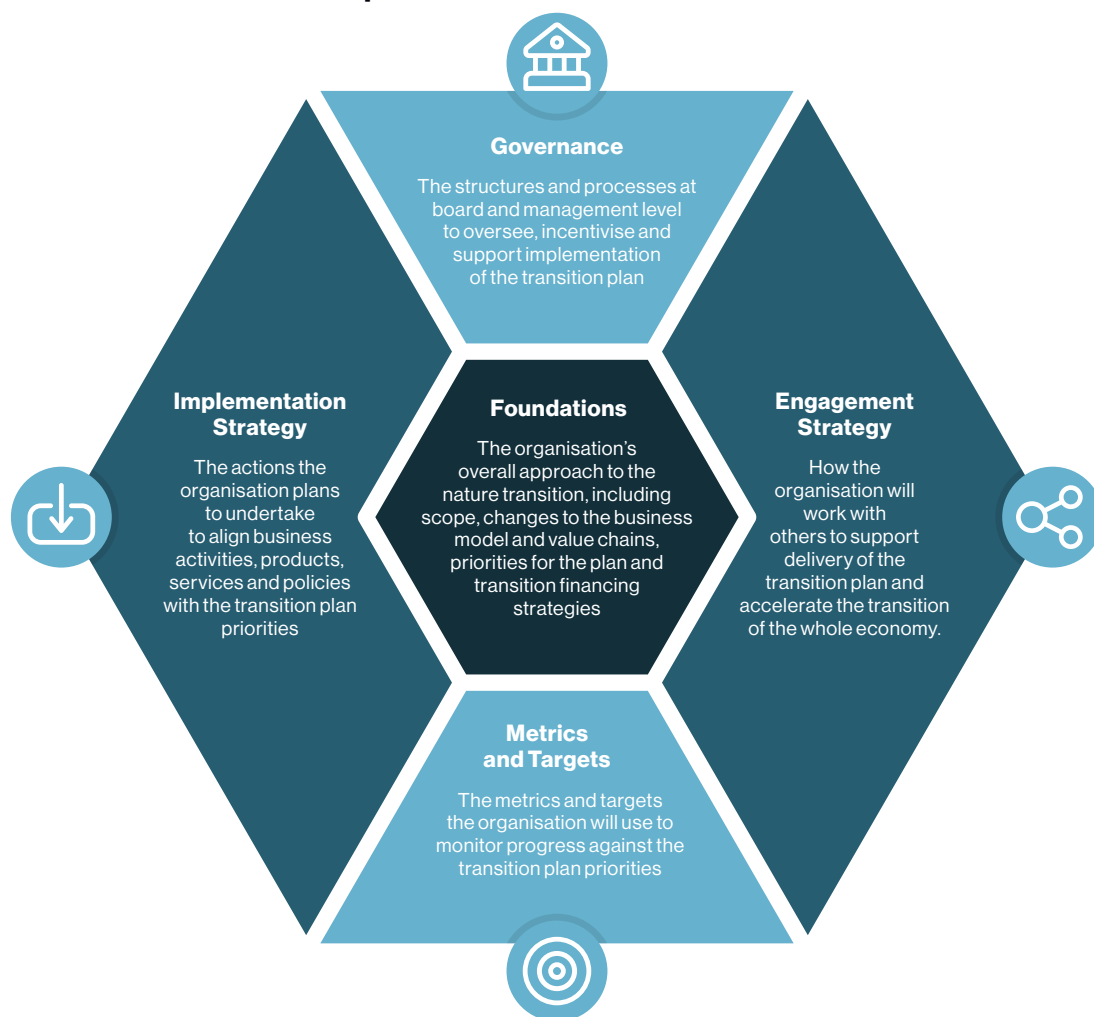


Figure 14 The components of a Nature Transition Plan

Source: Adapted from TNFD (2024, Figure 2, p. 5).

The IUCN RHINO approach provides the geographical context for the foundations of Nature Transition plan, as well as the metrics and targets for the core component of delivery. These have key implications for the company's governance, and implementation and engagement strategies. In particular, the IUCN RHINO approach identifies the most important need for action to reduce impacts and the actions that will be required to deliver them.

The transition plan (Figure 14) requires some other components that are not delivered through

the application of the IUCN RHINO approach, in particular the engagement of the governance structures of the company, the requirement for new capacity and resources, and the responses the company might make in terms of its products and services. However, by exploring the IUCN RHINO approach in detail and starting the process of delivering contributions, the company has a clear track to deliver this component of the transition plan. Such clarity can help with implementation of the other components.

10.5 Linking the IUCN RHINO approach with Life Cycle Analysis

Life Cycle Analysis (LCA), also known as Life Cycle Assessment, evaluates the environmental impacts of a product, service, or process throughout its entire lifecycle, from raw material extraction to final disposal. This analysis helps identify potential areas of environmental impact and inform decisions to reduce those impacts.

The LCA method is based on [ISO 14040](#) (2006) and [ISO 14044](#) (2006) standards. Widely

recognised procedures for conducting LCAs are included in the ISO 14000 series of environmental management standards of the International Organization for Standardization (ISO), in particular ISO 14040 and ISO 14044. ISO 14040 provides the ‘principles and framework’ of the Standard, while ISO 14044 provides an outline of the ‘requirements and guidelines’.

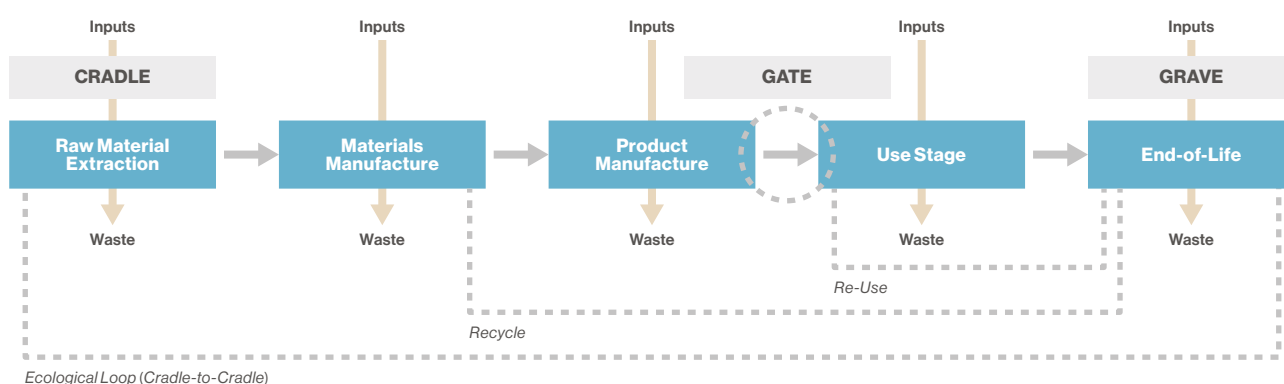


Figure 15 The components of a Life Cycle Analysis

Source: Adapted from UNEP (2024, Figure 1, p. 2).

The most important link between the IUCN RHINO approach and LCA is that IUCN RHINO generates information of site-based impacts of a particular product on biodiversity. Most of this happens at the cradle phase of LCA (Figure 15), where commodities used by the company are extracted or produced, but there may be significant impacts (for instance, through waste production) at other steps in the cycle. Companies that have direct control over management of sites can work through the IUCN RHINO process at these sites and use the information about impacts on biodiversity, responses to these impacts, and the

results of these actions as inputs into the LCA process.

For all LCA steps beyond raw material production and extraction, the most likely impacts on biodiversity are from changes in land-use at manufacturing sites, and pollution caused by waste. Companies using the value chain impacts track, who generate most of their impacts through the production or extraction of commodities that they then buy, will need to use the information generated in the Value Chain Impacts track (section 6) to generate the appropriate LCA inputs.

10.6 Synergies with emissions reductions and the Greenhouse Gas Protocol Net Zero

The effects of climate change on biodiversity are already visible at 1.3 degrees of warming. Warming beyond 1.5°C will have profound effects on species and ecosystems: for example, the Intergovernmental Panel on Climate Change (IPCC) estimates with *high confidence* that 13% of all species could become Critically Endangered at 4°C of warming, and entire functional types of ecosystem, such as tropical rainforests and shallow water coral reefs, may experience critical and irreversible tipping points.

As a priority, companies can contribute to reducing these risks by rapidly reducing absolute greenhouse gas (GHG) emissions across their value chain in line with science-based targets. However, there are many pressures on biodiversity that are not related to climate, and which may operate over shorter timescales. Addressing these will require actions above and beyond the challenging changes required to decarbonise companies' business practices.

Fortunately, many ongoing actions that are part of their science-based climate strategies can also contribute significantly to halting and recovering biodiversity, particularly for companies with, or connected to, significant land-based footprints. For this reason, an integrated approach to IUCN RHINO is crucial. Actions that make positive contributions for both biodiversity and climate goals could be the first focus for companies, with companies building on land-use based net-zero emissions reduction actions. These include:

1. focusing strongly on avoiding any further conversion of natural habitats;
2. implementing natural climate solutions within companies' operational land-holdings that are focused on protecting and restoring natural habitats;
3. driving transformational change to reduce land-use requirements, for example by

increasing yields or moving to plant-based alternatives to meat and dairy; and

4. after engaging actions to reduce GHG emissions in line with science-based targets, implementing additional beyond value chain mitigation focusing on protecting and restoring natural habitats.

Such actions for climate will help companies make positive contributions for biodiversity but it will not be sufficient. Using the methods set out in this document, based on STAR and ecosystem metrics (see section 4.6), can help companies optimise the biodiversity benefits of their climate actions, as well as identify and plan for additional actions for biodiversity. These actions will also require additional safeguards to protect against indirect land-use change.

We recognise that there may be important trade-offs between achieving net-zero commitments and contributing to the KMGBF. This may be the case, for instance for wind, solar, and hydropower installations which might require conversion of natural habitats. In these cases, there are already strong industry recommendations about minimising impacts on biodiversity (see IUCN's note on [Considering Biodiversity for Solar and Wind Energy Investments](#)).

To ensure that companies likewise take appropriate measures to deliver on societal climate goals, which are not covered by the approach proposed here, IUCN will consider whether setting robust climate targets (e.g. via SBTi or similarly robust standards) should be a precondition for registering on an appropriate contributions platform.

Many companies have already made commitments to reduce emissions, through the Scope framework of the [Greenhouse Gas Protocol](#). Table 12 explores the relationship between the IUCN RHINO approach and the different Scopes.

Table 12 Relationship between GHG Protocol Scopes, impacts on biodiversity, and IUCN RHINO approach track

GHG Protocol Scope	Most important impacts on biodiversity	Most important sectors	Less important Scope components	Relation to IUCN RHINO approach track
1	Direct land-use change caused by company action; increased access to intact habitats; introduction of invasive alien species	Mining; pasture and crop agriculture; forestry; construction	Energy used by company assets; company vehicles	Direct Impact Track
2	None	None	Impacts on global climate change caused by energy use in company assets	None
3 (upstream)	Direct land-use change, increased access to intact habitats; introduction of invasive alien species caused by production of commodities used by company; impacts of construction and infrastructure to provide energy and services to company	Consumer goods; food; beverage; retail;	Waste generated in operations; employee transport; business travel	Value Chain Impact Track
3 (downstream)	Impacts of investments on production of commodities, construction, and infrastructure		Investments; waste generated through use and disposal of sold products; energy use in distribution and further processing	Investor Impact Track

Impacts on biodiversity are rather different. As Table 12 shows, land-use focused industries, such as forestry, mining, construction, and agriculture have very significant Scope 1 impacts. Most of these impacts are driven by change in land-

use, for instance clearance of biodiversity-rich habitats for plantations or pasture, but there are also many impacts caused by introduction of invasive species, creation of access routes that facilitate hunting, and pollution and sedimentation

of freshwater and marine environments. These are the main direct impacts, although many of them will have little or no impact on biodiversity if their land-based assets are very small or in areas of little or no biodiversity impact, such as retail, transport, entertainment, administration, finance, law, consumer goods, and others. Most of these companies' impacts will be in upstream Scope 3, as determined by following the Value Chain Impact Track.

Other than Scope 1 impacts, which companies generally have the power to remedy using the Direct Impact Track (Section 5), many companies have value chain impacts, which are included within upstream Scope 3. These are manifested through the use of commodities that have impacts at source. Some of the most important of these are food components, such as sugar, palm oil, soy, meat, and grains. Other commodities that have significant biodiversity impacts include those used for packaging (wood pulp), and metals, such as iron ore, nickel, aluminium, and rare earth metals. Construction and infrastructure projects related

to the purchase of energy, or transportation or production of commodities used by a company may also have significant biodiversity impacts.

The biodiversity impacts of some of these commodity production systems overlap significantly with their land-use based emissions, for instance use of grains or food oils, so companies may already be aware of the location of these impacts.

The only component of downstream Scope 3 impacts with significant impacts on biodiversity are investments made by the finance sector on commodity production systems, infrastructure, and construction projects. Many of the other components of Scope 3 do not generate significant impacts on biodiversity, especially those related to downstream impacts (Table 10). Thus, for value chain impacts, efforts to understand biodiversity-related risks and opportunities can focus on a limited number of upstream Scope 3 (Table 12) and Scope 1 impacts.

10.7 Alignment with IUCN principles and standards

10.7.1 IUCN Green Status of Species

While the STAR metric used in the current framework is intended as a way for companies to make contributions to species extinction risk reduction in specific places, there are other ways that contributions can be made to species recovery, in particular the part of the recovery process after a species is no longer threatened with extinction. Full species recovery can be assessed by the [IUCN Green Status of Species](#) (GSS) which provides a standardised framework for measuring species recovery. This enables users to recognise conservation achievements, highlight species whose current conservation status is dependent on continued conservation

actions, forecast the expected conservation impact of planned conservation action, and elevate levels of ambition for long-term species recovery. Together, these objectives encourage conservation towards species recovery throughout a species' range. In contrast to STAR which is intended to identify measures to reduce threats to many species in particular places, actions measured by the GSS are generally focused on single species across its entire range at a given spatial unit. For instance, GSS can accommodate measurement at the national and global levels, through a GSS Index (under development) and this could be part of a basket of metrics used to evaluate conservation responses from a species lens.

10.7.2 Linking with IUCN Global Standard for Nature-based Solutions (NbS)

Goals for living nature are interdependent with, and must be achieved alongside other global goals, such as the Paris Agreement for climate and the Sustainable Development Goals, to promote synergies and minimise trade-offs. NbS are actions to protect, sustainably manage, and restore natural and modified ecosystems in ways that address societal challenges effectively and adaptively, to provide both human well-being and biodiversity benefits (IUCN, 2016). NbS therefore play a central role in delivering a just and sustainable Nature Positive future.

The IUCN Global Standard for Nature-based Solutions offers existing guidance and standards

on how efforts to protect and restore nature can also deliver outcomes for human well-being and therefore support social equity. Of particular importance are NbS Criteria 3, 4, 5, and 6 (Table 13) which relate to the impacts that IUCN RHINO contributions may have on IPLCs. In general, IUCN RHINO interventions should strive for social justice, such that affected groups perceive social and ecological outcomes, and the process to deliver them, to be fair and equitable (Bull et al., 2018). Since IUCN RHINO interventions are likely to entail some costs in the short term (such as the opportunity costs of reduced economic activity or access to natural resources), it is important to ensure these costs are equitably distributed, and not primarily borne by IPLCs as has often been the case in historic conservation efforts (Balmford & Whitten, 2003).

Table 13 Nature-based Solutions criteria which relate to the impacts that IUCN RHINO contributions may have to Indigenous peoples and Local communities

Criterion	Indicators
Criterion 3: NbS result is a net gain to biodiversity and ecosystem integrity	3.1 The NbS actions directly respond to evidence-based assessment of the current state of the ecosystem and prevailing drivers of degradation and loss; 3.2 Clear and measurable biodiversity conservation outcomes are identified, benchmarked and periodically assessed; 3.3 Monitoring includes periodic assessments of unintended adverse consequences on nature arising from the NbS; 3.4 Opportunities to enhance ecosystem integrity and connectivity are identified and incorporated into the NbS strategy.
Criterion 4: NbS are economically viable	4.1 The direct and indirect benefits and costs associated with the NbS, who pays and who benefits, are identified and documented; 4.2 A cost-effectiveness study is provided to support the choice of NbS including the likely impact of any relevant regulations and subsidies; 4.3 The effectiveness of the NbS design is justified against available alternative solutions, taking into account any associated externalities; 4.4 NbS design considers a portfolio of resourcing options such as market-based, public sector, voluntary commitments, and actions to support regulatory compliance.

Criterion 5: NbS are based on inclusive, transparent and empowering governance processes	5.1 A defined and fully agreed upon feedback and grievance resolution mechanism is available to all stakeholders before an NbS intervention is initiated; 5.2 Participation is based on mutual respect and equality, regardless of gender, age or social status, and upholds the right of Indigenous peoples to free, prior and informed consent (FPIC); 5.3 Stakeholders who are directly and indirectly affected by the NbS have been identified and involved in all processes of the NbS intervention; 5.4 Decision-making processes document and respond to the rights and interests of all participating and affected stakeholders; 5.5 Where the scale of the NbS extends beyond jurisdictional boundaries, mechanisms are established to enable joint decision making of the stakeholders in the affected jurisdictions.
Criterion 6: NbS equitably balance trade-offs between achievement of their primary goal(s) and the continued provision of multiple benefits	6.1 The potential costs and benefits of associated trade-offs of the NbS intervention are explicitly acknowledged and inform safeguards and any appropriate corrective actions; 6.2 The rights, usage of and access to land and resources, along with the responsibilities of different stakeholders, are acknowledged and respected; 6.3 The established safeguards are periodically reviewed to ensure that mutually-agreed trade-off limits are respected and do not destabilise the entire NbS.

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Annex A

Consultation and review process

The first stage of the consultation process for the IUCN RHINO approach was through a restricted circulation of the working paper (v 0.1) to partner institutions in August and September 2022 ahead of the IUCN Leaders Forum meeting in Jeju, South Korea, in October of that year. This resulted in over 350 separate comments including from: Convention on Biological Diversity Secretariat, IUCN Secretariat, Commission on Ecosystem Management's Impact Mitigation and Ecological Compensation (CEM IMEC) Group, SBTN, WBCSD, Business for Nature, and WWF International.

Between November 2024 and March 2025, version 1 of this document was circulated to IUCN Members for commentary. In addition, it was circulated to around 60 other partners, including private sector and technical organisations. The consultation resulted in over 750 comments, which have been reviewed and the document revised accordingly. These comments have been systematically grouped and summarised into key themes and are available through the [IUCN Nature Positive webpage](#).

We are grateful for the opportunity to have received detailed feedback during the final production of this document from the Nature Positive Initiative and the Taskforce on Nature Related Financial Disclosure.



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