Introduction to biodiversity management

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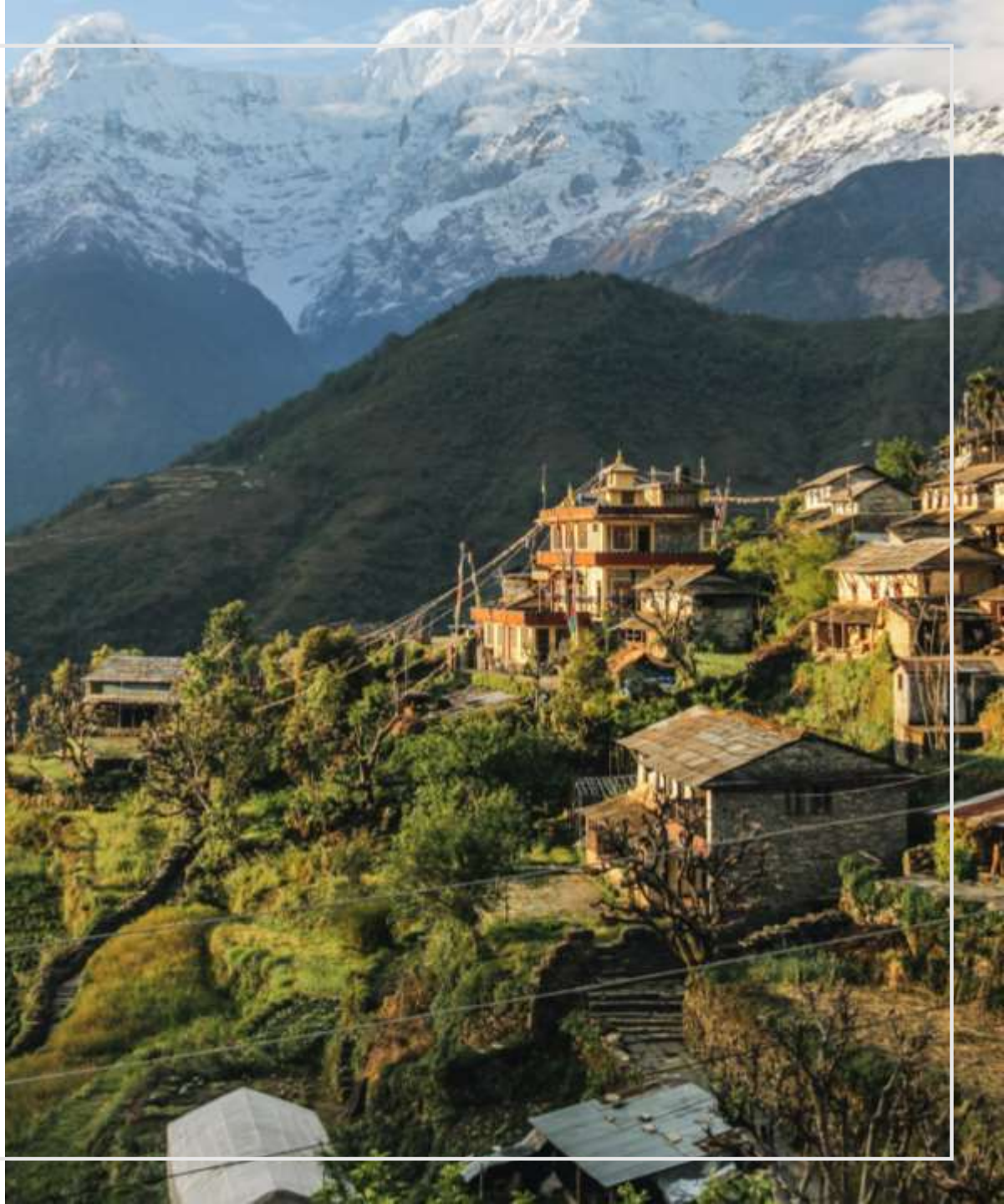
Newmont

17 NOVEMBER 2022

AGENDA

- The Proteus Partnership
- The Integrated Biodiversity Assessment Tool (IBAT)
- Newmont Case Studies
- Why is biodiversity important to businesses?
- Key biodiversity and conservation concepts
- Introduction to the Mitigation hierarchy
- Biodiversity Management Considerations
- Monitoring Biodiversity at an Asset Level
- Newmont Biodiversity Overview



VALUES MOMENT: COP 15

- Part two of the 15th meeting of the Conference of the Parties to the Convention on Biological Diversity (CBD COP15) will be held from 7-19 December in Montreal, Canada. Newmont will attend as part of the ICMM delegation.
- COP15 will review the achievement and delivery of the CBD's Strategic Plan for Biodiversity 2011-2020.
- It is anticipated that the final version of the Post-2020 Global Biodiversity Framework will be adopted "to implement broad-based action to bring about a transformation in society's relationship with biodiversity and to ensure that, by 2050, the shared vision of living in harmony with nature is fulfilled."
- Outlines 21 draft 2030 targets:

The Proteus Partnership

Aime Rankin – Associate Programme Officer (UNEP-WCMC)

PROTEUS – A LONG-TERM COLLABORATION BETWEEN THE PRIVATE SECTOR AND UNEP-WCMC

Vision:

- A planet where business contributes to a clean, healthy, resilient environment for all.

Mission:

- Support companies to be nature-positive.

GOALS OF THE PARTNERSHIP

proteus

1. Help companies recognise their responsibilities for nature and communicate the business case for its management

2. Accelerate and scale decision support tools and capacity building to help improve corporate performance

3. Strengthen and increase business engagement in the global policy agenda on nature

4. Sustain a viable mutually beneficial partnership through cross-sectoral collaboration

HOW PROTEUS RESOURCES CAN SUPPORT PARTNERS

Project level

Policy level

- Complement project-level risk assessment and site selection
- Support Environmental Impact Assessments (EIAs)
- Application of the mitigation hierarchy
- Biodiversity action planning
- Site closure / decommissioning
- Alignment with performance standards
- Screening potential investments
- Supply chain management
- Development of biodiversity management strategy
- Portfolio analysis and reporting on global footprint

PROTEUS TOOLS AT A GLANCE

Protected Planet

The online interface with the World Database on Protected Areas (WDPA)

Access: www.protectedplanet.net

The Integrated Biodiversity Assessment Tool (IBAT)

Access to site- and landscape-scale datasets

Access: https://ibat-alliance.org/

Biodiversity A-Z

Online glossary of terms

Access: www.biodiversitya-z.org

Ocean+

Access to metadata for over 190 datasets

Access: https://oceanplus.org/

Ocean Data Viewer

Access to over 30 marine and coastal datasets

Access: http://data.unep-wcmc.org

Proteus website

Access all information resources offered through Proteus

Access: www.proteuspartners.org

PROTEUS BENEFITS

Data and analytics

- Technical Briefings on challenges and questions raised by Partners
- Data verification support from the UNEP-WCMC expert team
- Access to a specialist cross-Partnership data forum supporting peer-to-peer learning with other technical experts
- Web services delivering data directly into partner systems

Capacity and support

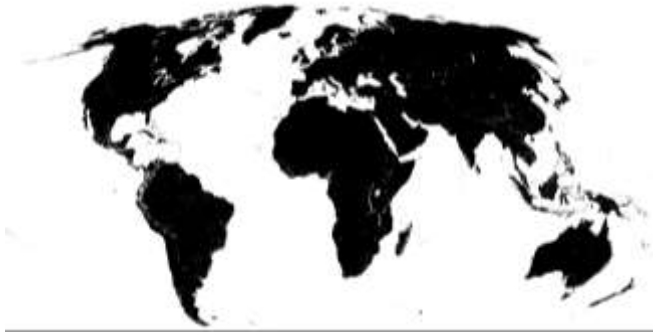
- Technical assistance from UNEP-WCMC's expert team
- Online and in person training and access to training resources
- Horizon scanning webinars and briefings, helping companies track progress, upcoming events and potential business implications
- Access to and influence over development of the Biodiversity A-Z

DATA VERIFICATION AND TECHNICAL SUPPORT

Data verification – clarifications on data quality and interpretation

Example query - Potential protected area (green) boundary discrepancy when compared to satellite imagery

Technical support – assistance or guidance on technical work

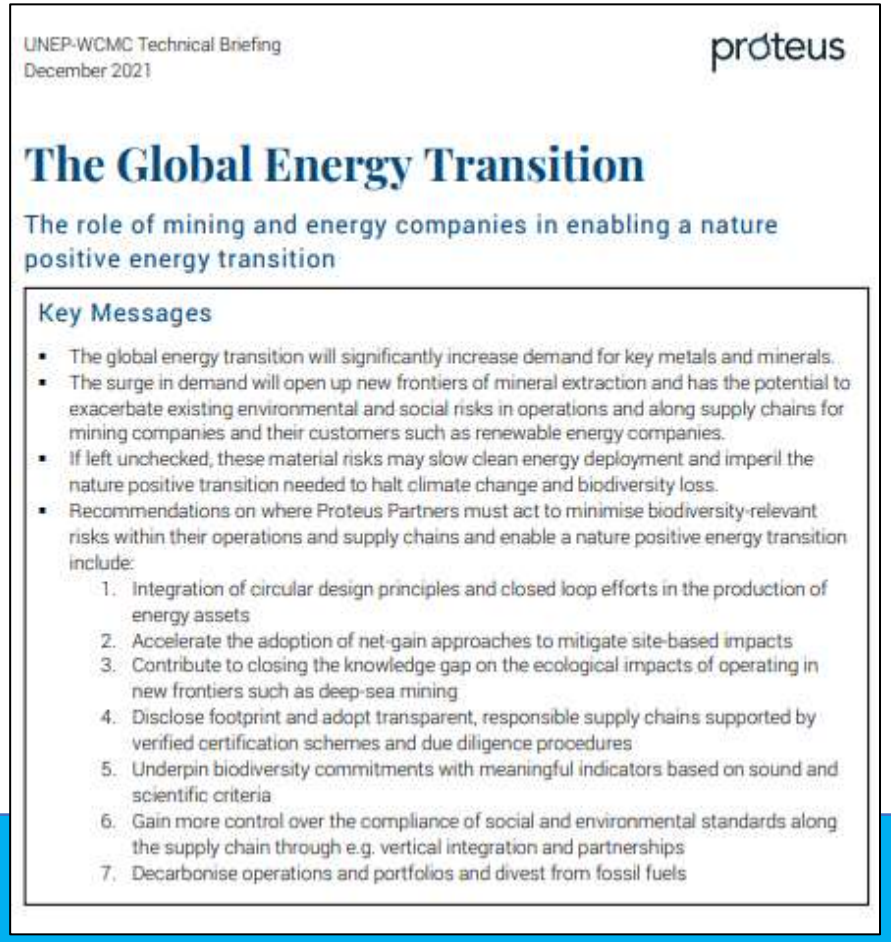


Example query – Visualisation of the global STAR Threat Abatement score layer

SPECIES POTENTIAL IMPACT MITIGATION MEASURES

Species	Project Stage	Common Adverse Impac	Potential Key Impact Mitigation Measures	Stage of Mitigation Hierarchy	Literature	Knowledge Gaps
Little brown bat	Design and Construction	Habitat loss (in particular hibernation roosts)	Avoid bats roosts and important foraging and commuting habitat	Avoidance	-	Define season periods per site
Myotis lucifugus			Provide alternative bat roosts (e.g. artificial subterranean bat roosts, bat boxes, bat barns)	Minimisation	Neilson A.L. & Fenton M.B. (1994) Responses of little brown m	-
ENDANGERED			Create foraging and commuting habitat through additional planting (e.g. woodland belt)	Minimisation	Bat Conservation Trust (2016) Bat Surveys for Professional E	-
		Habitat fragmentation	Retain and enhance existing commuting routes	Avoidance	Bat Conservation Trust (2016) Bat Surveys for Professional E	-
		Disturbance (including lighting and noise)	Ensure a robust Code Of Construction Practice (or equivalent) includes measures such as limits to construction noise and night-time lighting	Minimisation	Bat Conservation Trust (2016) Bat Surveys for Professional E	-
			Design according to best practice guidelines (e.g. Bat Conservation Trust) to avoid illumination of roosts, foraging sites and commuting corridors. Including roosting site gates for historical mine hazards.	Minimisation	Laidlaw G.W.J. & Fenton M.B. (1971) Control of nursery colon	-
			Avoid entering bat roosts during winter hibernation (October through May)	Avoidance	Verant M. et al. (2014) White-nose syndrome initiates a casca	-
	Operation	White-nose syndrome	Monitor, and treat where possible, bats for infection with white-nose syndrome	Minimisation	Cheng T.L., Mayberry H., McGuire L.P., Hoyt J.R., Langwig K.E	-
			Decontaminate clothing and equipment after entering roosting sites to reduce the spread of the white-nose syndrome pathogen	Minimisation	-	The recent severity of white-nose syndrome on populations of little brown bats means there are few studies on the effectiveness of treatments and other mitigation
			Modify bat hibernacula environments to increase survival of bats infected with white-nose syndrome (e.g. target a chamber temperature of 4°C)	Minimisation	Johnson J.S., Reeder D.M., McMichael J.W. III, Meiechofer M.E	-
		Disturbance (including lighting and noise)	Ensure a robust Environmental Management Plan (or equivalent) to include measures such as maintaining gates to restrict access (in particular during winter hibernation), including roosting site gates for historical mine hazards.	Avoidance	Bat Conservation Trust (2016) Bat Surveys for Professional E	-
	Closure	Habitat loss (in particular hibernation roosts)	Maintain microclimate in closed/abandoned mines (e.g. closing but not sealing the entrance to an abandoned mine buffers temperature and humidity, and also reduces disturbance from humans and predators)	Restoration	Carter T.C. & Steffen B.J. (2010) Converting abandoned mines	-
			Reopen entrances to closed mines that may be suitable for roosting bats	Restoration	-	There is limited academic research into the effectiveness of reopening
			Prevent roosting sites in buildings scheduled to be	Avoidance	-	-
			Restore bat foraging habitat at ex-quarry sites	Restoration	Kerbiriou C., Parisot-Laprun M. & Julien J.F. (2018) Potential	-
Olive-sided flycatcher	Design and Construction	Habitat loss	Avoid nesting sites and important breeding and non-breeding habitat (e.g. coniferous forests)	Avoidance	-	Define season periods per site
Contopus cooperi			Provide artificial or alternative nesting sites (bird boxes)	Minimisation	Goodenough A.E., Maitland D.P., Hart A.G. & Elliot S.L. (2008)	-
NEAR THREATENED			Create breeding and non-breeding habitat through additional planting (e.g. coniferous woodland)	Minimisation	Bale, S. et al.(2020) The benefits of using topographic feature	-
		Habitat fragmentation	Retain and enhance linear vegetated corridors (e.g. woodland belt)	Avoidance	Freeman A.N.D., Freeman A.B. & Burchill S. (2009) Bird use of	-
		Disturbance (noise)	Ensure a robust Code Of Construction Practice (or	Minimisation	Manitob Hydro (2020) Olive-sided flycatcher and rusty blackb	-

PROTEUS TECHNICAL BRIEFS



UNEP-WCMC Technical Briefing
December 2021

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The Global Energy Transition

The role of mining and energy companies in enabling a nature positive energy transition

Key Messages

- The global energy transition will significantly increase demand for key metals and minerals.
- The surge in demand will open up new frontiers of mineral extraction and has the potential to exacerbate existing environmental and social risks in operations and along supply chains for mining companies and their customers such as renewable energy companies.
- If left unchecked, these material risks may slow clean energy deployment and imperil the nature positive transition needed to halt climate change and biodiversity loss.
- Recommendations on where Proteus Partners must act to minimise biodiversity-relevant risks within their operations and supply chains and enable a nature positive energy transition include:
    1. Integration of circular design principles and closed loop efforts in the production of energy assets
    2. Accelerate the adoption of net-gain approaches to mitigate site-based impacts
    3. Contribute to closing the knowledge gap on the ecological impacts of operating in new frontiers such as deep-sea mining
    4. Disclose footprint and adopt transparent, responsible supply chains supported by verified certification schemes and due diligence procedures
    5. Underpin biodiversity commitments with meaningful indicators based on sound and scientific criteria
    6. Gain more control over the compliance of social and environmental standards along the supply chain through e.g. vertical integration and partnerships
    7. Decarbonise operations and portfolios and divest from fossil fuels

UNEP-WCMC Technical Briefing
November 2021

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The Area of Influence of site-based operations – Direct Impacts

Assigning buffer distances for high-level screening of biodiversity exposure based on direct impacts

Key Messages

- Defining an appropriately scaled 'Area of Influence' is integral to high level screening processes that aim to identify important biodiversity features that may generate risk.
- Area of influences should include the extent of expected pressures that stem from the site and consider potential for indirect impacts on biodiversity.
- To date however, there lacks consensus or quantitative guidance on appropriate buffers to be applied in different contexts. Understanding the factors underlying variation in the distances impacted by sites forms the foundations of a decision-making framework, presented here, to address this knowledge gap.
- Available literature to create generalised rules is disparate and there is a lack of research that compares pressures between sectors and habitats systematically. However, best available information suggested that the following approach should be applied for direct impacts:
    - A 10km buffer is likely to cover the majority of direct impacts of terrestrial mines in most habitats, and, applying a precautionary approach, a 5km buffer likely to cover the impacts of terrestrial oil and gas, whose impacts are generally shown to impact smaller distances than mining. These should be taken as a maximum starting point when deciding on buffers to apply during screening.

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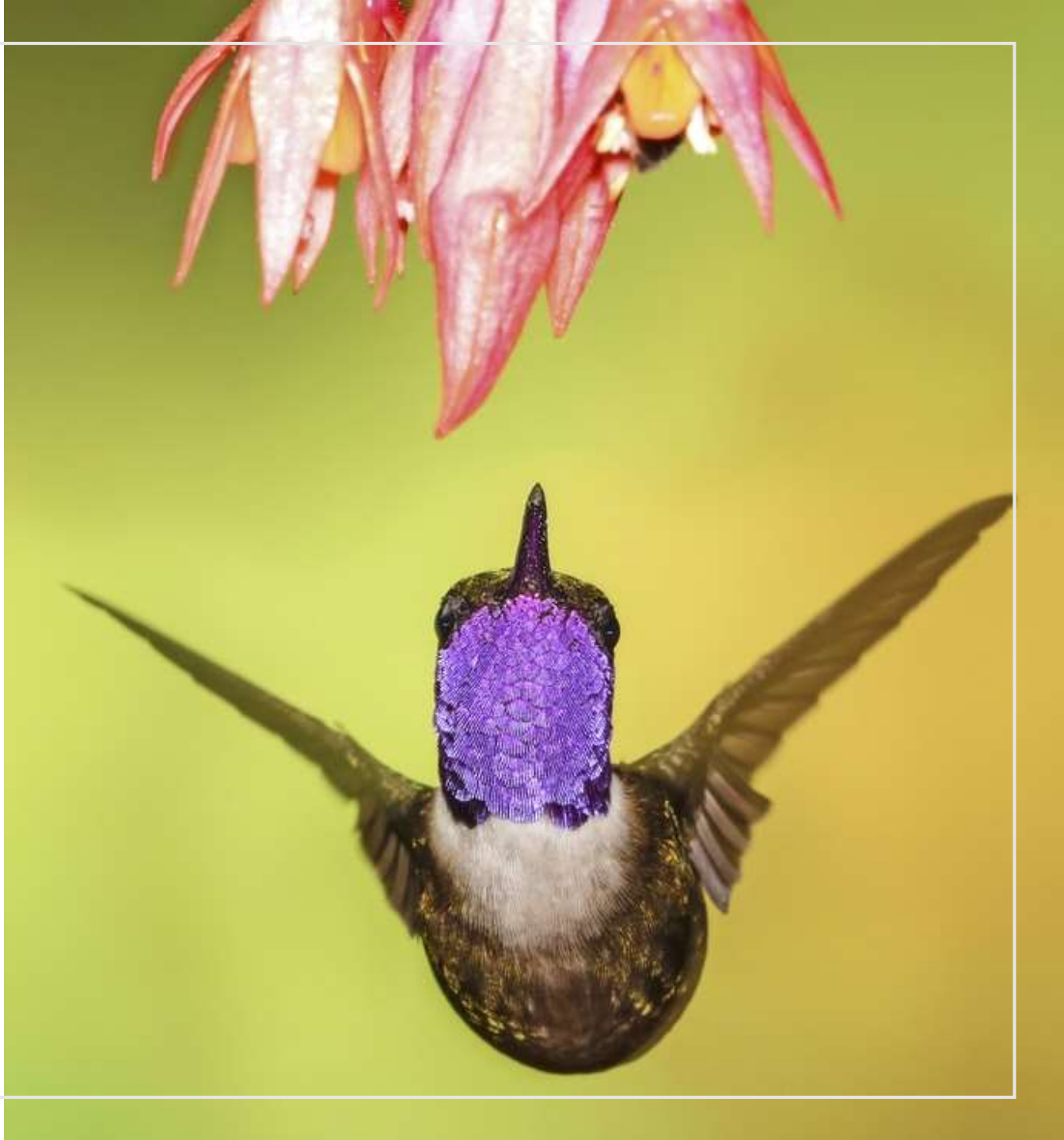
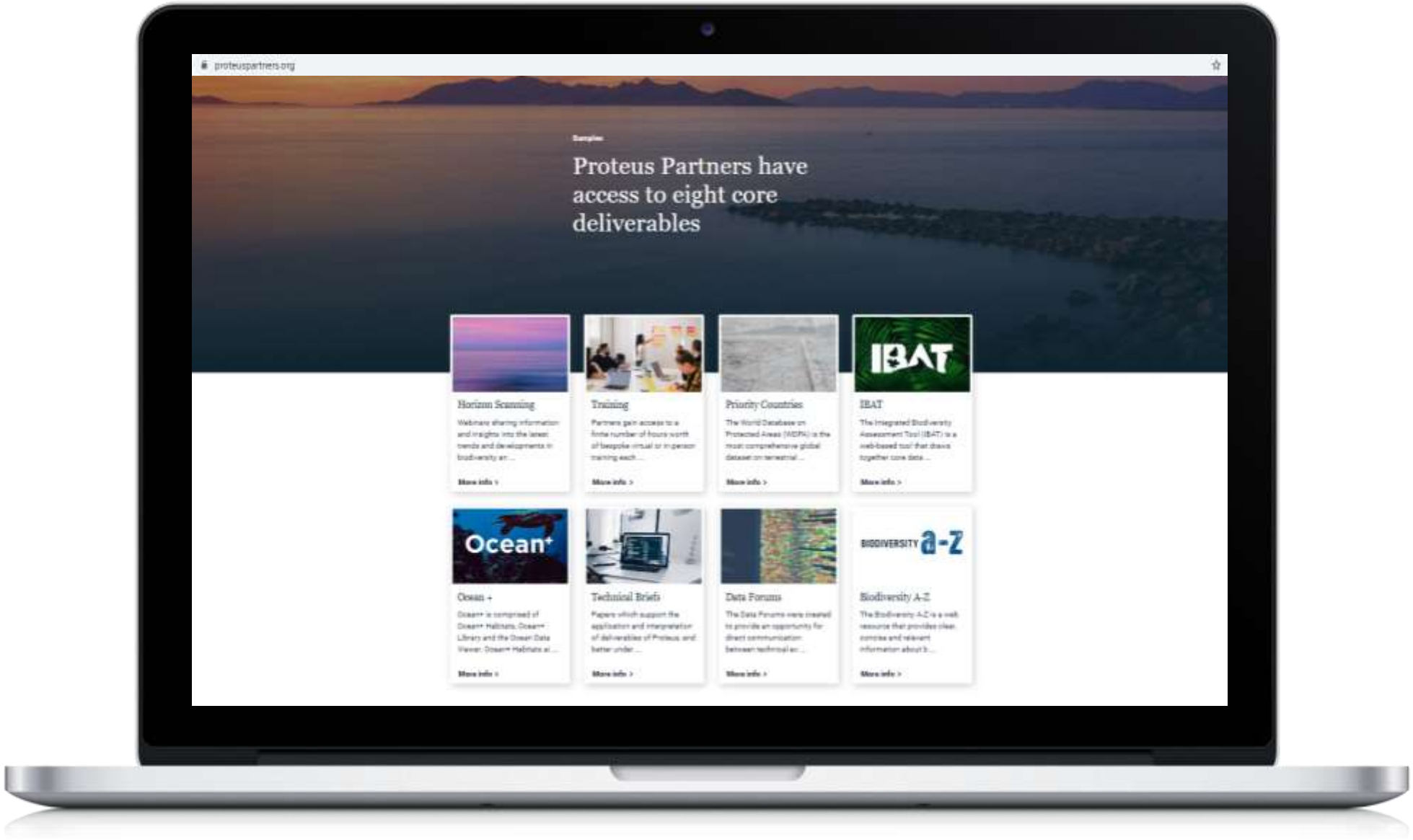
PROTEUS DATA FORUMS

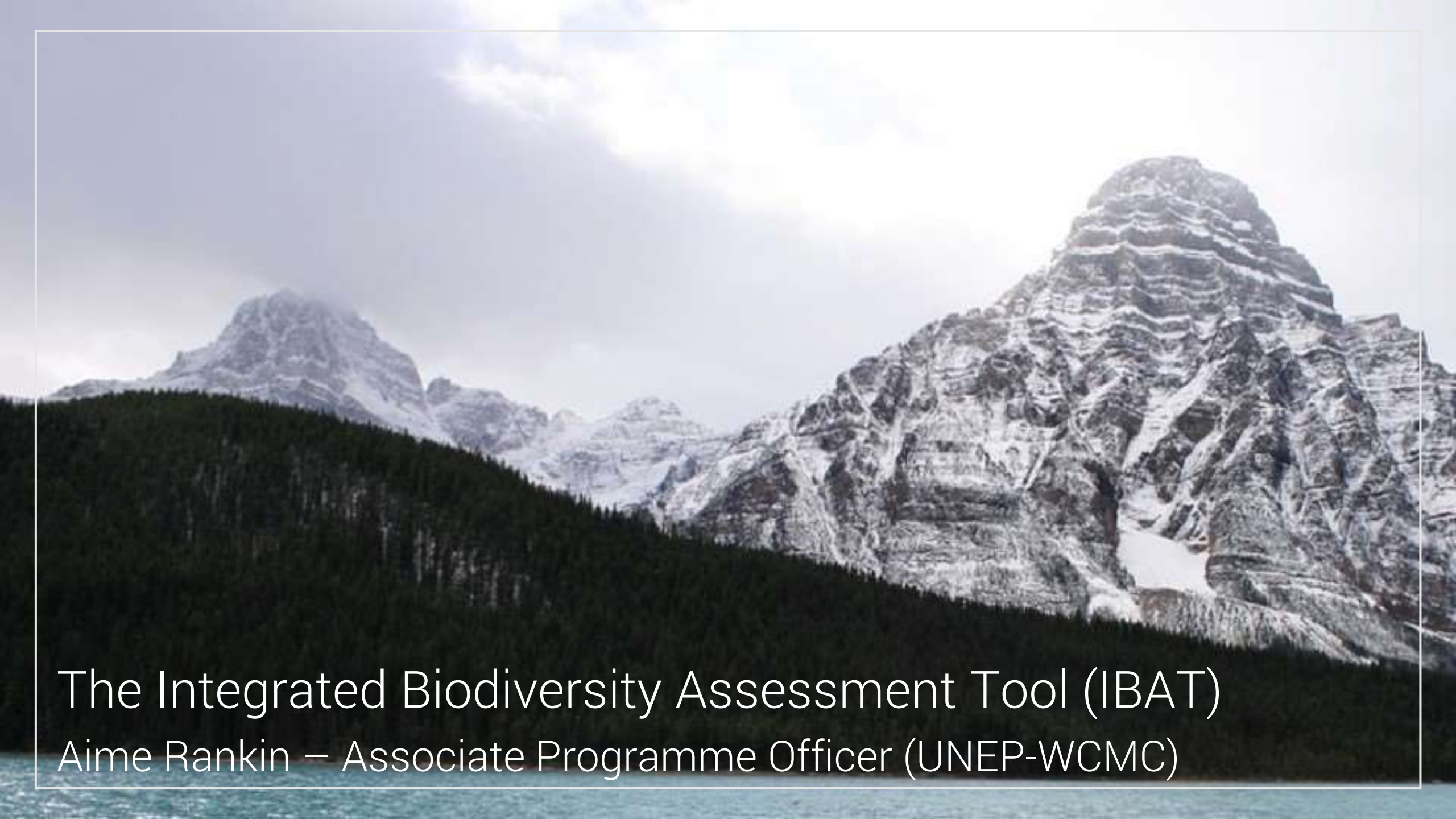
A series of webinars for Proteus Partners that provide a venue for direct communication between data users and technical experts, help increase familiarity with Proteus resources and support identification of common challenges & finding solutions

PROTEUS HORIZON SCAN WEBINARS

A series of webinars for Proteus Partners sharing information and insights into the latest trends and developments in biodiversity and ecosystem services policy, initiatives, data and tools.




proteuspartners.org
Proteus Partners have access to eight core deliverables
Horizon Scanning
Training
Priority Countries
IBAT
IBAT
Ocean+
Technical Briefs
Data Forums
BIODIVERSITY a-Z
Biodiversity A-Z



The Integrated Biodiversity Assessment Tool (IBAT)

Aime Rankin – Associate Programme Officer (UNEP-WCMC)

INTEGRATED BIODIVERSITY ASSESSMENT TOOL (IBAT)

IBAT

KEY FEATURES OF IBAT

Features

- Ability to draw polylines and polygons
- Upload multiple sites (csv, shp, KMZ, KML)
- Download data per specified area
- Create portfolio of ‘Projects’ (sites)
- Site page giving overview of a site
- Multiple report types: Proximity, IFC PS6/World Bank ESS6, Freshwater, Multi-site
- Ability to view all data in the IBAT map

Real-time updates

- Protected Areas
- Key Biodiversity Areas
- Red List of Species data
- Species Threat Abatement and Restoration (STAR)

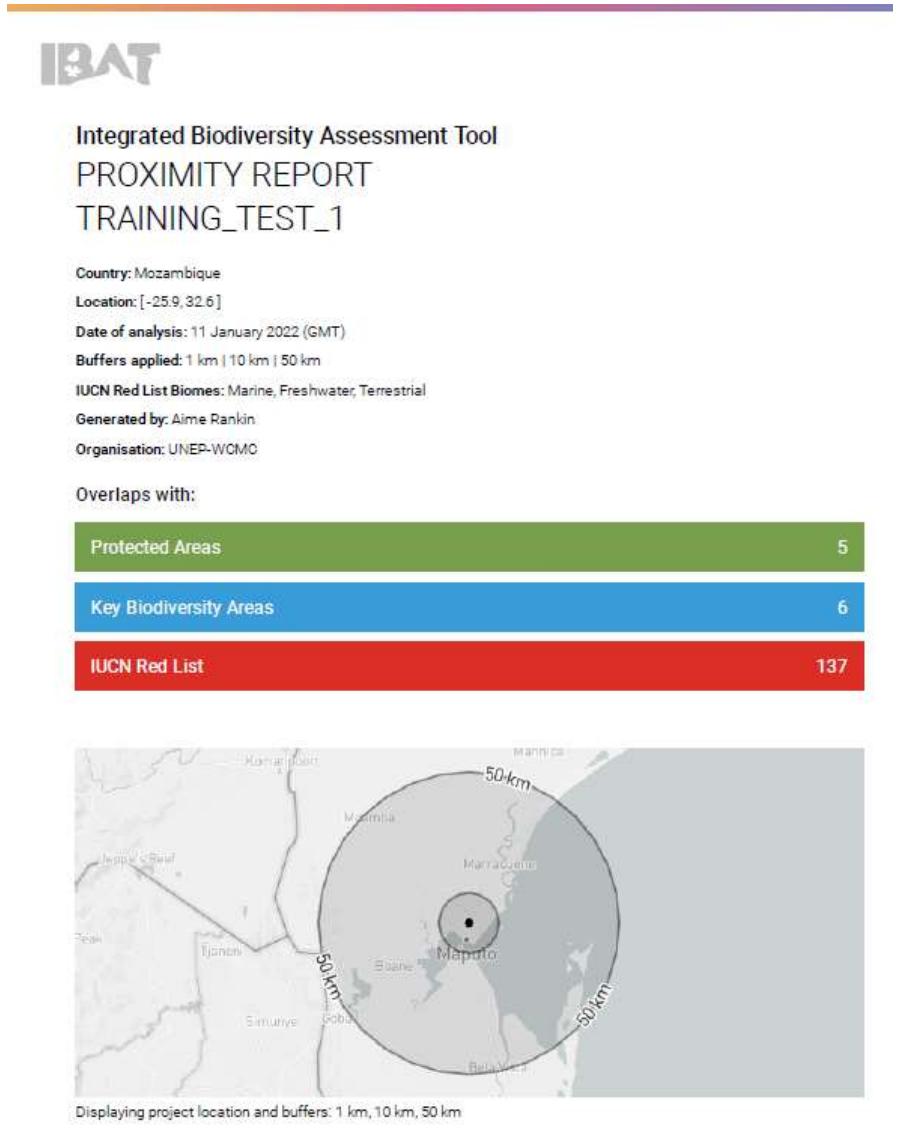
Committed to continuous improvement and user support

- Fully maintained
- Scientifically robust
- Committed to innovation and new functionality

IBAT REPORTS

Proximity Reports

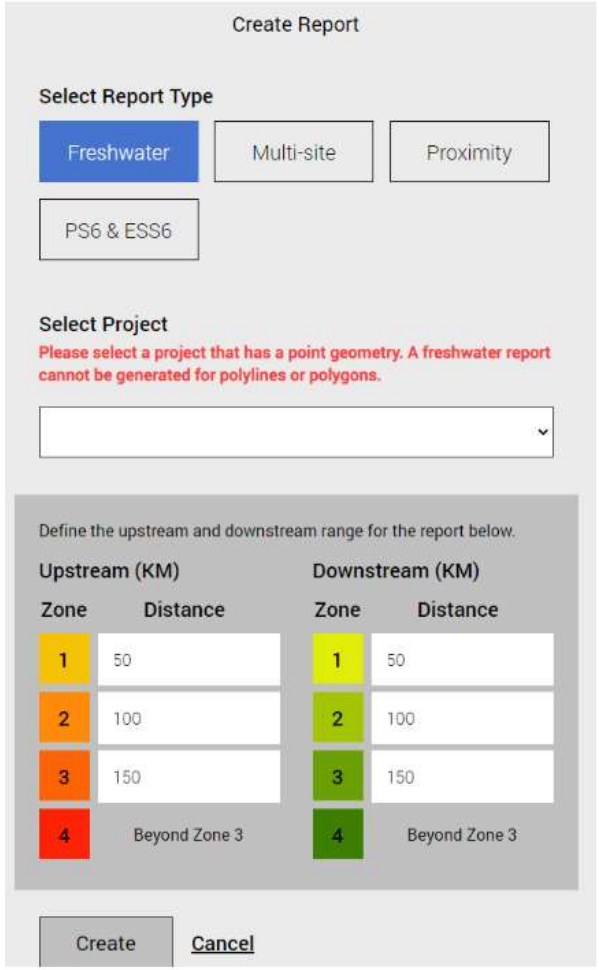
- High-level early stage biodiversity risk screening for a single site.
- Buffers from 1 to 50 km.
- Assess for overlap with:
  - Protected Areas.
  - Key Biodiversity Areas.
  - IUCN Red List species.

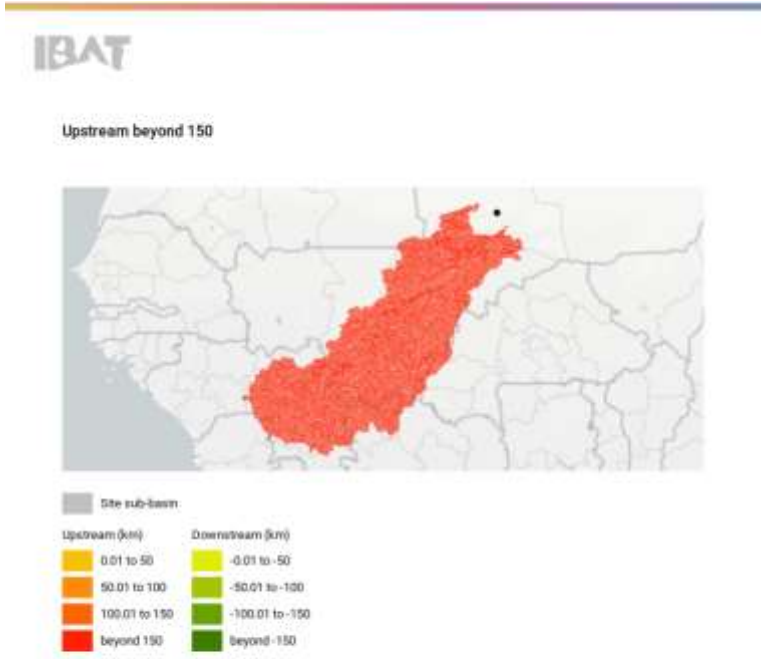


IBAT REPORTS

Freshwater

- High-level early stage biodiversity risk screening for a single site with potential to impact freshwater ecosystems.
- Upstream and downstream buffers.
- Point features only.

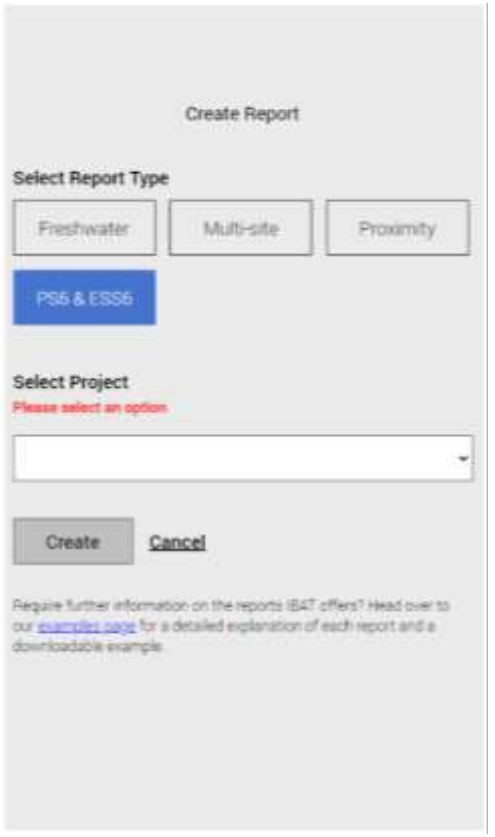


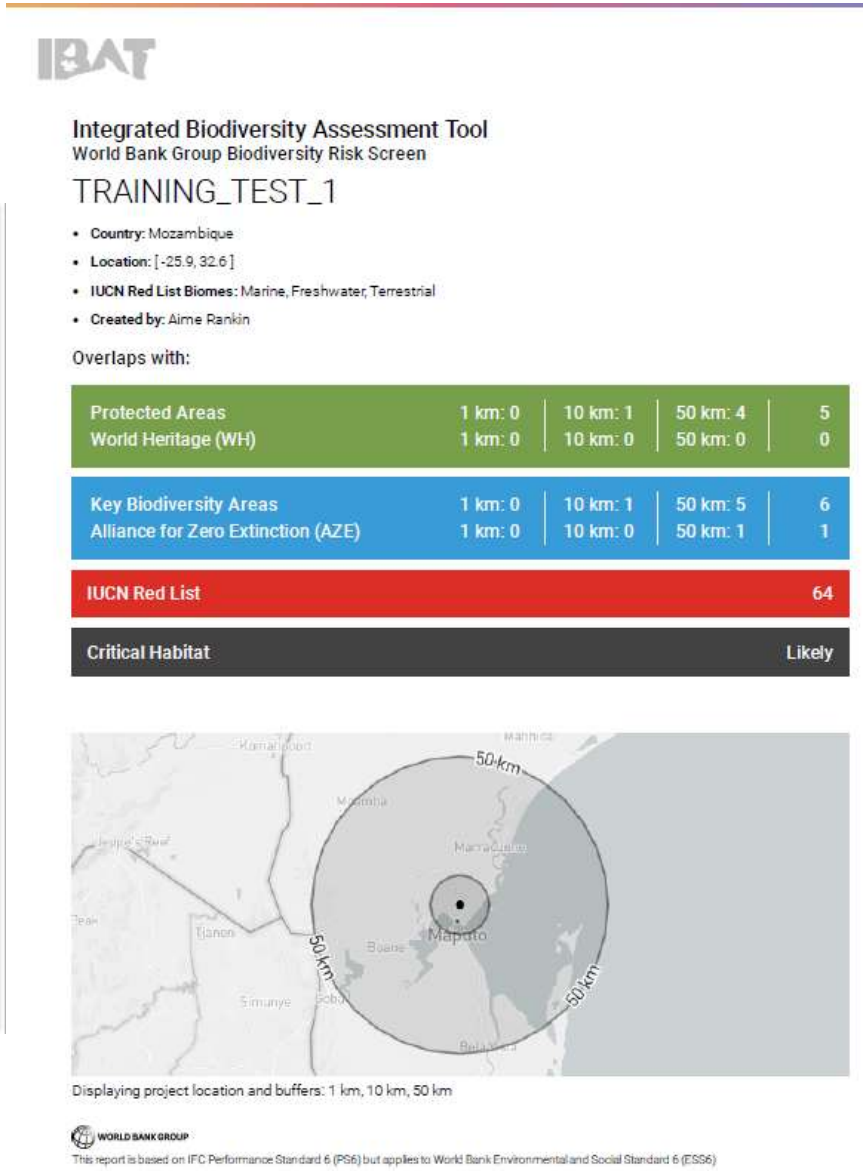


IBAT REPORTS

World Bank Group Risk Reports

- High-level early stage biodiversity risk screening for a single site with specific reference to **PSS6** and **ESS6**.
- Assesses **Critical habitat likelihood**.
- Buffers pre-defined at 10 and 50 km.

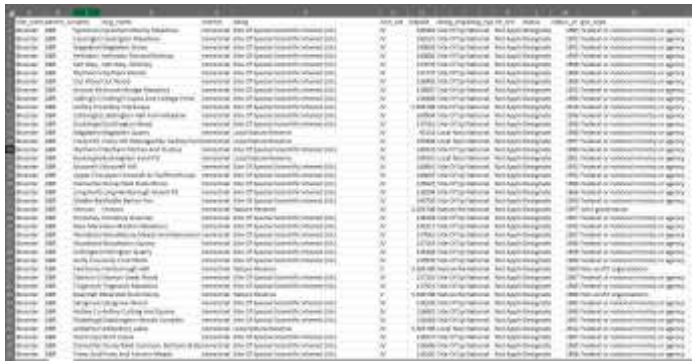




IBAT REPORTS

Multi Site

- IBAT Multi-site reports designed to help companies reporting for GRI/ SASB, and certification schemes .
- GRI Disclosure 304-1 Identify operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas (aka Key Biodiversity Areas)
- GRI Disclosure 304-4 Identify presence of IUCN Red List species and national conservation list species with habitats in areas affected by operations.



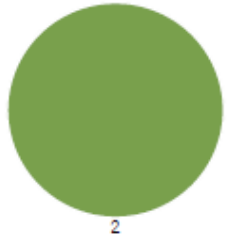
IBAT

Overlap with protected areas and Key Biodiversity Areas (KBAs)

The following table shows the number of protected areas and KBAs overlapped by a 50.0 km buffer for each operational site where an overlap occurs.

Site	Area (km^2)	Protected Areas	KBAs
Training_test_1	0	5	6
Training_test_2	0	173	20

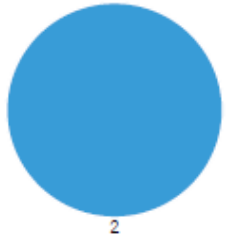
% Summary of protected areas overlap



2 (100.00% of sites) are within 50.0 km of a protected area.

0 (0.00% of sites) are not within 50.0 km of a protected area.

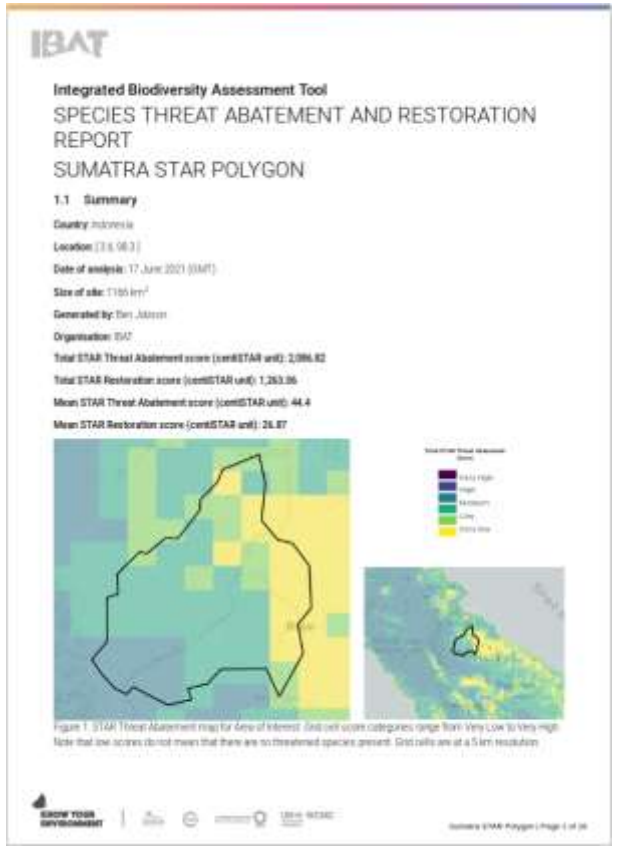
% Summary of KBAs overlap



2 (100.00% of sites) are within 50.0 km of a Key Biodiversity Area.

0 (0.00% of sites) are not within 50.0 km of a Key Biodiversity Area.

SPECIES THREAT ABATEMENT AND RESTORATION METRIC (STAR)



IBAT

Integrated Biodiversity Assessment Tool

SPECIES THREAT ABATEMENT AND RESTORATION REPORT

SUMATRA STAR POLYGON

1.1 Summary

Country: Indonesia

Location: [3 S, 98 E]

Date of analysis: 17 June 2021 (GMT)

Size of site: 7185 km²

Generated by: Ben Jobson

Organisation: IBAT

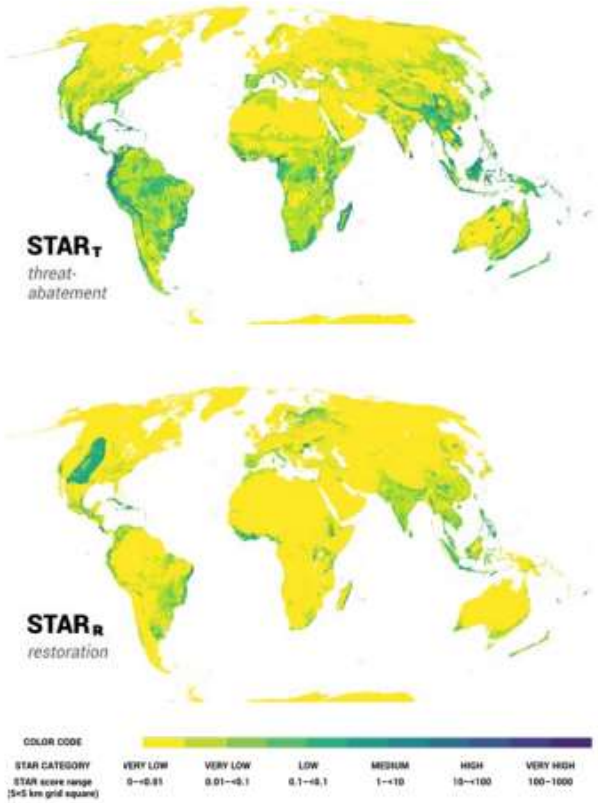
Total STAR Threat Abatement score (contSTAR unit): 2,086.82

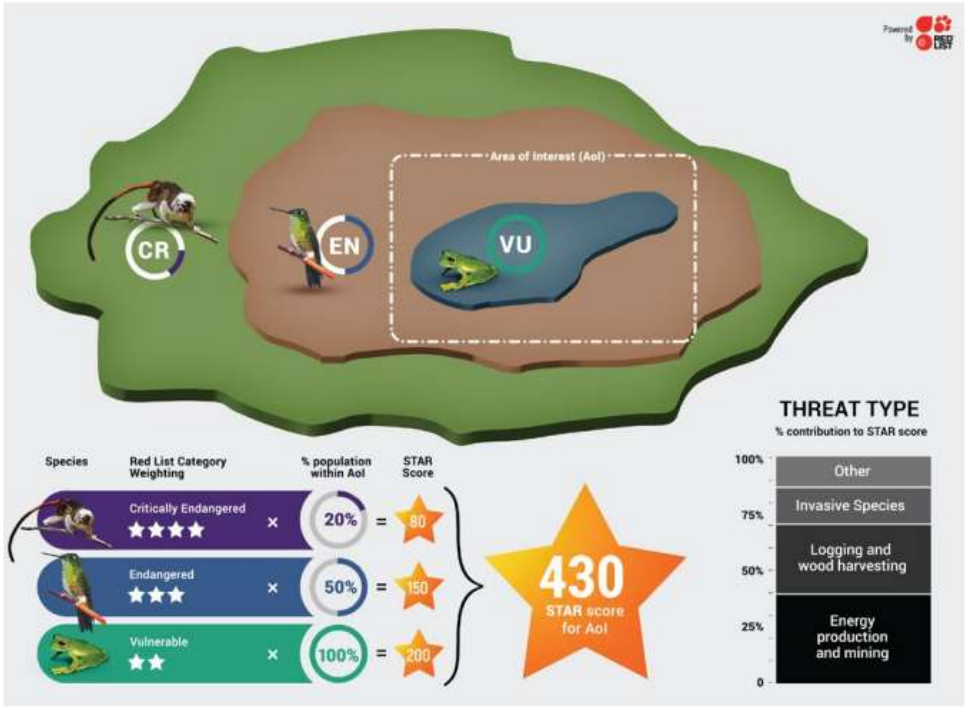
Total STAR Restoration score (contSTAR unit): 1,263.06

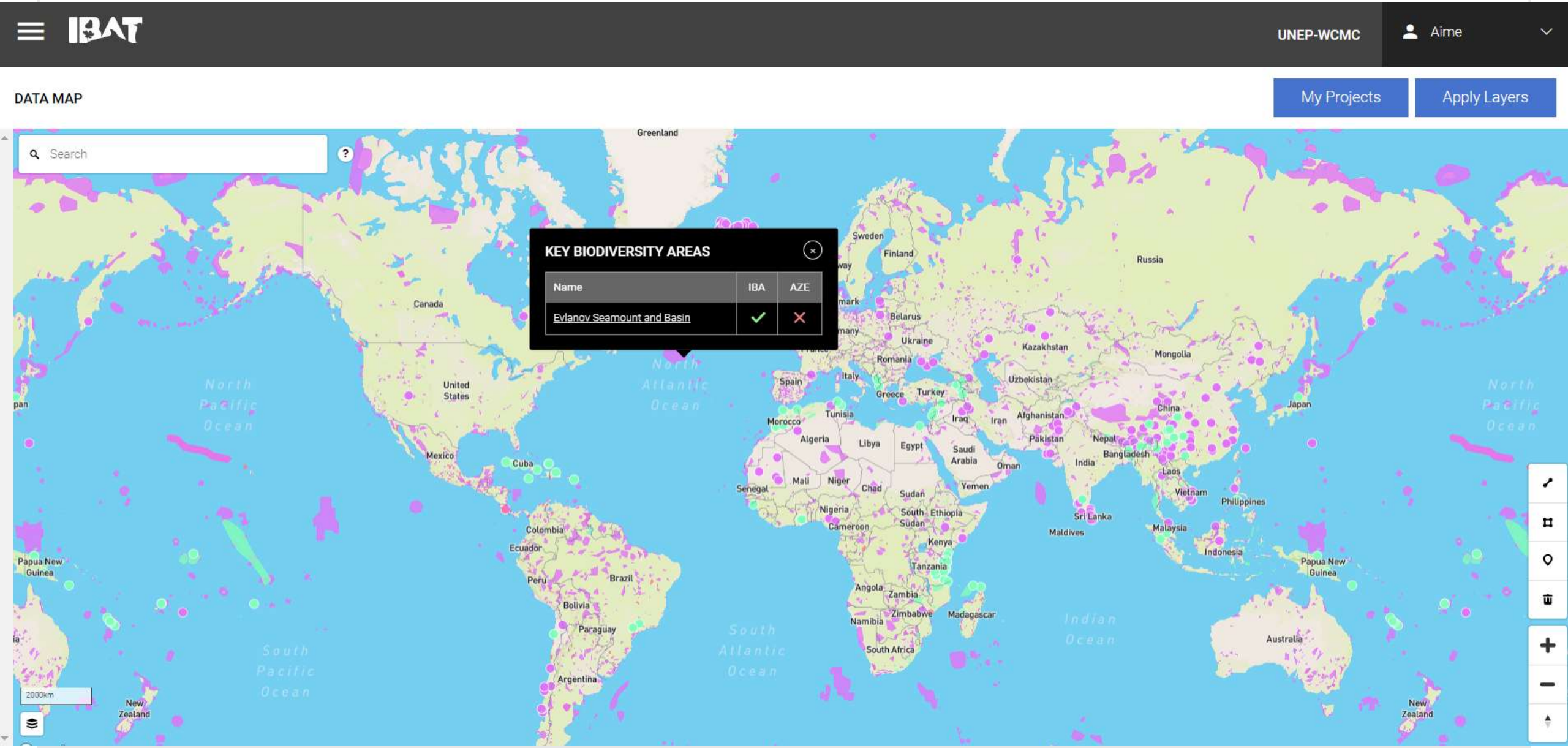
Mean STAR Threat Abatement score (contSTAR unit): 44.4

Mean STAR Restoration score (contSTAR unit): 26.87

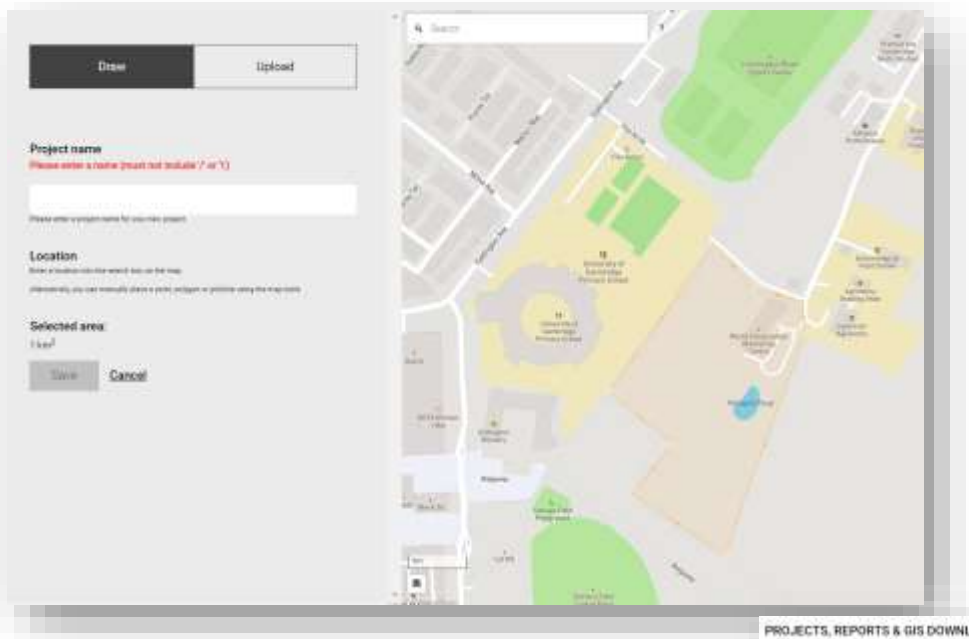
Figure 1. STAR Threat Abatement map for Area of Interest. Grid cell score categories range from Very Low to Very High. Note that low scores do not mean that there are no threatened species present. Grid cells are at a 5 km resolution.



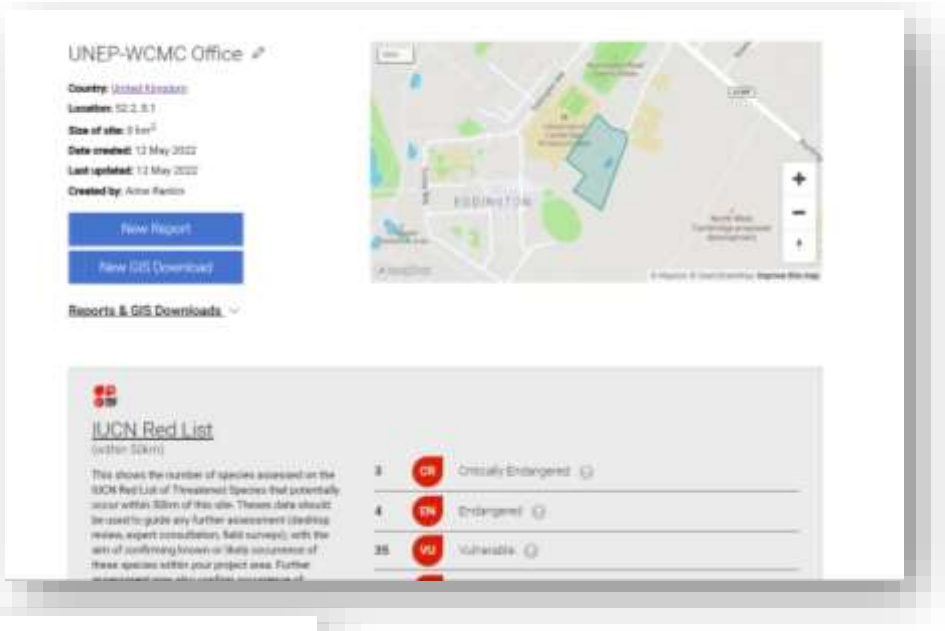


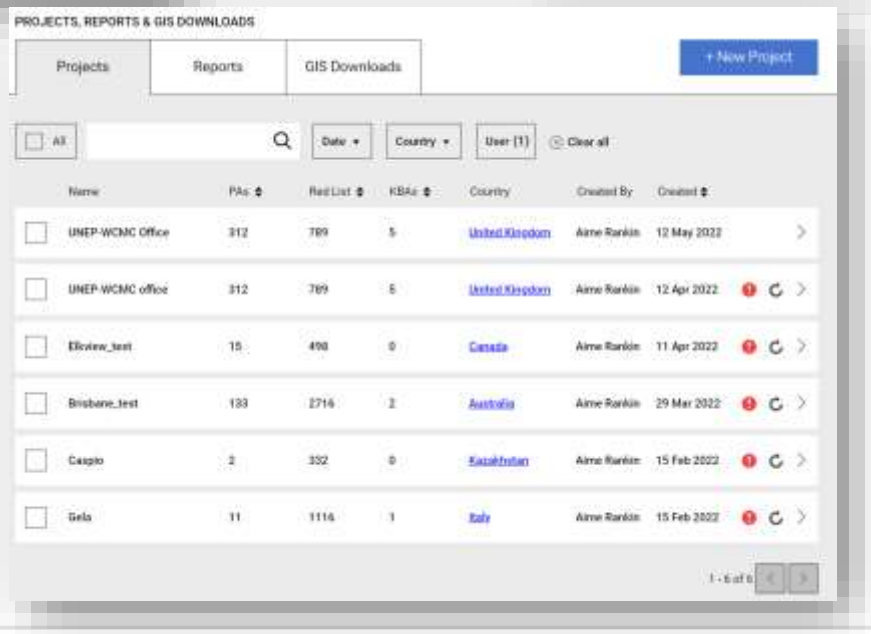

IBAT
UNEP-WCMC
Aime
DATA MAP
My Projects
Apply Layers
Search
KEY BIODIVERSITY AREAS
Name
IBA
AZE
Evlanov Seamount and Basin
Greenland
Canada
United States
Mexico
Cuba
Colombia
Ecuador
Peru
Brazil
Bolivia
Paraguay
Argentina
Papua New Guinea
New Zealand
Sweden
Finland
Russia
Belarus
Ukraine
Romania
Kazakhstan
Mongolia
Uzbekistan
Spain
Italy
Greece
Turkey
Tunisia
Morocco
Algeria
Libya
Egypt
Iraq
Iran
Afghanistan
Pakistan
China
Japan
Nepal
Bangladesh
India
Saudi Arabia
Oman
Yemen
Mali
Niger
Chad
Sudan
Senegal
Nigeria
Cameroon
South Sudan
Ethiopia
Kenya
Tanzania
Angola
Zambia
Zimbabwe
Namibia
South Africa
Madagascar
Sri Lanka
Maldives
Laos
Vietnam
Philippines
Malaysia
Indonesia
Australia
North Pacific Ocean
North Atlantic Ocean
South Pacific Ocean
South Atlantic Ocean
Indian Ocean
2000km

Adding sites (draw directly on map or upload file)



Home page for your site with summary information





Create portfolios of ‘projects’ (sites)

NEWMONT USE OF IBAT

Option 1 – Australia/Africa

- Jarrod Riley, Manager of Sustainability & External Relations for Exploration, Regional Projects & Closure – Australia
    - Utilising IBAT to inform biodiversity risk assessments in exploration and projects

Option 2 – Americas

- Stephanie Thibeault, Regional Environmental Performance Director for North America
    - Saddle Project baseline studies and informing the BRAT

Newmont Use of IBAT: Option 1

Jarrod Riley

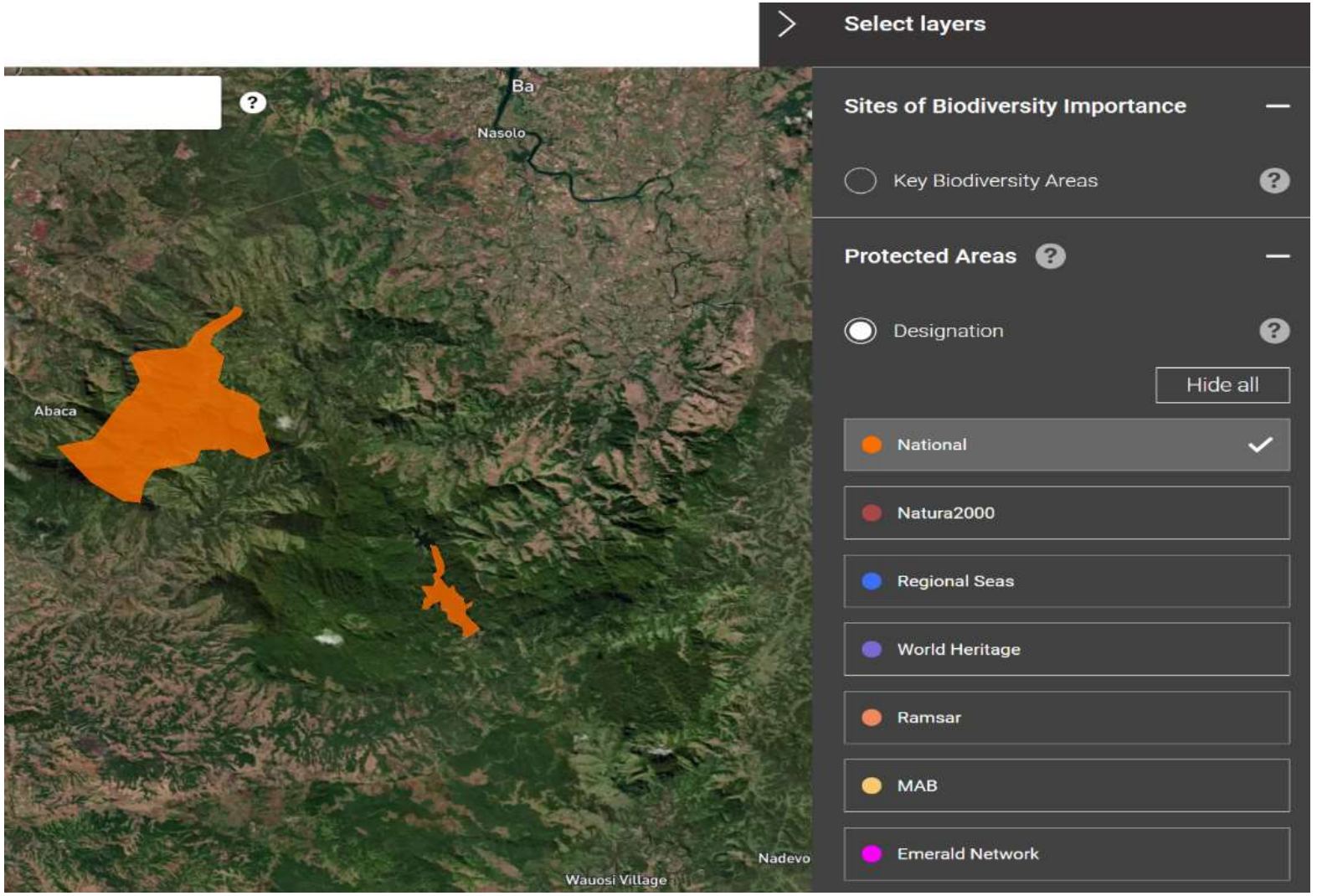
IBAT EXAMPLE

- Utilised IBAT on a number of occasions

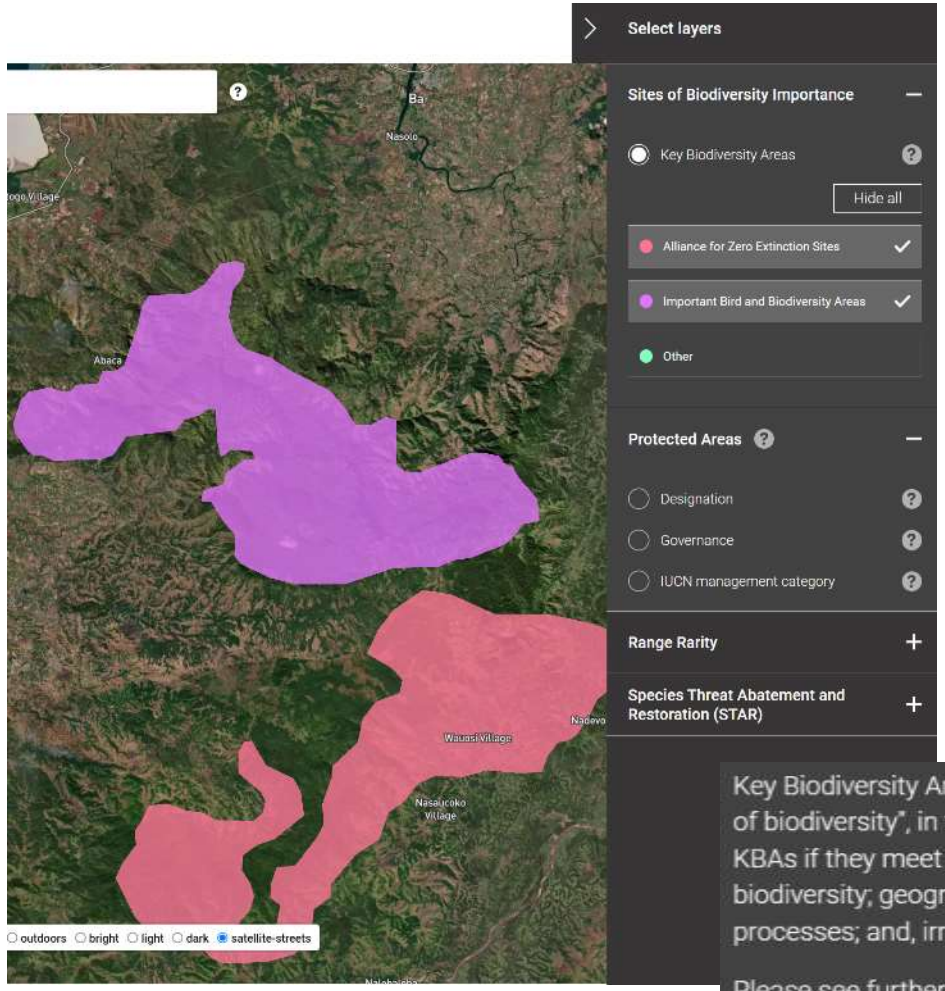
- Useful to do a first pass on potential projects or assets as a part of due diligence
  - Provides a quick and easy platform to get a high-level understanding of potential risks regarding biodiversity
  - Fairly self intuitive tool which I managed to navigate without any training or guidance
    - It is probably more powerful than what I utilise it for so I am keen to learn more myself.
  - A good starting point with combinations of a lot of information in one platform

- Useful to keep reviewing risks from a due diligence perspective and will look to feed more into the Generative Exploration support work i.e., assessment on new tenure, annual review of S&ER workbooks to review current risk and opportunities.

IBAT EXAMPLE



IBAT EXAMPLE



Key Biodiversity Areas (KBA) are "sites contributing significantly to the global persistence of biodiversity", in terrestrial, freshwater and marine ecosystems. Sites qualify as global KBAs if they meet one or more of 11 criteria, clustered into five categories: threatened biodiversity; geographically restricted biodiversity; ecological integrity; biological processes; and, irreplaceability.

Please see further information including the global standard for the identification of Key Biodiversity Areas and associated guidance on business and KBAs.

Newmont Use of IBAT: Option 2 - Saddle Project, BC

Stephanie Thibeault

Newmont CANADA

THE SADDLE PROJECT

- The Saddle Project is located in Tahltan Territory, approximately 6km west of Iskut and 510 km north of Terrace in British Columbia
- The Saddle North deposit was discovered by GT Gold in 2018 after six seasons of exploration
- A site-specific Biodiversity Disturbance Procedure was developed and is followed for any clearing activities ensuring there is no loss to key biodiversity values (KBVs)
- Newmont has started social and environmental baseline studies to validate key biodiversity values within the area
- Of most importance is the ungulate population west of Saddle North and the sacred Klabona headwaters east of Saddle North

INTEGRATED BIODIVERSITY ASSESSMENT TOOL

IBAT

Integrated Biodiversity Assessment Tool

PROXIMITY REPORT

TATOGGA PROJECT

Country: Canada

Location: [57.9, -130.1]

Date of analysis: 17 August 2021 (GMT)

Buffers applied: 50 km

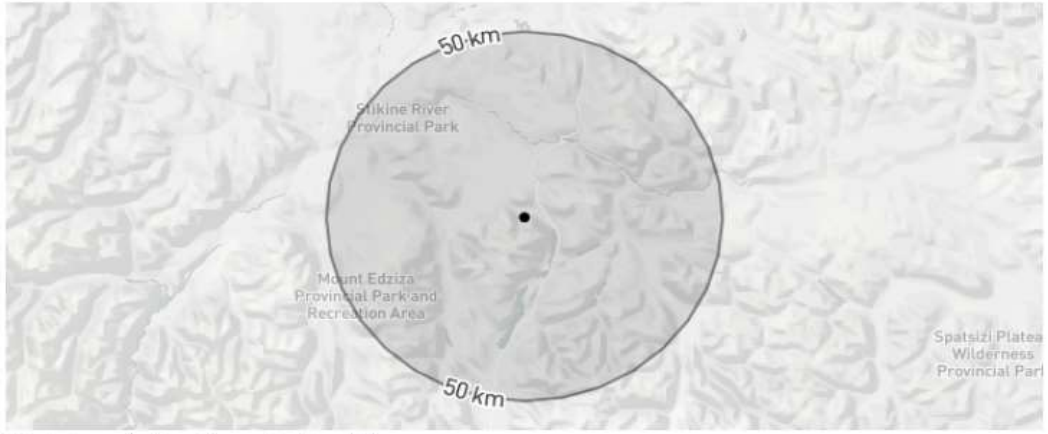
IUCN Red List Biomes: Terrestrial, Freshwater, Marine

Generated by: Stephanie Thibeault

Organisation: Newmont Mining Corporation

Overlaps with:

Protected Areas	6
Key Biodiversity Areas	0
IUCN Red List	9



Displaying project location and buffers: 50 km

Protected Areas

The following protected areas are found within 50 km of the area of interest.
For further details please refer to the associated csv file in the report folder.

Area name	Within buffer of
Kinaskan Lake Park	50 km
Mount Edziza Park	50 km
Spatsizi Plateau Wilderness Park	50 km
Stikine River Park	50 km
Todagin South Slope Park	50 km
Todagin Wildlife Management Area	50 km

IUCN Red List of Threatened Species

The following threatened species are potentially found within 50km of the area of interest.

For the full IUCN Red List please refer to the associated csv in the report folder.

Species Name	Common Name	Taxonomic Group	IUCN Category	Population Trend	Biome
Myotis lucifugus	Little Brown Bat	MAMMALIA	EN	Decreasing	Terrestrial
Salvelinus confluentus	Bull Trout	ACTINOPTERYGII	VU		Marine, Freshwater
Rangifer tarandus	Reindeer	MAMMALIA	VU	Decreasing	Terrestrial
Cypseloides niger	Black Swift	AVES	VU	Decreasing	Terrestrial
Bubo scandiacus	Snowy Owl	AVES	VU	Decreasing	Terrestrial, Freshwater
Podiceps auritus	Horned Grebe	AVES	VU	Decreasing	Terrestrial, Marine, Freshwater
Euphagus carolinus	Rusty Blackbird	AVES	VU	Decreasing	Terrestrial, Freshwater
Bombus occidentalis	Western Bumble Bee	INSECTA	VU	Decreasing	Terrestrial
Tricholoma apium		AGARICOMYCETES	VU	Decreasing	Terrestrial

SADDLE PROJECT- BIODIVERSITY DISTURBANCE PERMIT

- The S&ER team created an internal site-specific Biodiversity Disturbance Permit that is completed by Exploration for ANY ground disturbance work in the Project Area
- KBVs are indicated in this permit based on Saddle's Baseline work completed in 2022
- The permit outlines mitigation control measures that are required based on the activity of disturbance

Image: Saddle Area 2022, conducting ecosystem mapping

Newmont

SADDLE PROJECT
FORM

Biodiversity Disturbance Permit

BDP Number:	**CMP Number:**	
☐ **Boundaries flagged?**	☐ **GPS Files attached?**	☐ **Map/ Drawings attached?**
Form Completed By:		
Form Reviewed By the Following		
S&ER Manager:		
Exploration Manager:		
Clearing Supervisor (Contractor) IF APPLICABLE:		
Construction Supervisor (Contractor) :		
Job Scope Details		
Expected Start Date: Click or tap to enter a date.	**Expected Completion Date:** Click or tap to enter a date.	
Location of Work: South of Bear Paw Lodge	**Area(Ha):**	
Purpose of Work: Clearing/ grubbing and brushing trees and vegetation for new camp and core processing facility		
Anticipated Reclamation: Post project, decommission camp, replant vegetation		

This biodiversity disturbance permit is to be reviewed and approved by the Saddle S&ER team prior to commencement of any disturbance. Land disturbance includes any disturbance to the ground that is greater than 30cm. Disturbance must not occur in flagged archaeological boundaries or any other flagged buffer areas.

The British Columbia Generative Exploration S&ER Manual be consulted for mitigation controls when filling out this permit (Appendix A)

1. Use ArcGIS map layers and field inspection to assess the following:

Item	Description	Mitigation Control Required
Landscape (Wetland, hill, flat area etc.)	What is the landscape of the work area? Can view Google Earth, ArcGIS, Alas or consult previous Saddle team members	For any disturbance to the landscape, the area must be assessed by TEEM biologist ***prior to any works commencing*** Assessments include: rare plant survey, wetland survey, species at risk survey, and bird survey
Access (existing or not)	What is the access to the work area?	For any clearing activities occurring, the area must be assessed by TEEM biologist ***prior to any works commencing*** Assessments include: rare plant survey, wetland survey, species at risk survey, and bird survey
Vegetation Type (primary or secondary forest, general description)	**To add vegetation types by area from TEEM's Baseline Report (drop downs if possible)**	For any clearing activities occurring, the area must be assessed by a Registered Professional Forester ***prior to any works commencing. Tahltan must be notified and engaged***

WILDLIFE SURVEY

Numerous wildlife species were observed in and around the Saddle site:
In February 2022, the Wildlife Survey observed:

- 202 moose (24 bulls, 88 cows, 65 juveniles), 169 mountain goats, 163 Stone's sheep, 2 caribou, 3 wolverine, 4 Wolves, 30 Willow Ptarmigan, 2 fox

In May 2022, the Wildlife Survey observed:

- 32 waterbird species (1,668 individuals)
- 7 raptor species, 1 species of concern

Rare Plant Surveys and Terrestrial Ecosystem Mapping have also been completed

Details from the various Wildlife programs are incorporated into Saddle Project's Biodiversity Risk Assessment Tool (BRAT) with updates to the Biodiversity Action Plan (BAP)

Image: Three timber wolves in the Saddle Project area in February 2022

IN SUMMARY

- Proteus resources can support companies to take action on nature.
- Key Proteus tools are **Protected Planet**, **IBAT**, **Biodiversity A-Z**, **Ocean+** and the **Proteus website**.
- IBAT allows companies to access and interrogate authoritative global datasets for Protected Areas, Key Biodiversity Areas (KBAs), IUCN Red List species and the Species Threat Abatement and Restoration (STAR) metric.
- Newmont uses IBAT to inform biodiversity risk assessments, baseline studies and internal tools.

Break (5 mins)

Why is biodiversity important to businesses?

Alex Ross – Programme Officer (UNEP-WCMC)

Nature under multiple, sustained, accelerating pressures

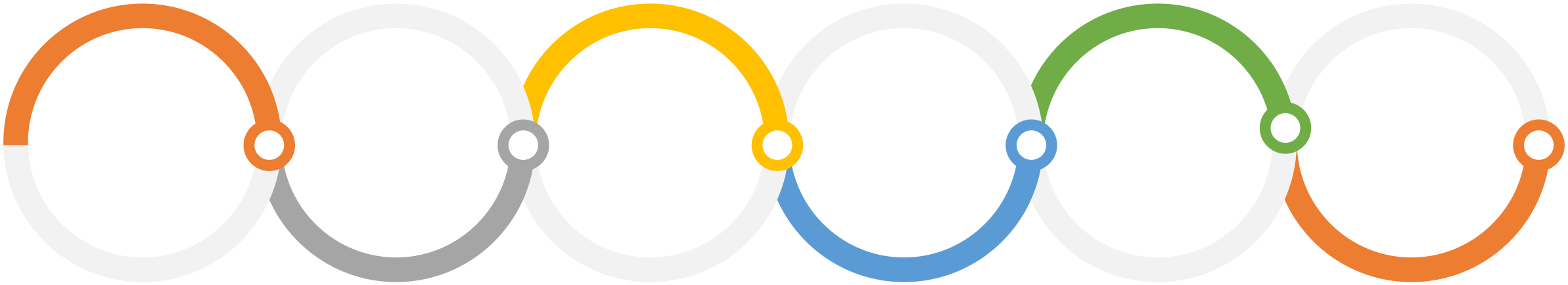
Ecosystem services in decline

Resource extraction intensifying

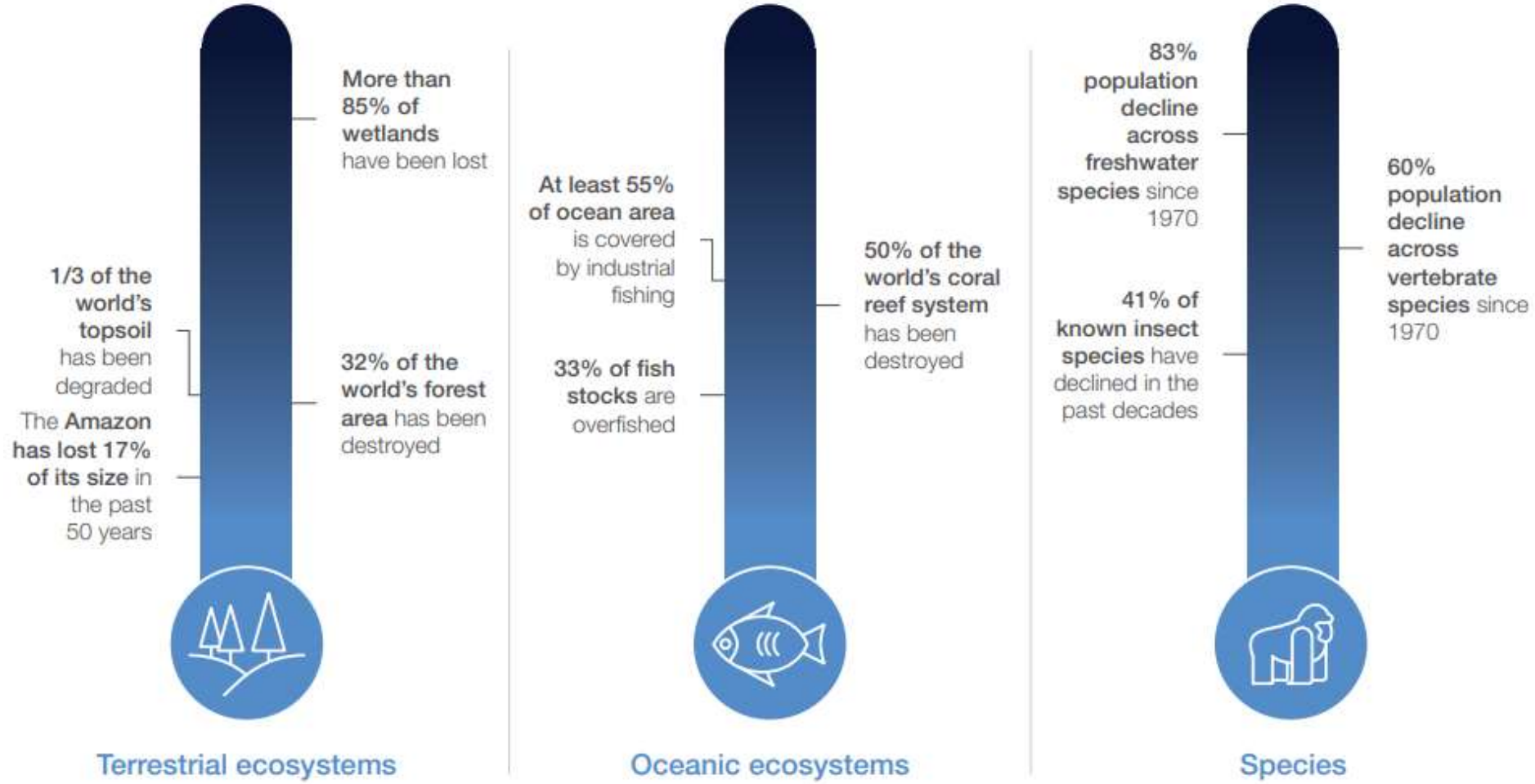
Economic growth drawing down on natural capital

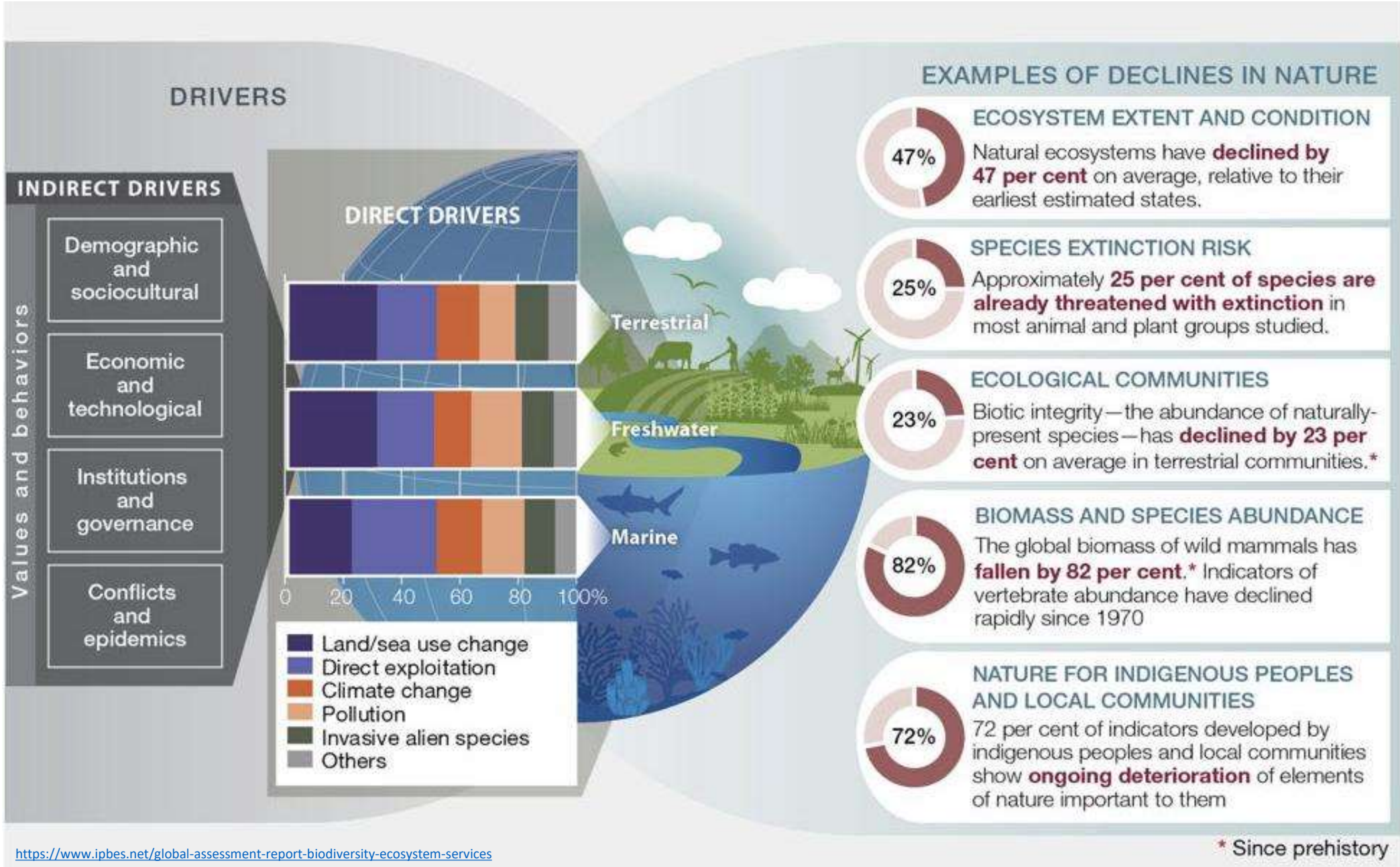
Window of opportunity to address nature and climate crisis closing

Nature loss creating real business risk



HUMAN ACTIVITIES HAVE HEAVILY IMPACTED ON NATURE





https://www.ipbes.net/global-assessment-report-biodiversity-ecosystem-services

MANY OF THE WORLD'S ECOSYSTEMS SERVICES ARE IN DECLINE

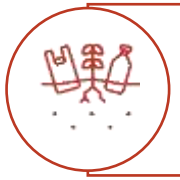
- 17 of 18 categories assessed have undergone decline

- Benefits of nature to people are not easily replaced or replicated when lost

https://www.ipbes.net/global-assessment-report-biodiversity-ecosystem-services

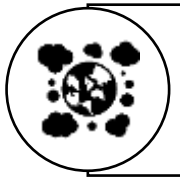
POTENTIAL IMPACTS ON BIODIVERSITY FROM MINING

Use of land & freshwater (e.g. direct use, conversion or fragmentation of natural habitats)



Pollution (e.g. emissions of air, soil and water pollutants; solid waste)

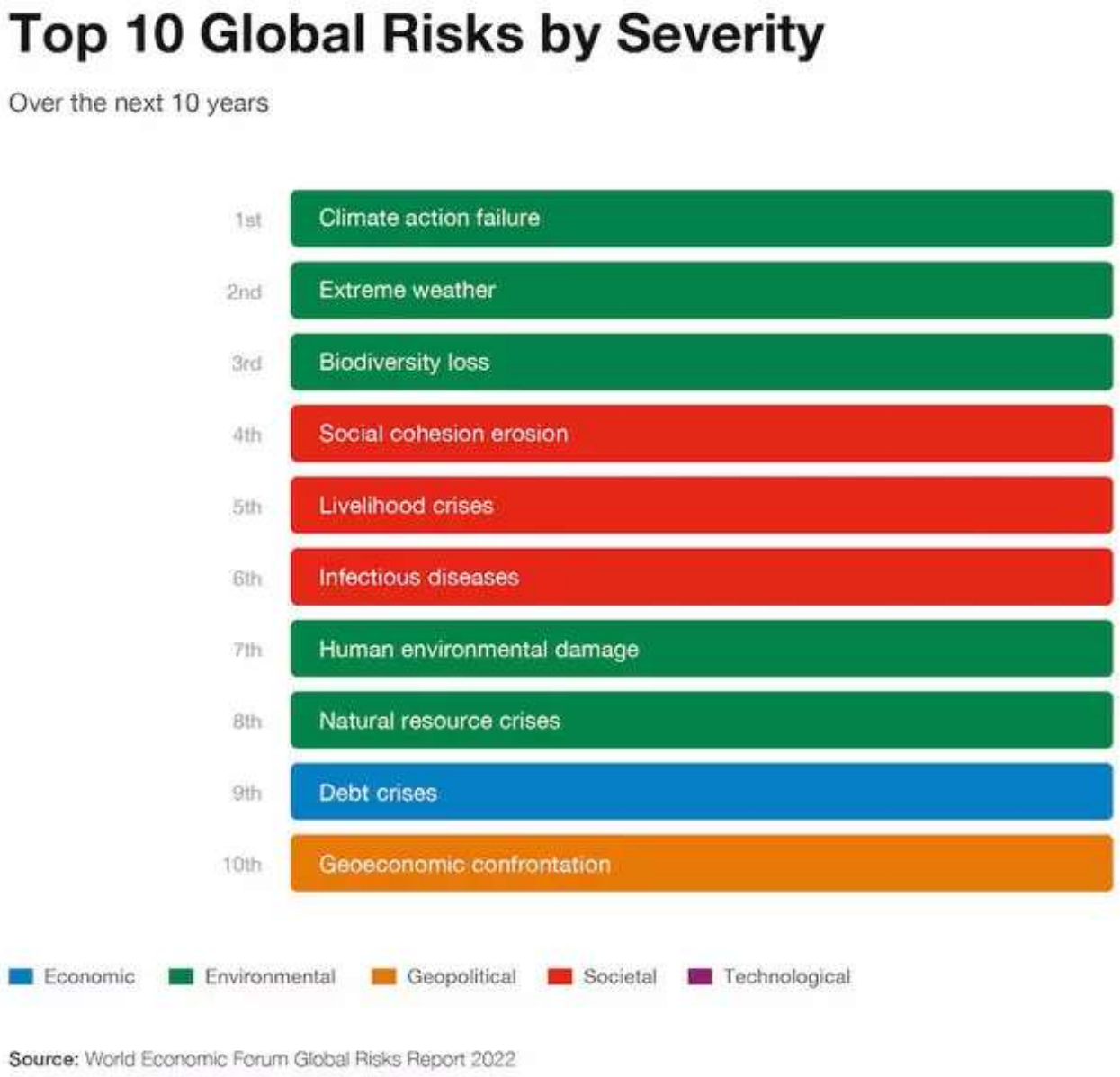
Disturbances (e.g. seismic activity affecting species)



Climate change (e.g. emission of greenhouse gases by operations, machinery, vehicles)

NATURE LOSS AS BUSINESS RISK IS WELL RECOGNISED

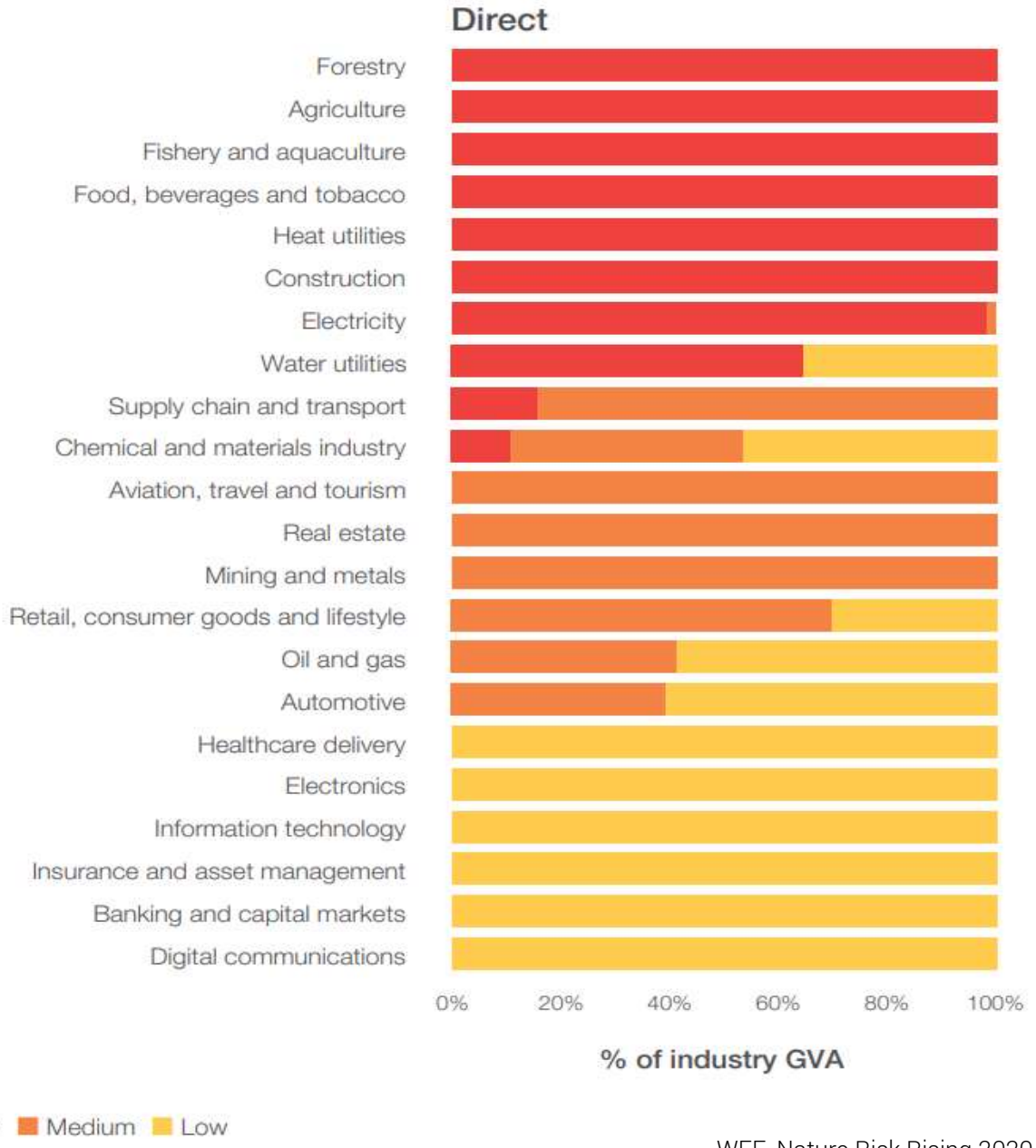
- All businesses **impact and depend on biodiversity** directly and through their supply chains
- Global biodiversity loss affects key areas of risk for any business:
  - **Physical** inc. acute and chronic
  - **Transition** inc. policy, legal and market changes
  - **Systemic** inc. natural system breakdown



THIS TRANSLATES TO POTENTIAL DISRUPTION FOR BUSINESSES

$44 Trillion at risk

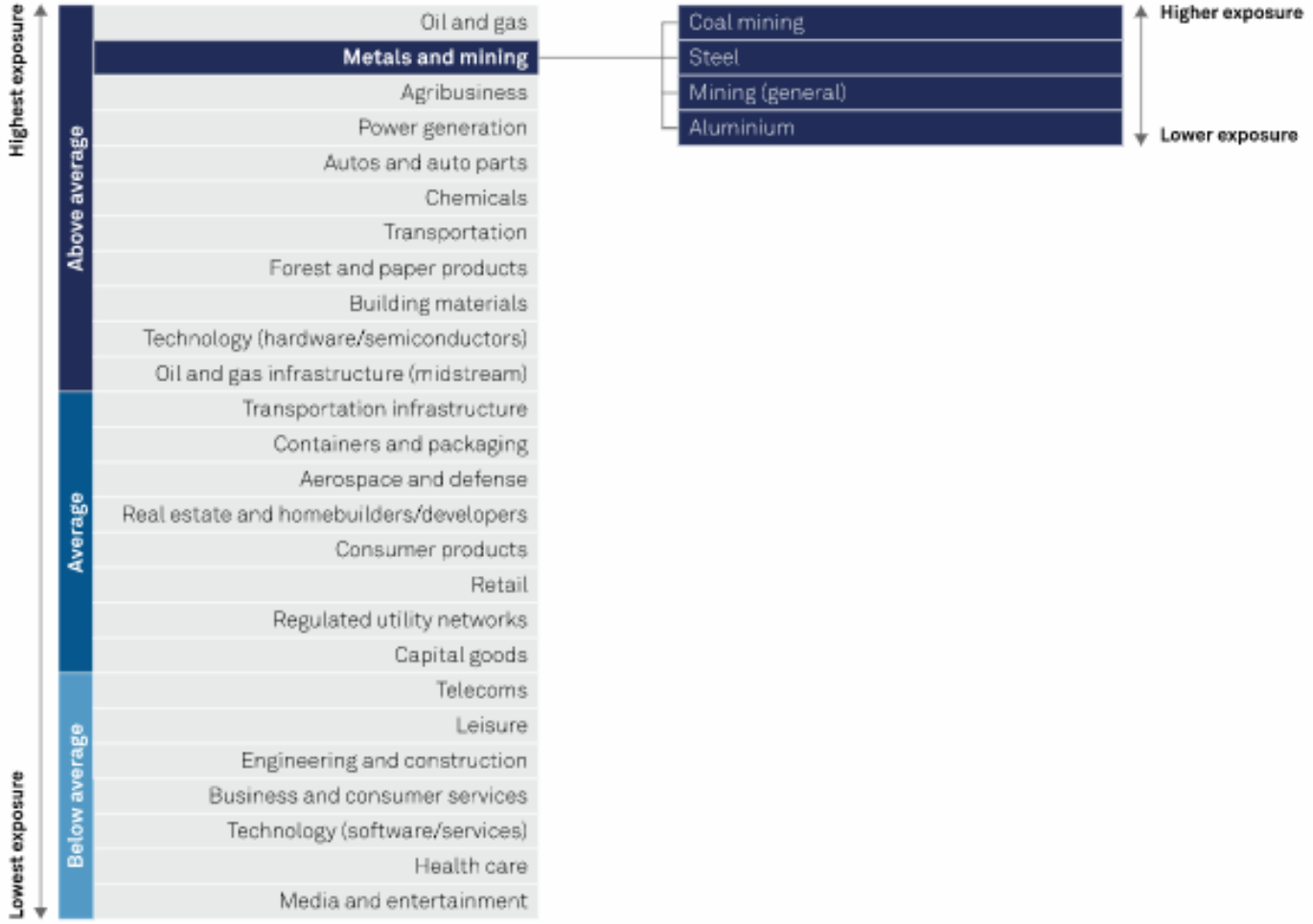
(50% of Global GDP)



WEF, Nature Risk Rising 2020

ESG SECTOR RISK ANALYSIS

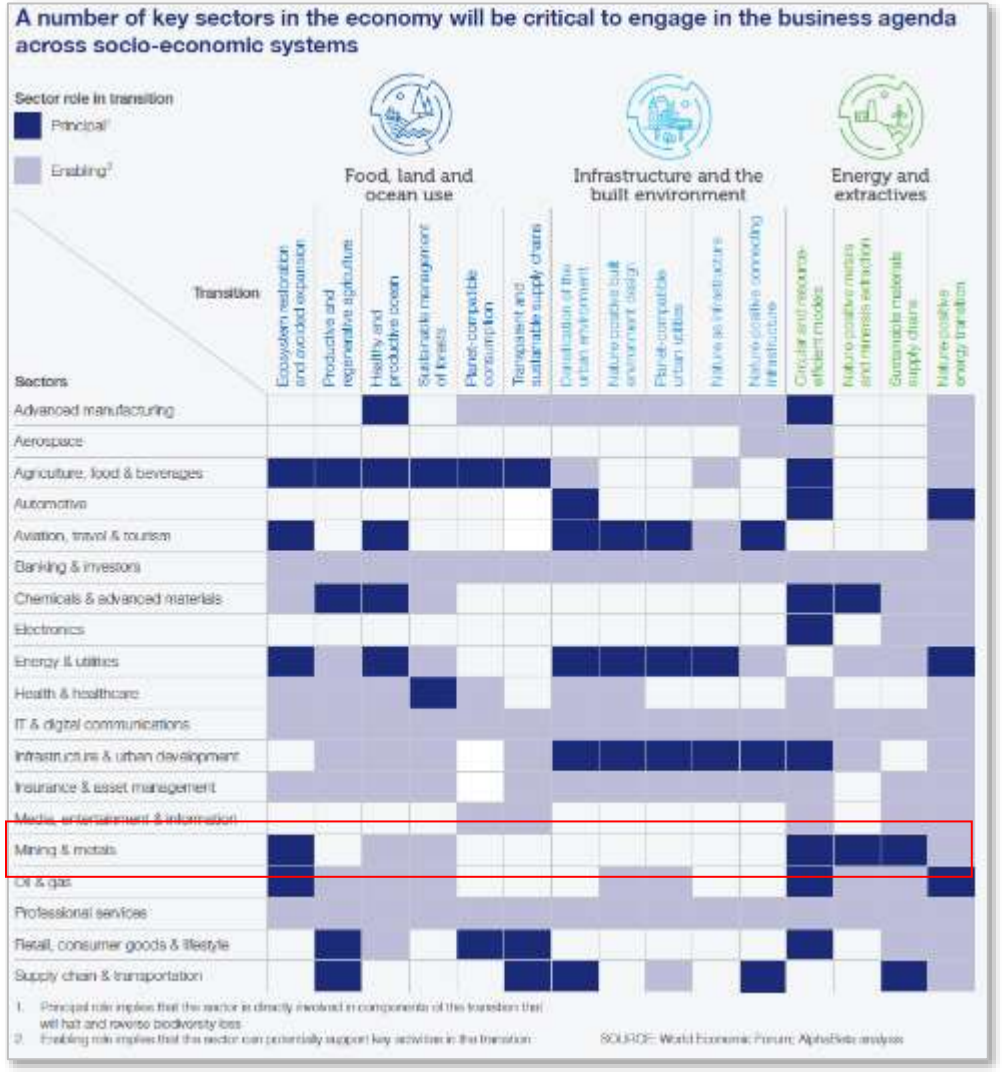
Qualitative Sector Listing Of Relative Environmental Exposure: Metals And Mining
Greenhouse gas emissions, waste, pollution, and land use



Source: S&P Global Ratings.

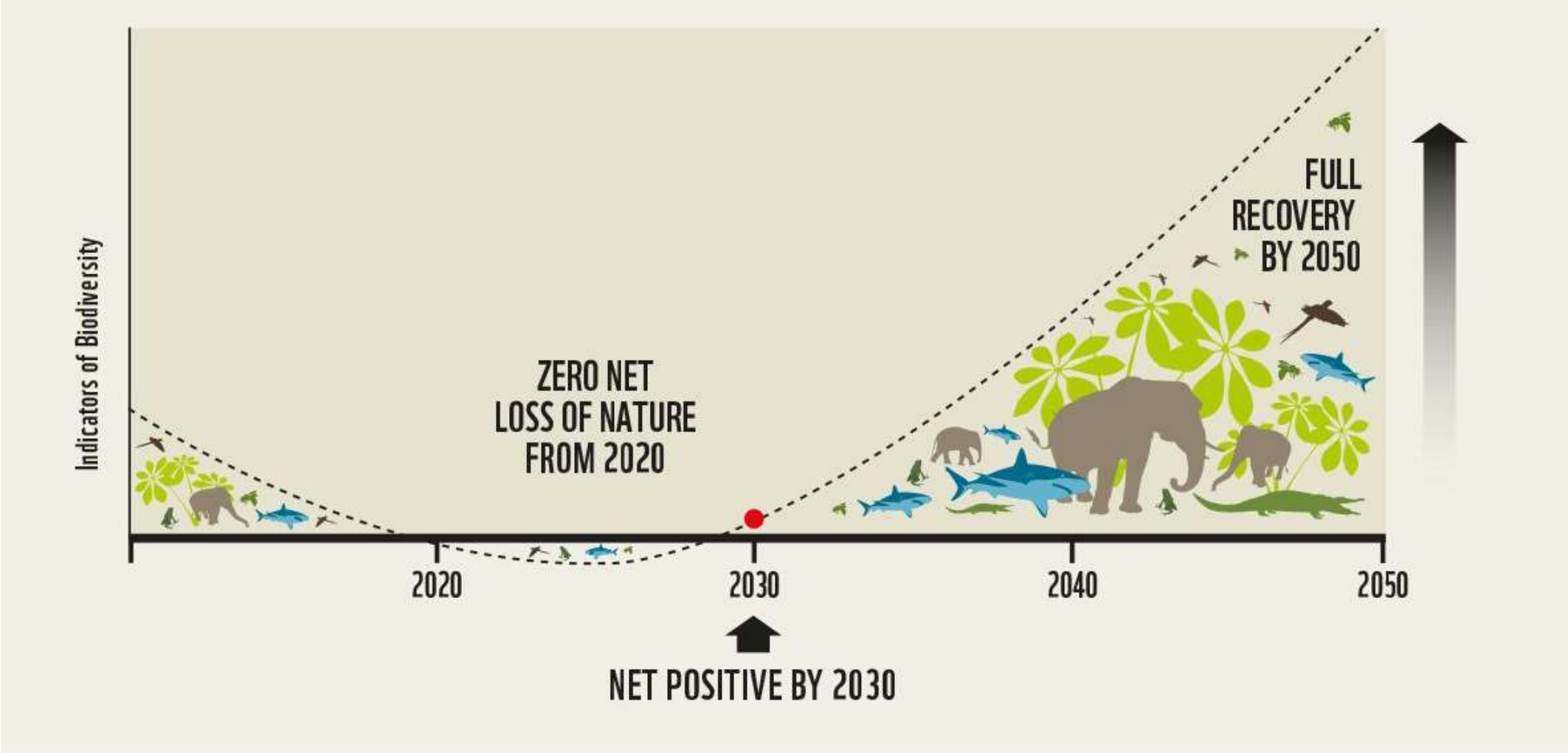
THE MINING SECTOR WILL BE CRITICAL TO KEY TRANSITIONS

- Emerging business opportunities for the energy sector could create over $(USD) 3.5 trillion of annual value and 87 million jobs by 2030
- Four systemic transitions are identified as critical for mining companies



Source: World Economic Forum (2020)

GLOBAL GOAL FOR NATURE: NATURE POSITIVE BY 2030

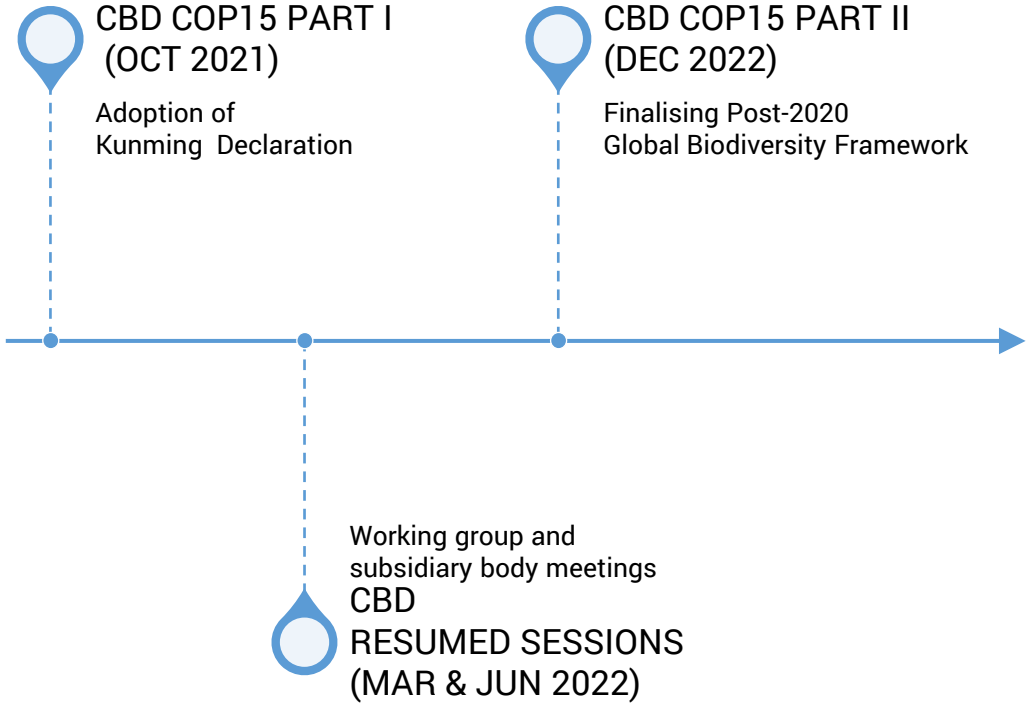


THE CONVENTION ON BIOLOGICAL DIVERSITY

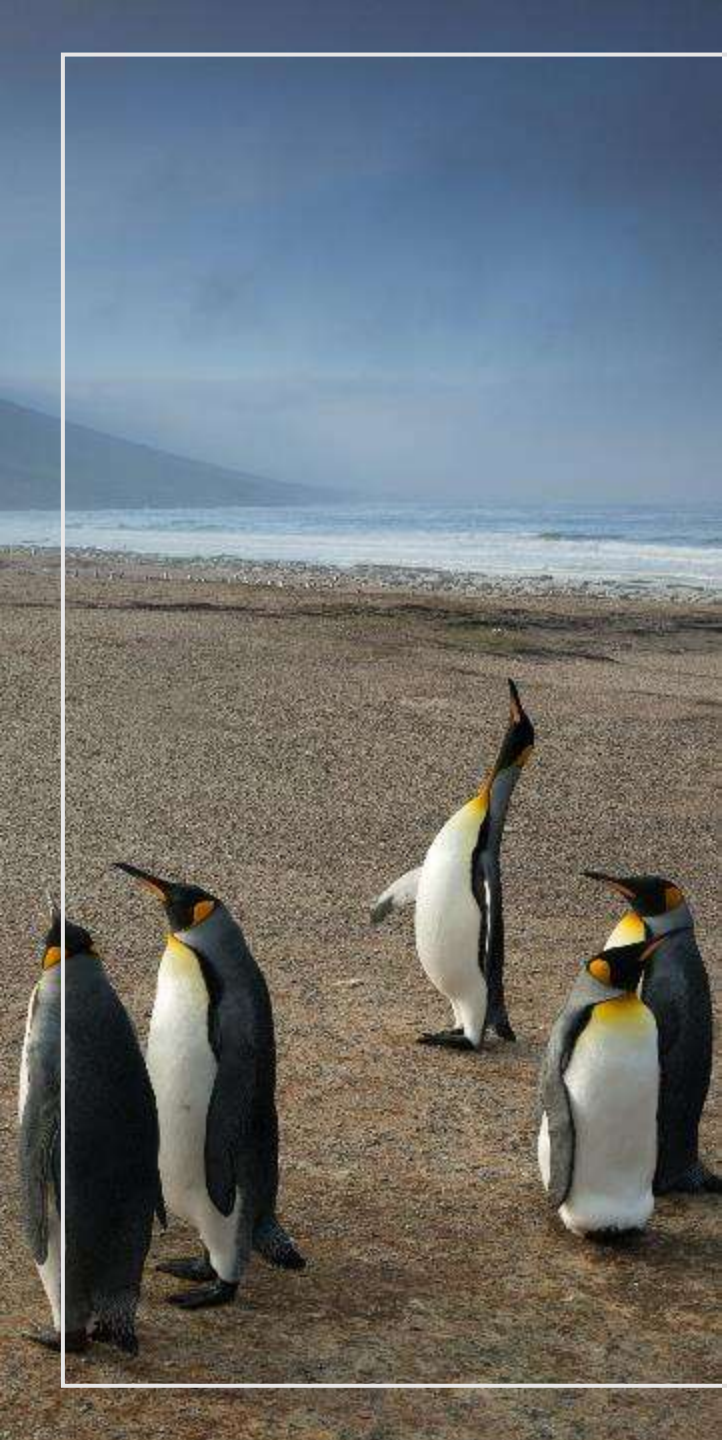
Post-2020 Global Biodiversity Framework

- 21 targets and 10 ‘milestones’ for 2030
- ‘Living in harmony with nature’ by 2050
- Draft Target 15
  - Businesses to measure and report dependencies and impacts
  - Reduce negative and increase positive impacts
  - Full sustainability of extraction and production practices

25 YEARS Convention on Biological Diversity
SAFEGUARDING LIFE ON EARTH



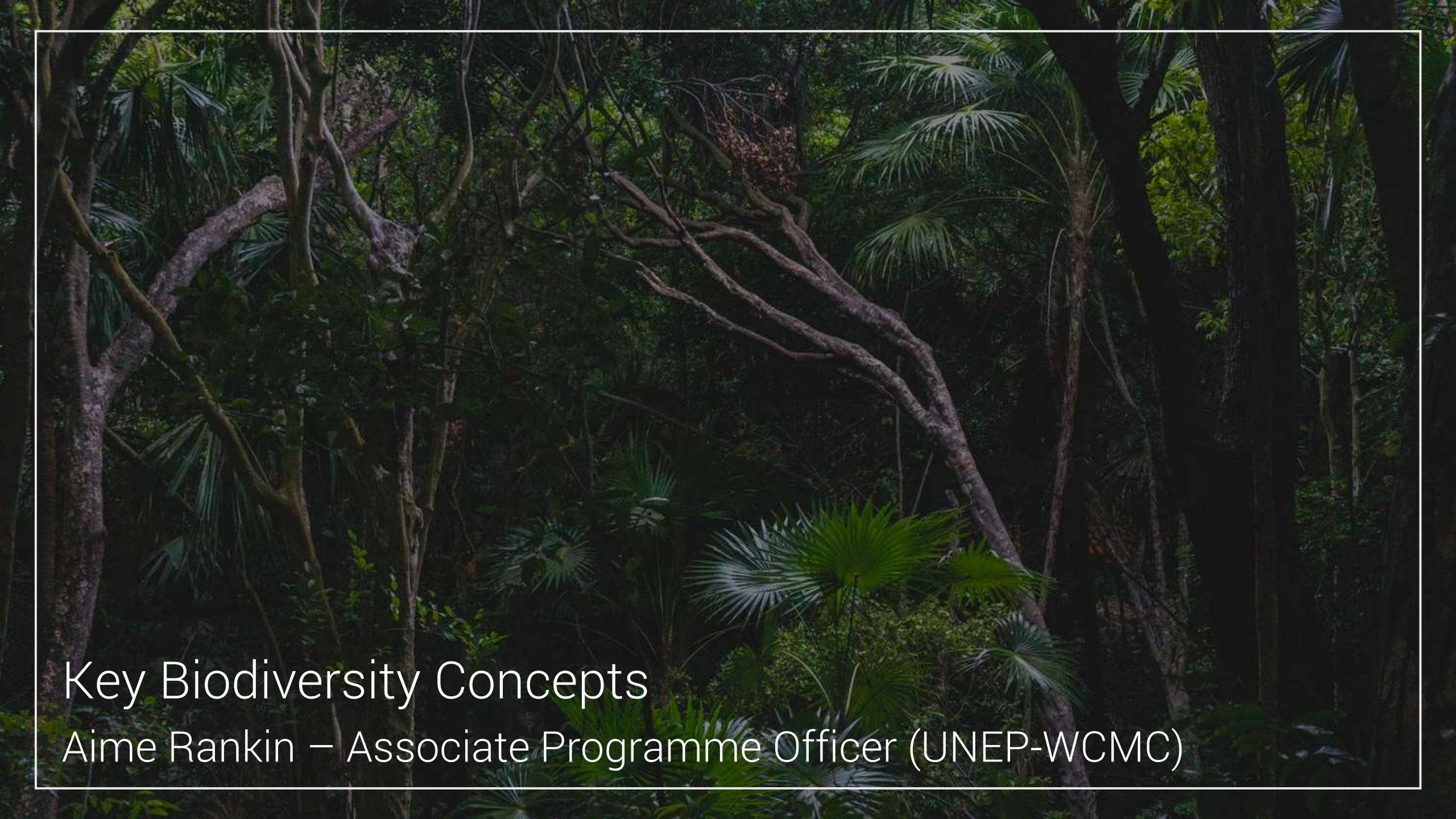
BUSINESS FOR NATURE'S HIGH-LEVEL ACTIONS



GOOD BIODIVERSITY MANAGEMENT…

…leads to many benefits for business

- Maintained access to finance
- Continued supply of resources
- Resilient operations
- Supporting regulatory compliance
- Increased/maintained reputation & licence to operate



Key Biodiversity Concepts

Aime Rankin – Associate Programme Officer (UNEP-WCMC)

WHAT IS BIODIVERSITY?

"Biological diversity means the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems…; this includes diversity within species, between species and of ecosystems."

(Convention on Biological Diversity 1992)

Genes (diversity within species)

Species (diversity between species)

Ecosystems (diversity of ecosystems)

WHAT IS A SPECIES?

“Groups of actually or potentially interbreeding natural populations, which are reproductively isolated from other groups.”

(Mayr 1942)

- Species are seen as the fundamental units of conservation.
- Provides a way of quantifying biodiversity, and its loss.
- Many conservation strategies and international Multilateral Environmental Agreements (CITES, CMS) are focused on species.

WHAT IS A SPECIES RANGE?

"The environmental conditions or geographic area within which a species occurs"

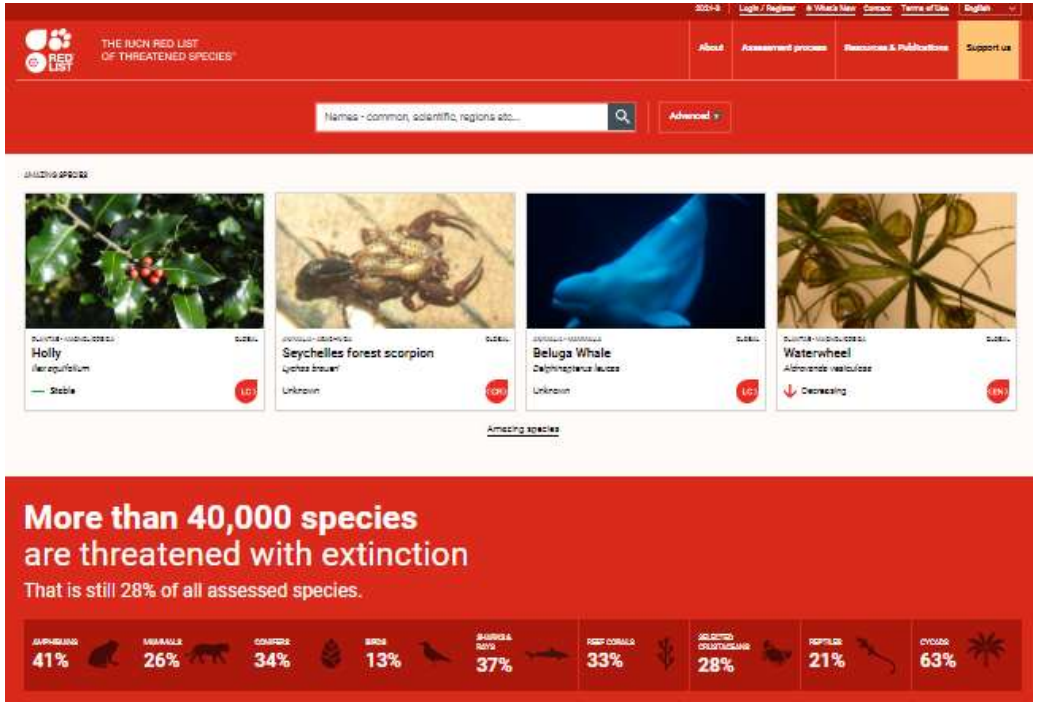
(Oxford Dictionary of Ecology, 2010)

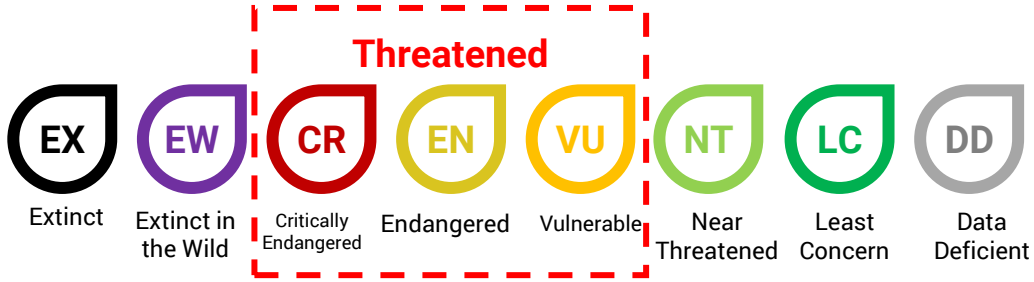
Bornean Orangutan

Pongo pygmaeus

ABSTRACT

Bornean Orangutan *Pongo pygmaeus* has most recently been assessed for *The IUCN Red List of Threatened Species* in 2016. *Pongo pygmaeus* is listed as Critically Endangered under criteria A4abcd.



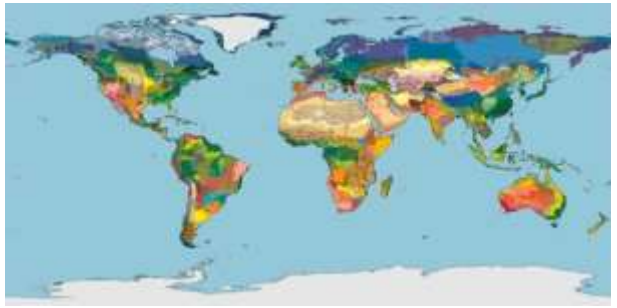


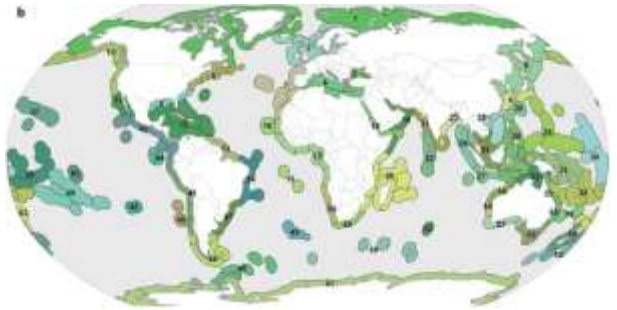
WHAT ARE HABITATS AND ECOSYSTEMS?

Habitat: The place or type of site where an organism or population naturally occurs.

Ecosystem: A dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit.

(Convention on Biological Diversity 1992)





WHAT ARE ECOSYSTEM SERVICES?

"Benefits people obtain from ecosystems."

(Millennium Ecosystem Assessment 2005)

Ecosystem services link the environment to people

Biodiversity underpins ecosystem services

ECOSYSTEMS THROUGH TO BENEFITS

Flow from Ecosystem to Society Benefit

boreal forest	*Ecosystem*	coral reef
trees, animals, soil	*Ecosystem Component*	coral, reef organisms, fish
photosynthesis	*Ecosystem Process*	reef building by corals
tree growth	*Ecosystem Function*	reduction of wave energy
timber (provisioning services)	*Ecosystem Service*	coastal protection (regulating service)
materials for construction	*Benefits*	safety of coastal community

Key Conservation Concepts

Aime Rankin – Associate Programme Officer (UNEP-WCMC)

CORE CONSERVATION CONCEPTS

Protected areas

Areas that are afforded legal or other effective protection

Areas important for biodiversity

Areas that are identified on the basis of biodiversity values, often using standardised assessment criteria

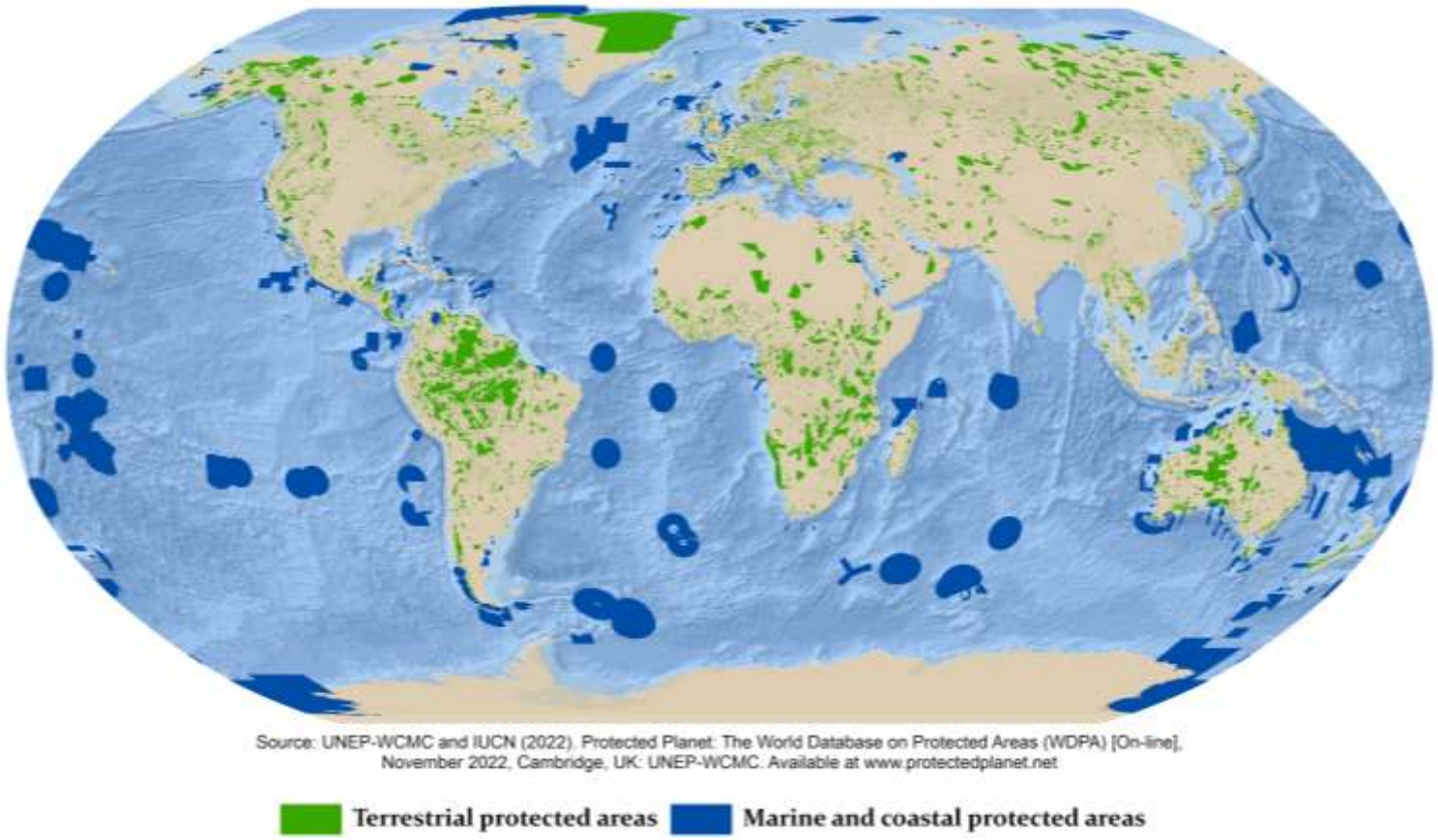
Threatened species

Species likely to become extinct within the foreseeable future throughout all or part of its range

WHAT ARE PROTECTED AREAS?

"A clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values."

(IUCN 2008)



PROTECTED AREAS ARE DESIGNATED AT DIFFERENT LEVELS

National

- Designated under national law
- Different naming schemes exist in every country
- Often grouped according to IUCN management categories

Regional

- Based on regional conventions agreed by governments
- e.g. Natura2000 in Europe
- e.g. Regional Seas conventions (OSPAR, HELCOM Barcelona etc)

International

- Based on international conventions/agreements between many governments
- e.g. World Heritage
- e.g. Wetlands of International Importance (Ramsar)
- e.g. UNESCO Man and the Biosphere

WHAT ARE AREAS THAT ARE IMPORTANT FOR BIODIVERSITY?

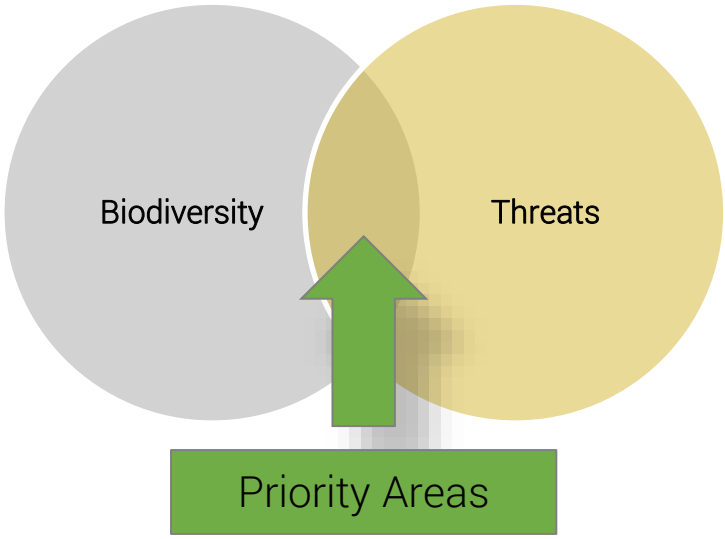
- Can exist at the site or landscape/regional/international scales
- May overlap protected areas, but are not in themselves protected
- KBAs are one among several approaches to designate areas important for biodiversity

Site scale examples

- Key Biodiversity Areas
- Important Bird Areas

Landscape/Regional/International scale examples

- Endemic Bird Areas
- Biodiversity Hotspots
- Global200 Ecoregions



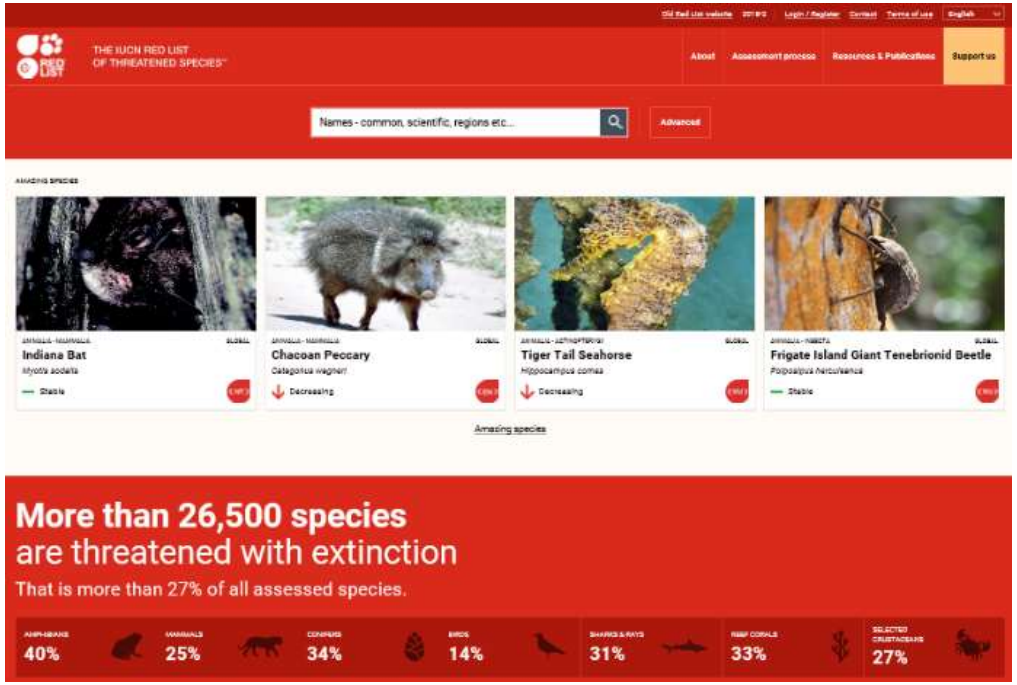
WHAT ARE KEY BIODIVERSITY AREAS?

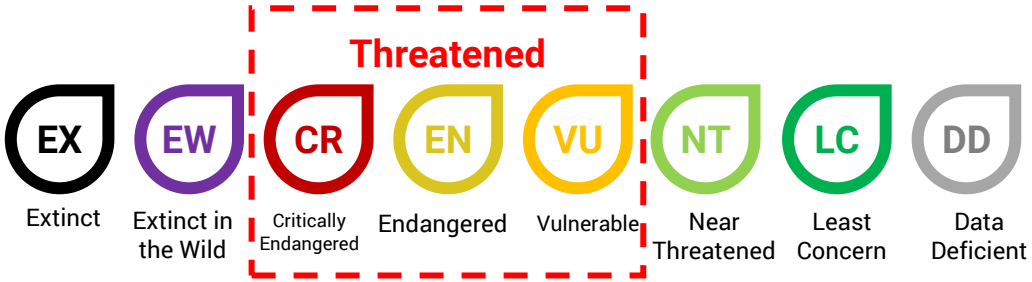
"Sites contributing significantly to the global persistence of biodiversity."
(IUCN 2016)

- Originally identified for birds
- Recently expanded to other species groups
- New criteria across taxa and realms promote KBAs as the key biodiversity site designation
- Over 16,000 identified so far

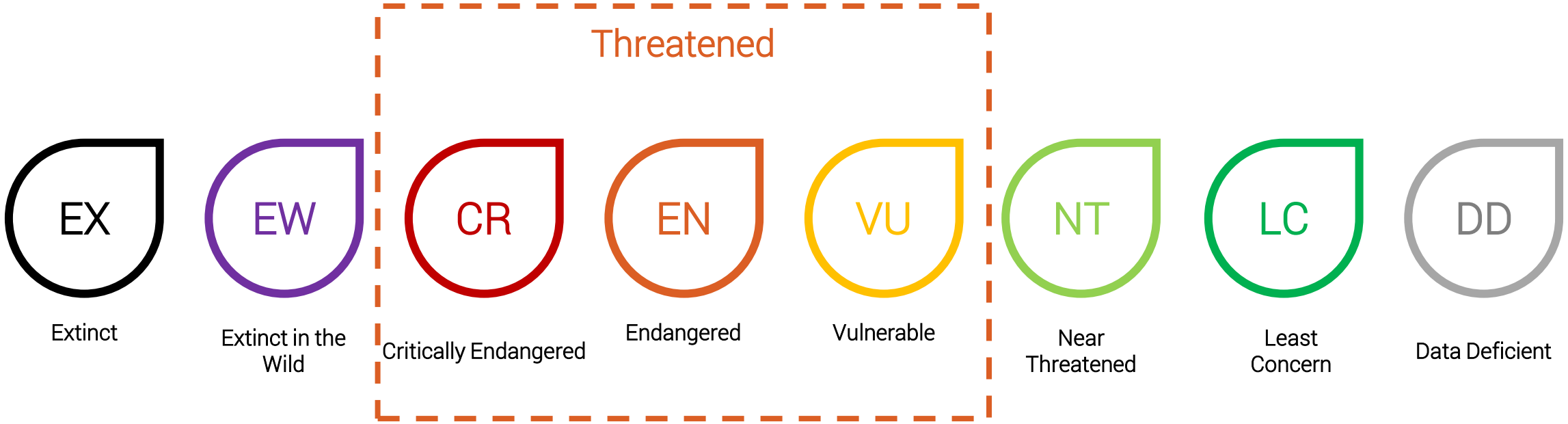
IUCN RED LIST OF SPECIES

- Established in 1964 by IUCN
- >147,500 species assessed as of August 2022
- Information on threats, ecological requirements, habitats and conservation actions to reduce or prevent extinctions
- Standardised assessment process to categorise species
- Re-evaluation every ~ 5-10 years
- Three categories of 'Threatened' species: Critically Endangered, Endangered and Vulnerable
- List also includes other categories e.g. 'Least Concern' species





ONE WAY WE MEASURE “THREAT” IS THE EXTINCTION RISK OF SPECIES



SPECIES OF ‘LEAST CONCERN’

LC

- A taxon that has been evaluated against the criteria and does not qualify as CR, EN, VU or NT at the global level
- Least Concern does not mean unimportant
- Could still be of conservation concern e.g. threatened at the national level, small extent of occurrence
- Potential considerations
  - Legal Protection
  - Global vs National Red List category
  - Relevancy to Critical Habitat e.g. migratory and congregatory species
  - Change in status

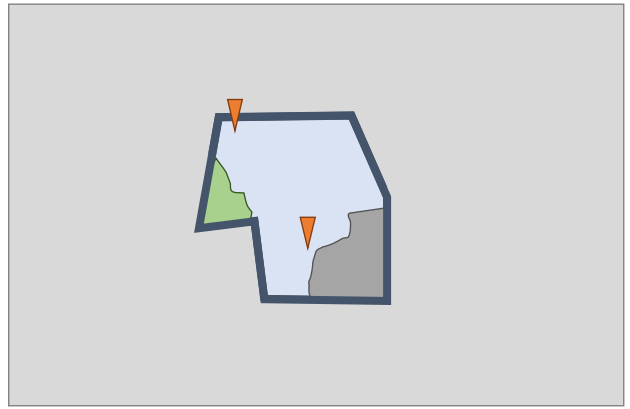
‘DATA DEFICIENT’ SPECIES

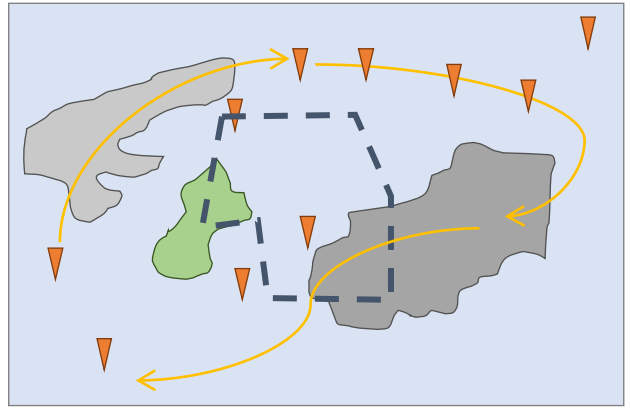
DD

- A taxon that has inadequate information to make an assessment of its risk of extinction based on its distribution and/or population status.
- Data deficient does not mean not at risk.
- Local studies may have been carried out, but insufficient information is available to assess across the global range.
- Unknown threat status
  - May increase risks to business
  - May present opportunities to share data and contribute to addressing gaps

BIODIVERSITY IS SPREAD ACROSS THE WIDER LANDSCAPE OR SEASCAPE

- Biodiversity and Ecosystem Services do not respect arbitrary operational boundaries
- It is critical to consider Biodiversity and Ecosystem Service impacts in their broader spatial context
- All project lifecycle stages present potential impacts and dependencies on Biodiversity and Ecosystem services

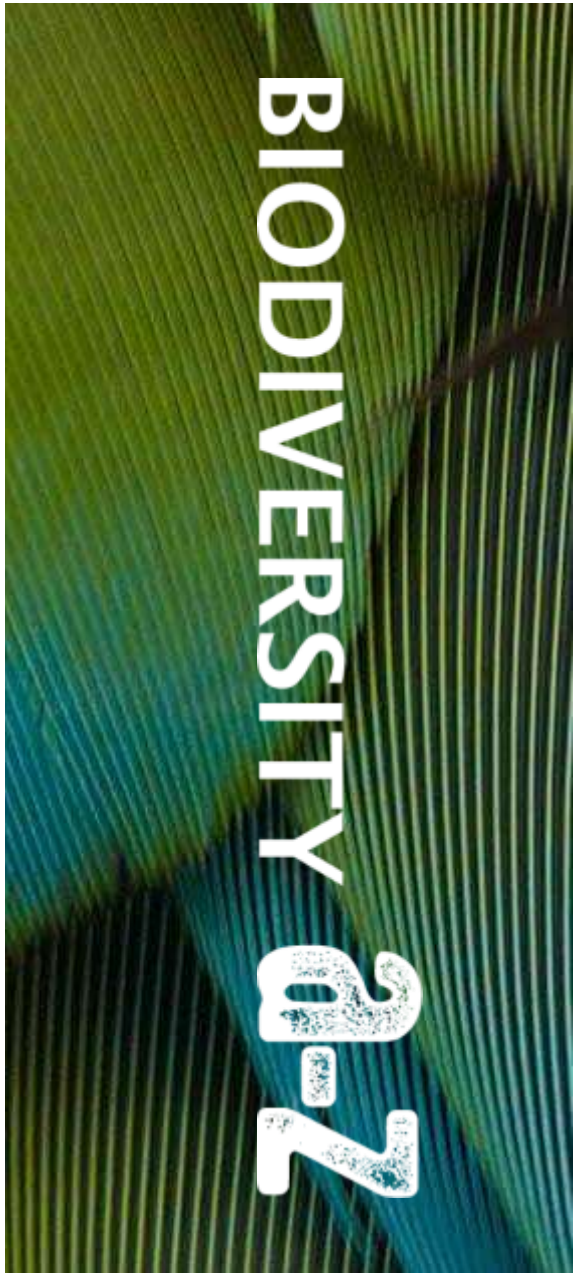




BIODIVERSITY A-Z

Online resources intended to support business users (specialists and non-specialists)

- Areas important for biodiversity
- Glossary of biodiversity terms
- Marine-specific glossary
- Acronym buster
- Countries module



IN SUMMARY

- Multiple drivers are contributing to the growing business case for companies to take action on nature.
- All businesses impact and depend on biodiversity, either directly or through their supply chains.
- Biodiversity includes within species, between species and of ecosystems.
- Ecosystem services link biodiversity with peoples' wellbeing.
- Priority areas for conservation action are places where biodiversity and threats overlap.
- Biodiversity is spread across wider landscapes and seascapes and does not follow arbitrarily set boundaries.

Break (5 mins)

Mitigating site-level impacts: the Mitigation Hierarchy

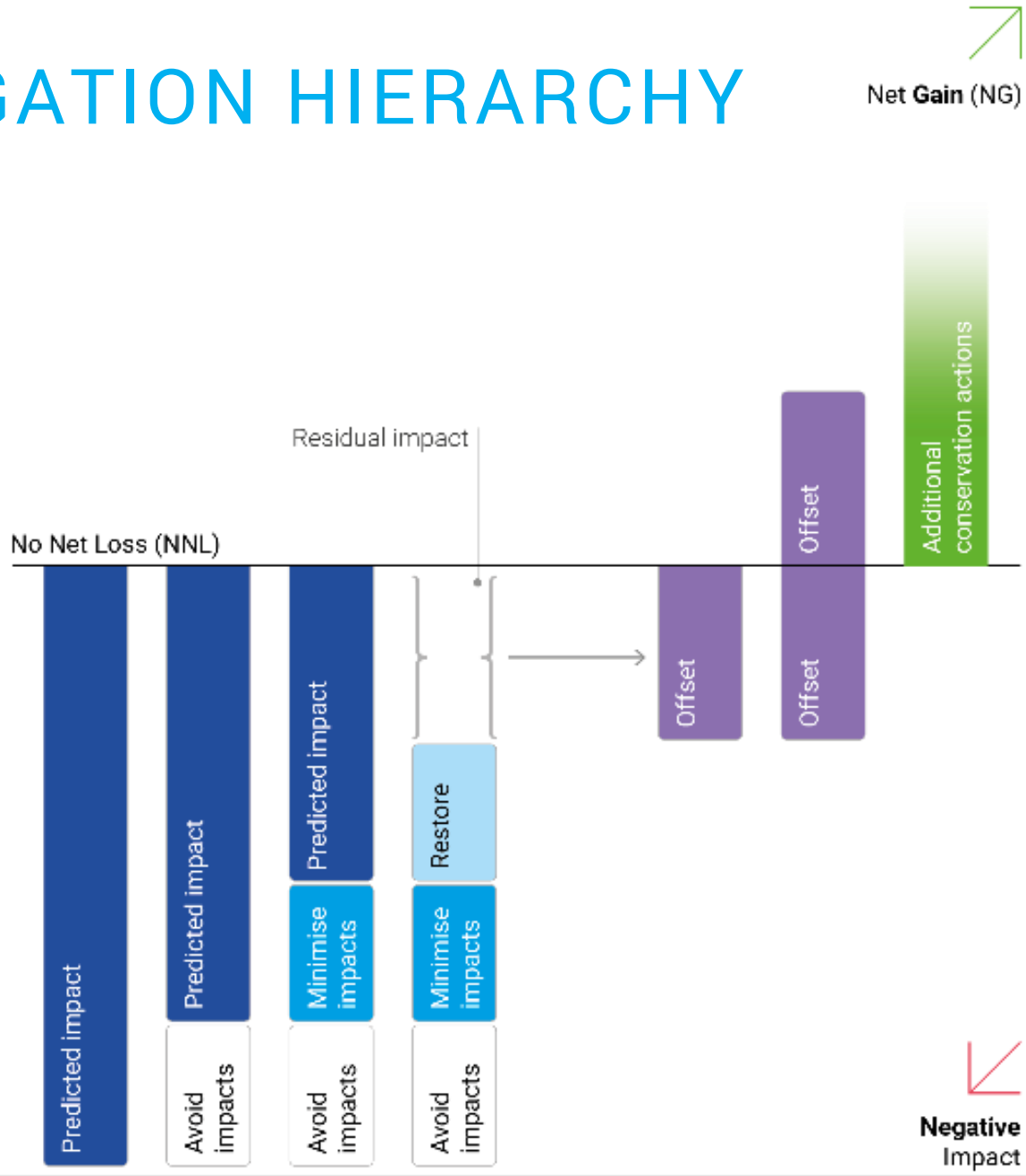
Alex Ross– Programme Officer (UNEP-WCMC)

APPLICATION OF THE MITIGATION HIERARCHY

Sequential steps to minimise negative impacts on biodiversity.

Emphasis should be placed on the first steps of avoidance and minimisation to stops impacts from happening in the first place.

ACAs refers to a wide range of interventions intended to be positive for biodiversity and ecosystem services (BES).



THE MITIGATION HIERARCHY

Avoidance	• …to prevent adverse impacts on biodiversity
Minimisation	• …to reduce the duration, intensity, significance and/or extent of impacts
Restoration	• …to repair, remedy, remediate habitats, biodiversity values, and/or ecosystem services.
Offset	• …actions applied to areas not impacted by the project, that compensate for significant, adverse project impacts

Site selection

- Detailed survey of key biodiversity features
- Relocate a project site to avoid an area of high biodiversity

Project design

- Reduce overall project footprint
- Design of infrastructure routing and siting of construction facilities
- Avoiding of watercourses and flood prevention

Scheduling

- Avoid breeding seasons
- Schedule seismic outside of migration seasons
- Prohibit night transportation

Physical controls

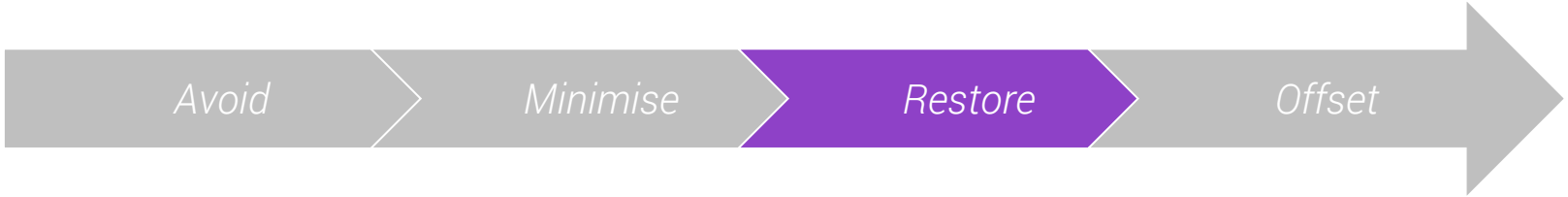
- Protect watercourses from contamination/siltation
- Minimise habitat fragmentation and maximise regrowth potential
- Barriers to control access to roads and minimise habitat loss/degradation

Operational controls

- Low disturbance at edge of pits
- Spray water to reduce dust and minimise air pollution/habitat degradation

Abatement controls

- Implement solid waste management
- Design and install drainage and water treatment systems
- Treatment of acidic water discharges



Revegetation

- Re-planting trees after mining closure
- Include threatened native plant species
- Retaining topsoil and its original seedbank
- Invasive species control measures

Habitat enhancement

- Building artificial nests
- Spreading grass cuttings from undisturbed habitat

Considerations

Might:

- not be possible for certain features
- have lower certainty of success
- be scientifically uncertain
- financially uncertain
- require expert consultation
- require long-term intervention
- require significant monitoring effort

Restoration offsets

- Reintroduction of priority species in degraded habitat
- Building artificial reefs as nursing grounds

Protection offsets

- Developing alternative livelihoods for communities to prevent ongoing degradation of threatened forests

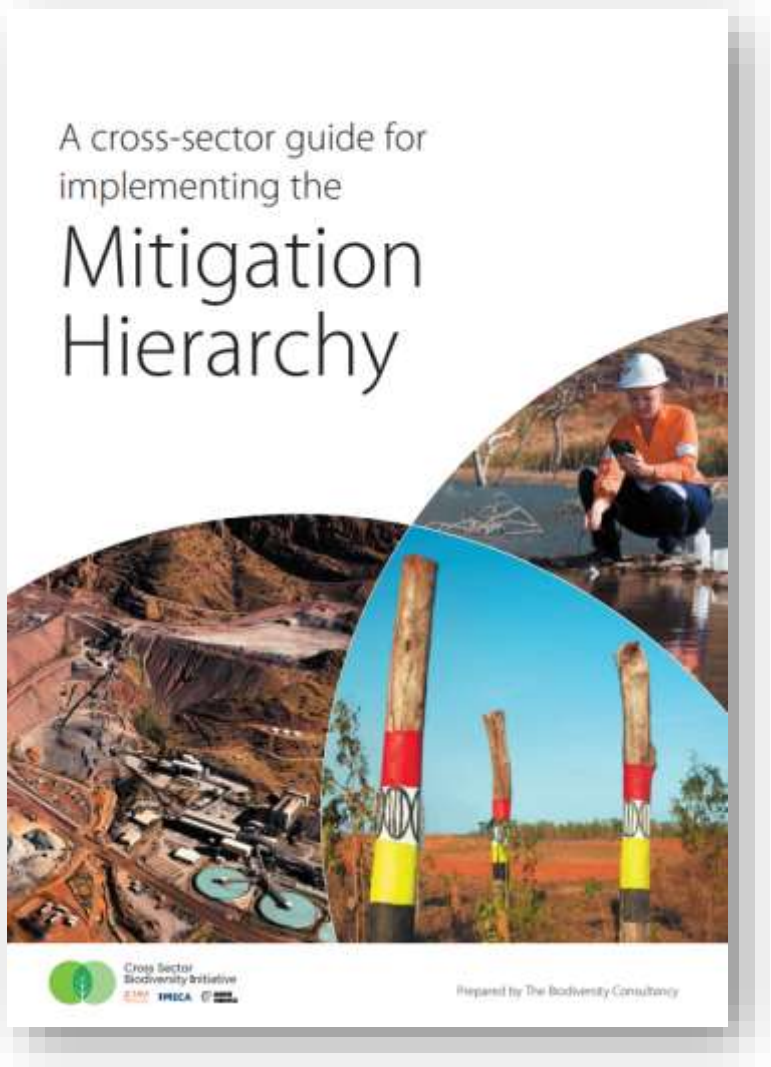
Considerations

- Possibility/ feasibility needs to be assessed
- Is the offset equivalent to the previous habitat?
- Outcomes need to be specified (and ideally quantified)
- Appropriate stakeholder consultation
- Will it last at least as long as the project impact?

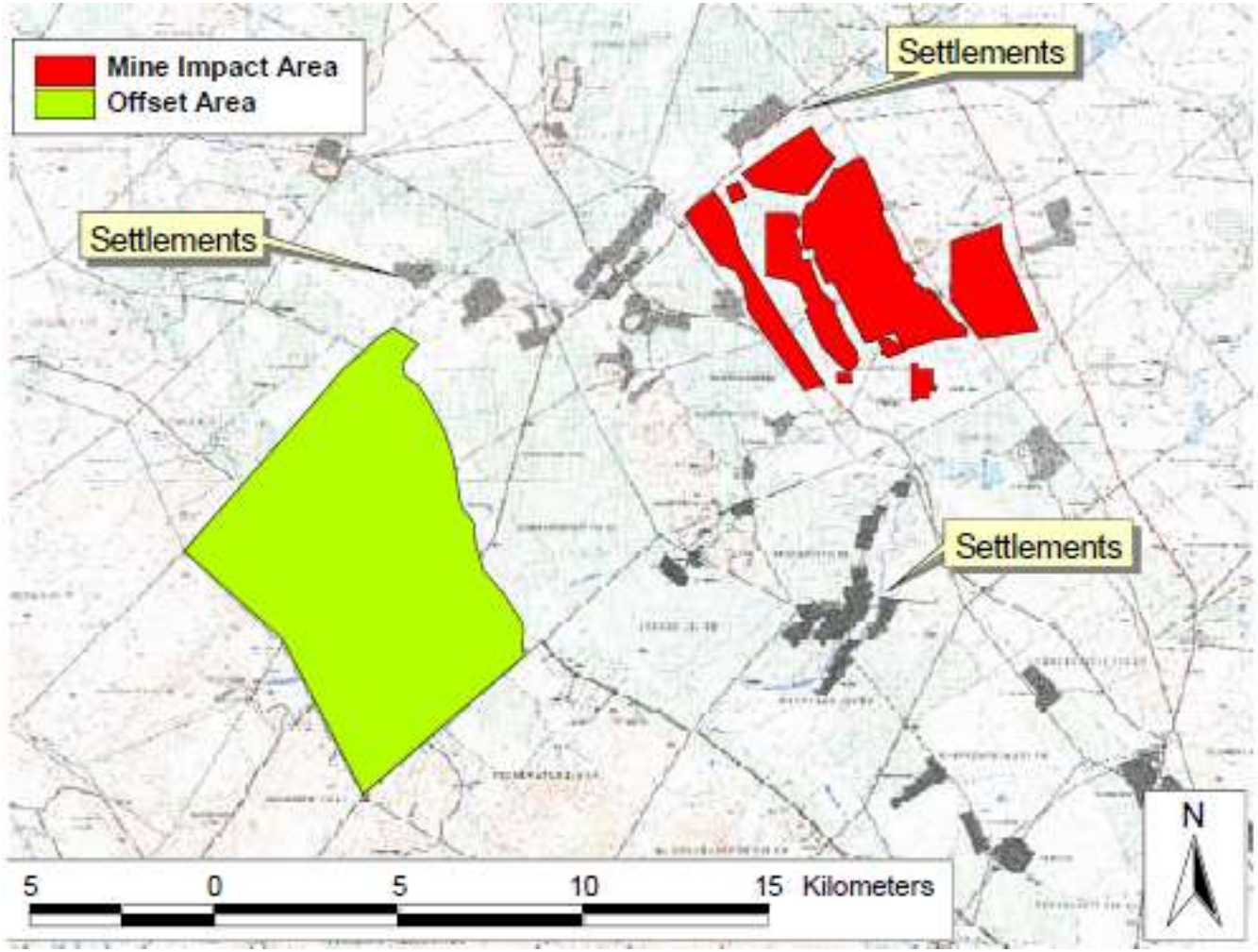
BEST PRACTICES

Cross Sector Biodiversity Initiative's (CSBI) "Cross-Sector Guide for Implementing the Mitigation Hierarchy"

- Definitions of the four steps
- Guidance for determining and demonstrating biodiversity loss or gain as a result of mitigation efforts
- Practical measures for predicting and verifying biodiversity conservation outcomes over time



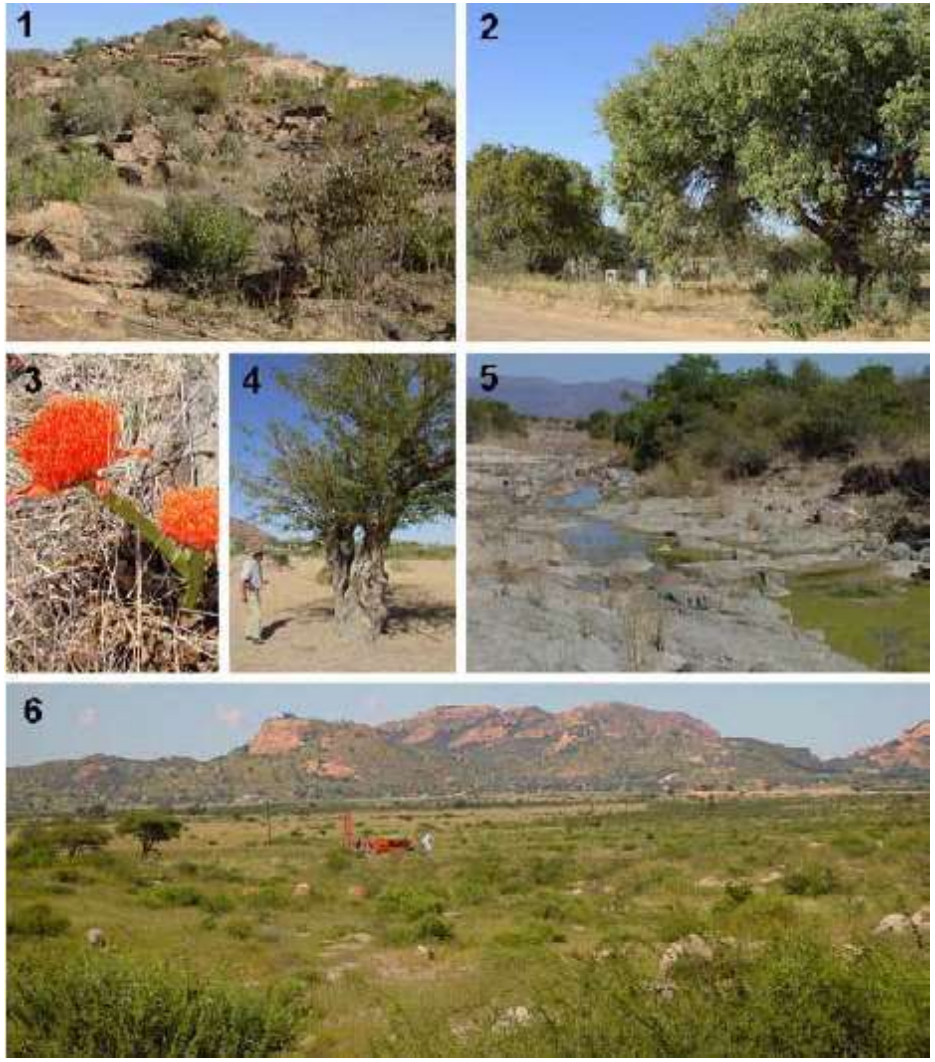
APPLICATION OF THE MITIGATION HIERARCHY EXAMPLE

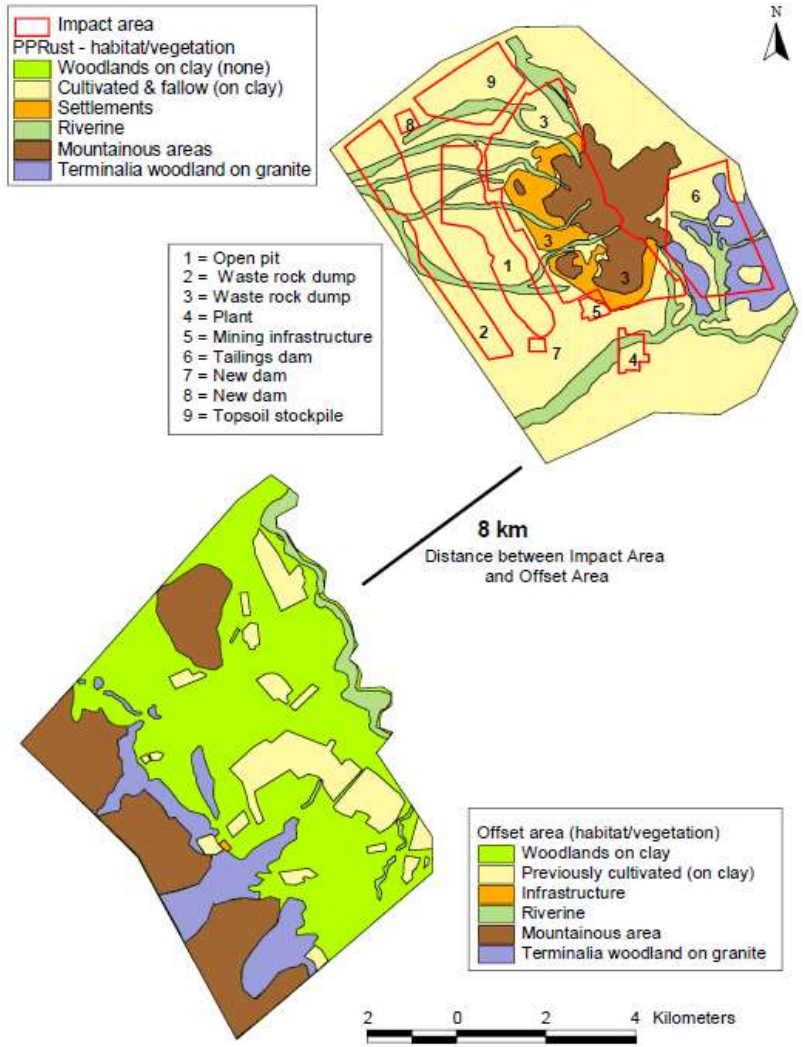


BBOP Pilot Project Case Study (2009)

SCREENING

Habitats





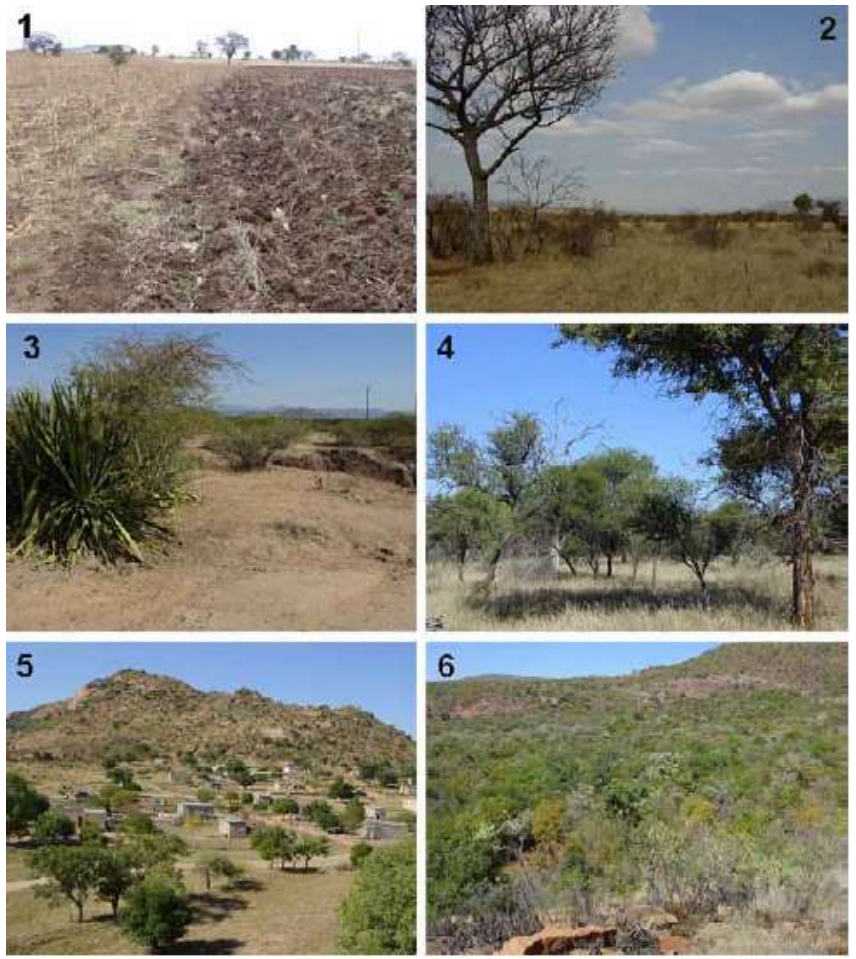
SCOPING AND BASELINE STUDIES

- Public consultation
  - Stakeholder participation – local communities
  - Equity – benefits of offsets
  - Transparency – define/develop offset plans
- Baseline studies
  - Impact prediction and evaluation

MITIGATING IMPACTS

Avoid: activities within 100m of rivers was avoided, use of existing roads instead of additional ones, demarcation of sacred areas

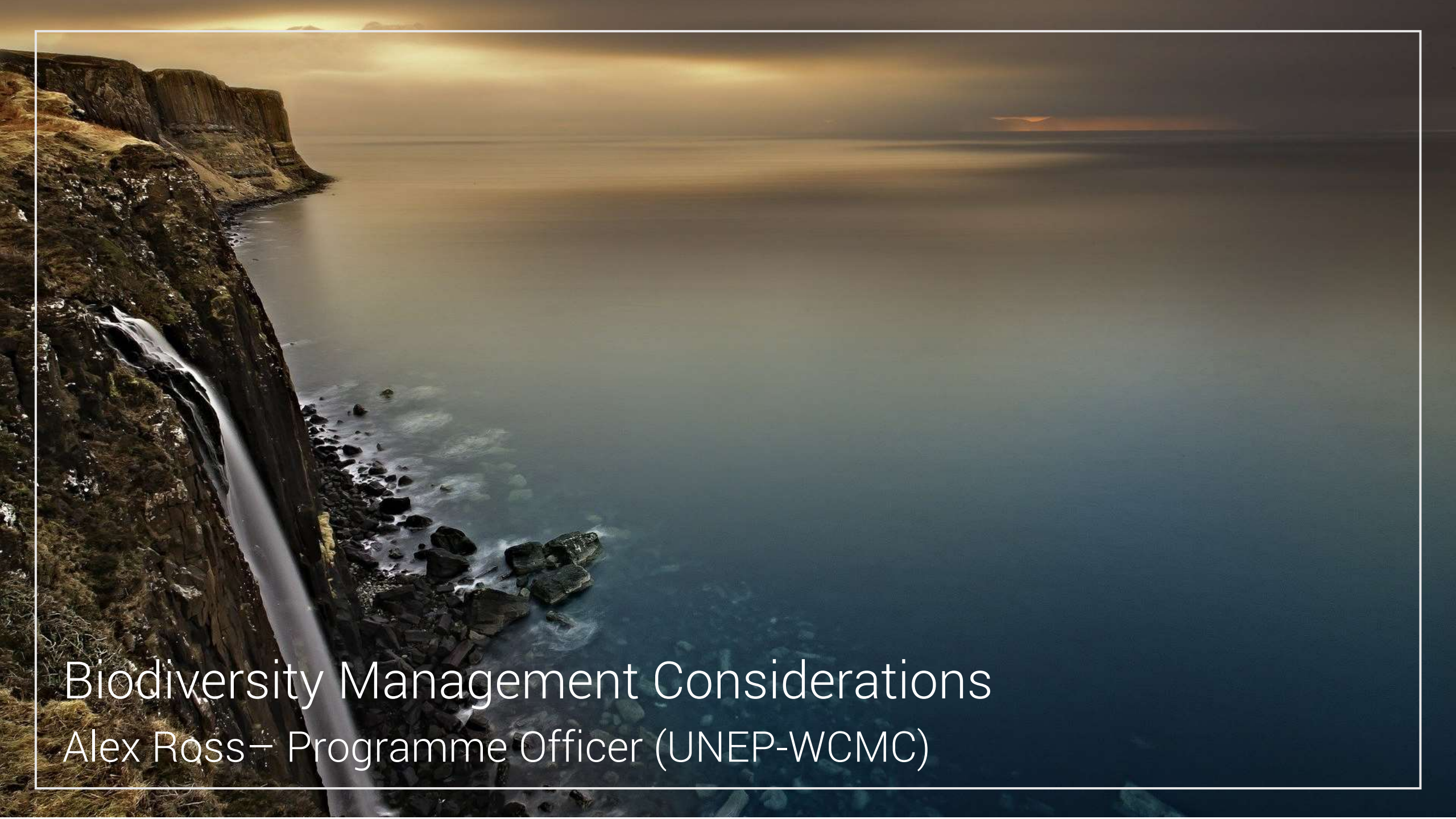
Mitigate: Environmental Management Plan



Before offset (left) and after offset (right)

Minimise: chose site for new human settlement to minimise footprint, make use of existing mining infrastructure

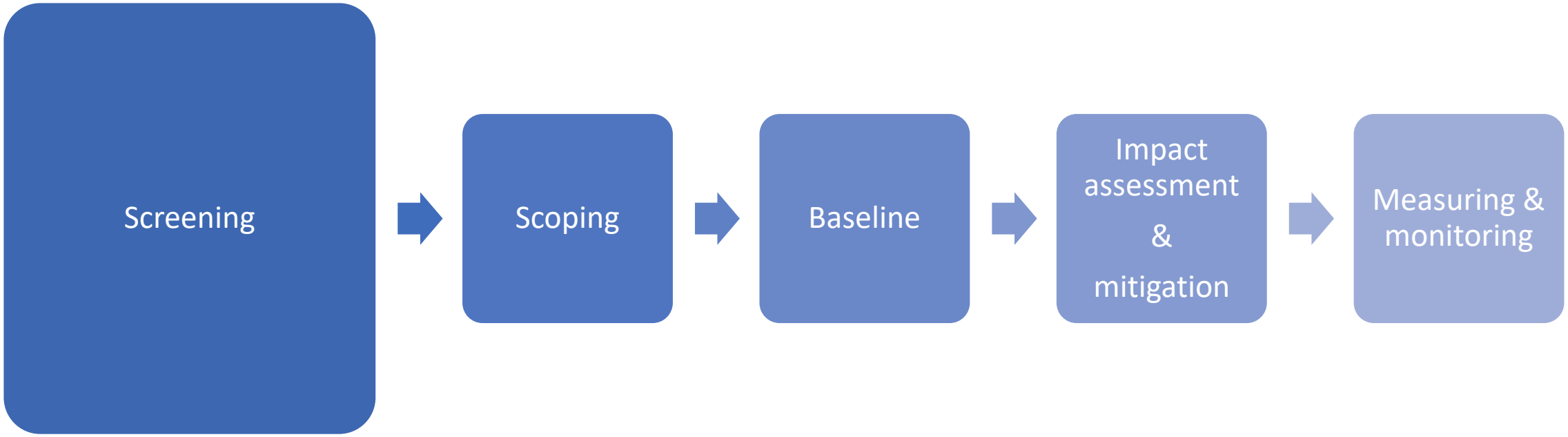
Offset: wildlife reserve with re-stocking of indigenous ungulate component, improved protection, active range management and rehabilitation



Biodiversity Management Considerations

Alex Ross– Programme Officer (UNEP-WCMC)

STAGES OF BIODIVERSITY MANAGEMENT



DETERMINING BIODIVERSITY FEATURES

Biodiversity feature	Implications for biodiversity management
Protected Areas	Consider the boundaries, purpose/objectives, management plan, management effectiveness and resources. • Can the project design avoid impacts completely? • Is a protected area a candidate for implementing an offset?
Key Biodiversity Areas	What are the trigger species, how are these impacted by the project, what is the current state of the KBA? • Can impacts on the KBA be avoided? • How might impacts on trigger species outside the KBA affect the KBA itself? • Can the KBA be enhanced as part of the mitigation measures?
Habitats	What is the distribution and types of habitat (habitat classification), status or condition of the habitat, habitat designation (if applicable) and connectivity and function of the habitat. • Will mitigation measures be appropriate for all impacted habitat types?
Species	Include targeted species groups, global status of the species, distribution and abundance, conservation status (e.g., IUCN Red List Endangered) • Are mitigation measures appropriate for the seasonal and natural variability and underlying trends in population changes?
Key ecosystem services	Identify key ecosystem services – their type, the users and beneficiaries, and the value • How will project impacts on ecosystem services impact on local communities? • Will offsets and restoration activities change the access of communities to services?

INTEGRATED BIODIVERSITY ASSESSMENT TOOL (IBAT)

A web-based map & reporting tool that provides fast, easy & integrated access to critical biodiversity information

- The source of the most globally authoritative biodiversity data:
  - The World Database on Protected Areas
  - The World Database of Key Biodiversity Areas
  - The IUCN Red List of Threatened Species

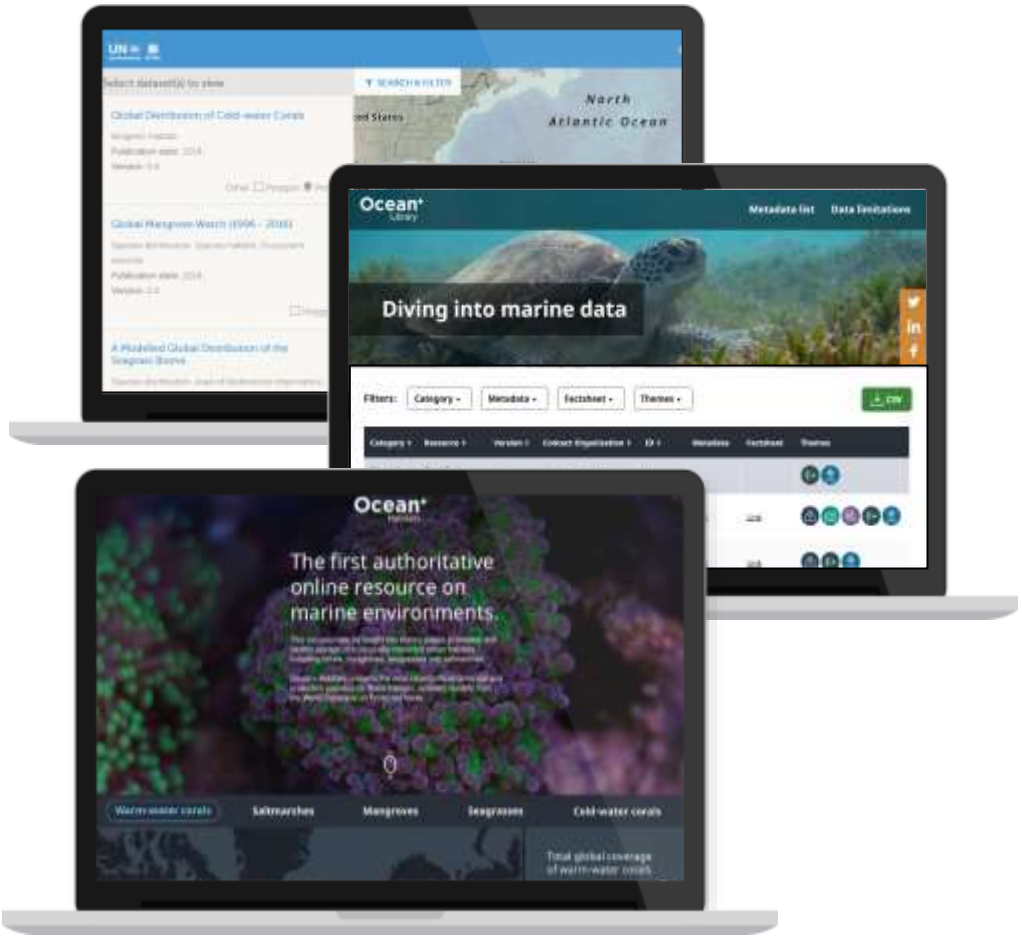
- A link between the private sector and biodiversity conservation. Incorporate biodiversity considerations into project planning, risk screening and management decisions

- First step in identifying biodiversity features. Followed by ground truthing and collecting site-level data

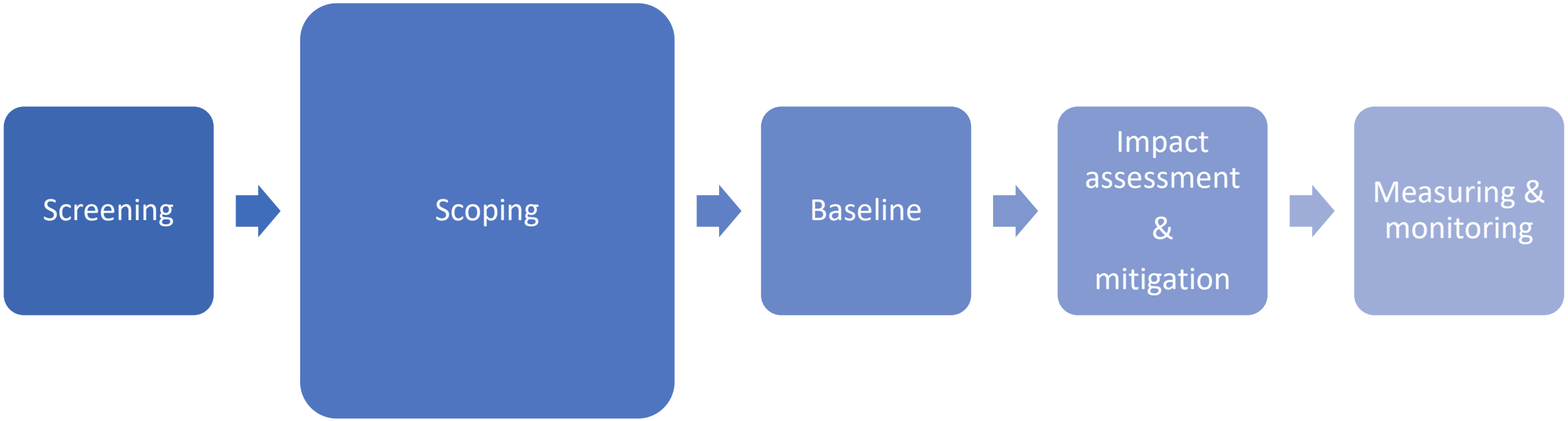
Ocean+

UN environment programme WCMC | proteus

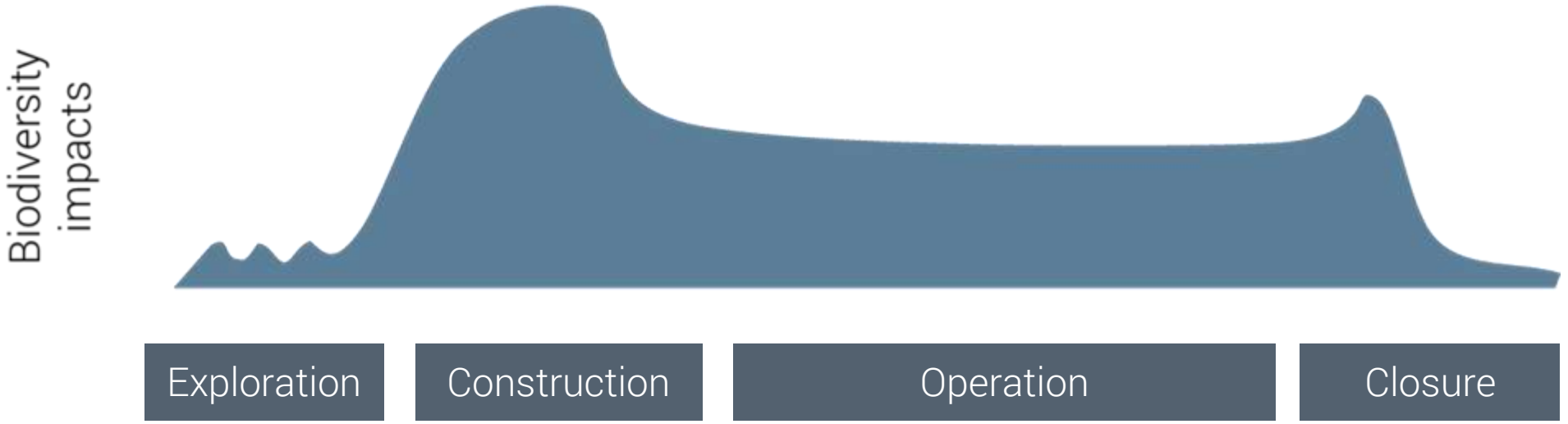
- Umbrella initiative for UNEP-WCMC's marine work, supported by Proteus
- Inventory of nationally-validated spatial data on ocean habitats, informing development and reporting
- Supporting capacity development by identifying needs and overcoming gaps
- Data can support initial biodiversity screening, but must be supported by the collection of site-based data to inform the baseline



STAGES OF BIODIVERSITY MANAGEMENT



THE SCALE OF IMPACT CHANGES THROUGHOUT THE PROJECT LIFECYCLE



THE SCOPE OF IMPACTS NEEDS TO BE DEFINED

Direct	Indirect/ Induced	Cumulative
• Direct result of project	• Knock on effects of project activities	• Combined effect of multiple actors

DEFINING THE AREA OF INFLUENCE: DIRECT IMPACTS

Key findings:

- AoI depends on pressures associated, habitat type operated in and type of impact considered
- 50 to 70km buffer likely to cover the impacts of mining sites
- A minimum buffer of 5km should be applied in marine environments for mining operations, but extended if there is high potential for sedimentation above natural levels.

Table 1. Average and range of AoI from literature for key sectors

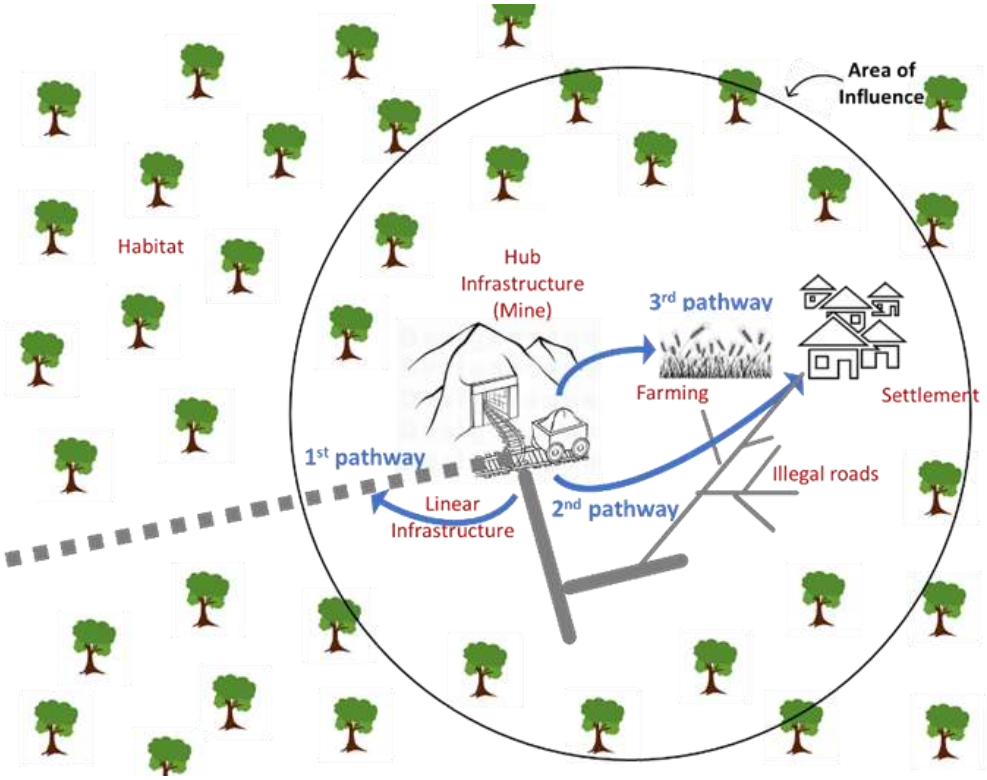
Activity	Average AoI	Lower range	Pressure and context of lower range	Upper range	Pressure and context for upper range
Terrestrial mining	**10.5km**	0.08km	Zinc levels exceeding agriculture water standards	70km	Deforestation
Marine mining	**27.5km**	5km	Presence of heavy metals in seagrass	50km	Sedimentation rates exceeding natural levels
Terrestrial Oil and Gas	**0.9km**	0.015km	Low impact seismic lines on herbaceous plant diversity	5km	Roads and infrastructure on mammal abundance
Marine Oil and gas	**17.5km**	0.1km	Physical damage by anchors	300km	Cessation of whale vocalisation in response to noise from seismic surveys

DEFINING THE AREA OF INFLUENCE: INDIRECT IMPACTS

- Hard to capture in risk assessments. They are also more far-reaching both temporally and spatially than direct impacts.

- Can be defined and triggered by the wider socio-economic and demographic changes associated with the project and not directly by project operations.

- Follow three main pathways
    1) increased access to habitats
    2) population influx
    3) increased viability of other economic activity



ESTABLISHING SIGNIFICANCE OF IMPACTS

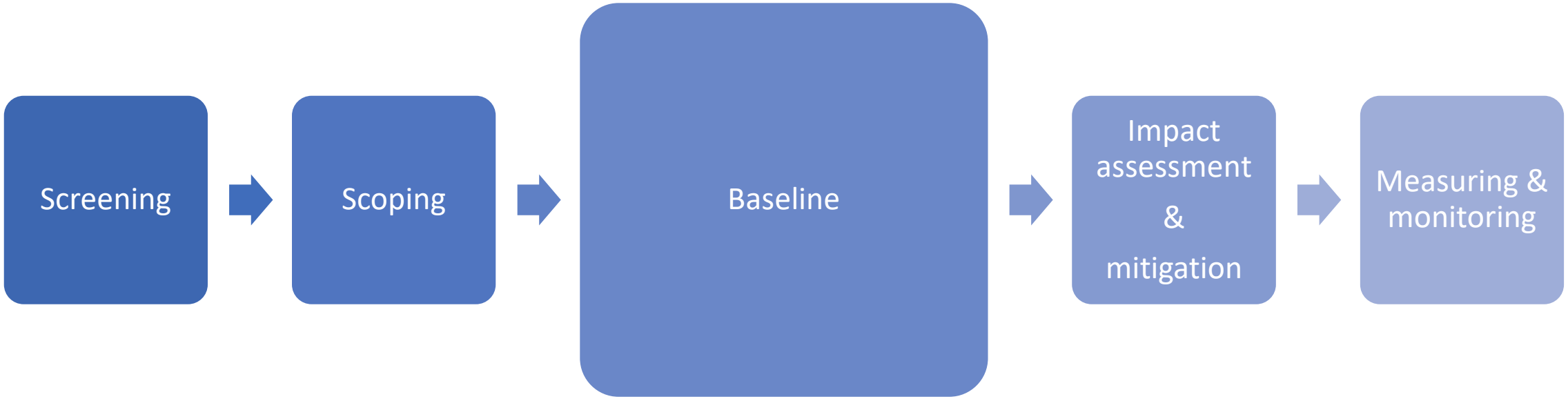
Severity

- Importance of affected biodiversity / ecosystem services
- Scale of impact
- Duration / frequency of impact
- Reversibility of impact

Likelihood

- Accuracy of predictions
- Under what circumstances would it occur
- Adopt the precautionary principle

STAGES OF BIODIVERSITY MANAGEMENT



BASELINE ASSESSMENTS

‘A description of existing conditions to provide a reference (e.g. pre-project condition of biodiversity) against which comparisons can be made (e.g. post-impact condition of biodiversity), allowing the change to be quantified.’

- Establishes status of biodiversity before operations
- Informs impact assessment and mitigation
- Informs primary data collection for long term monitoring and measuring performance (metrics)
- More detailed assessment than screening and scoping

HOW SHOULD A BASELINE BE DEVELOPED?

Biodiversity features identified during scoping

+

Additional biodiversity features within the Area of Influence

Identify the biodiversity baseline study area (area of influence)

Identify the scope of the baseline study

Review existing information on the biodiversity values

Conduct field-based assessment of biodiversity values

Integrate the data into a baseline report

Engage stakeholders and experts

CHALLENGES FOR BASELINES

Collecting environmental information from aquatic environments

Freshwater and marine habitats are not as well mapped as terrestrial habitats.

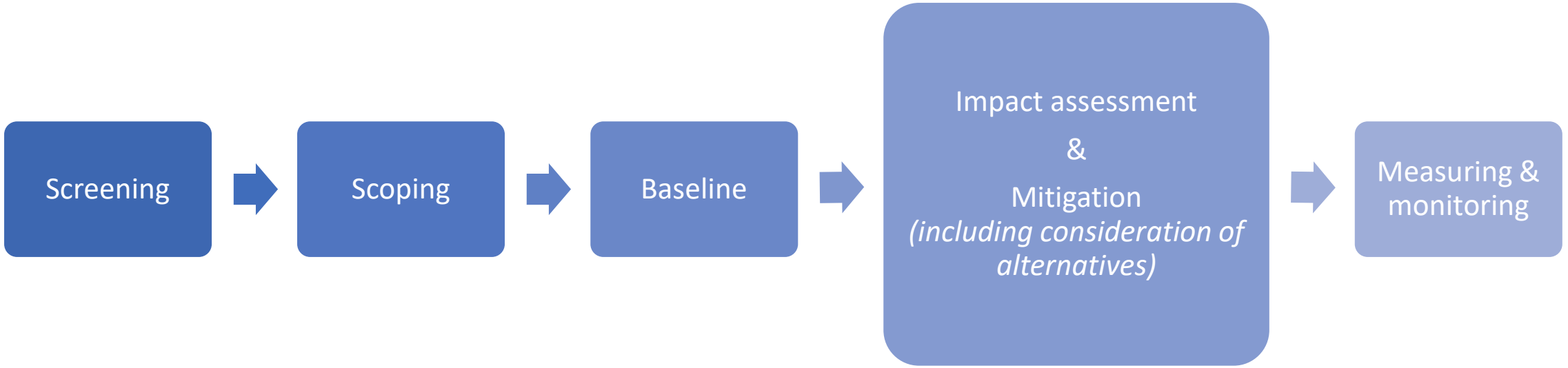
Taxonomic bias

Species that are small, mobile, subterranean, nocturnal, or otherwise relatively hard to detect, can be overlooked.

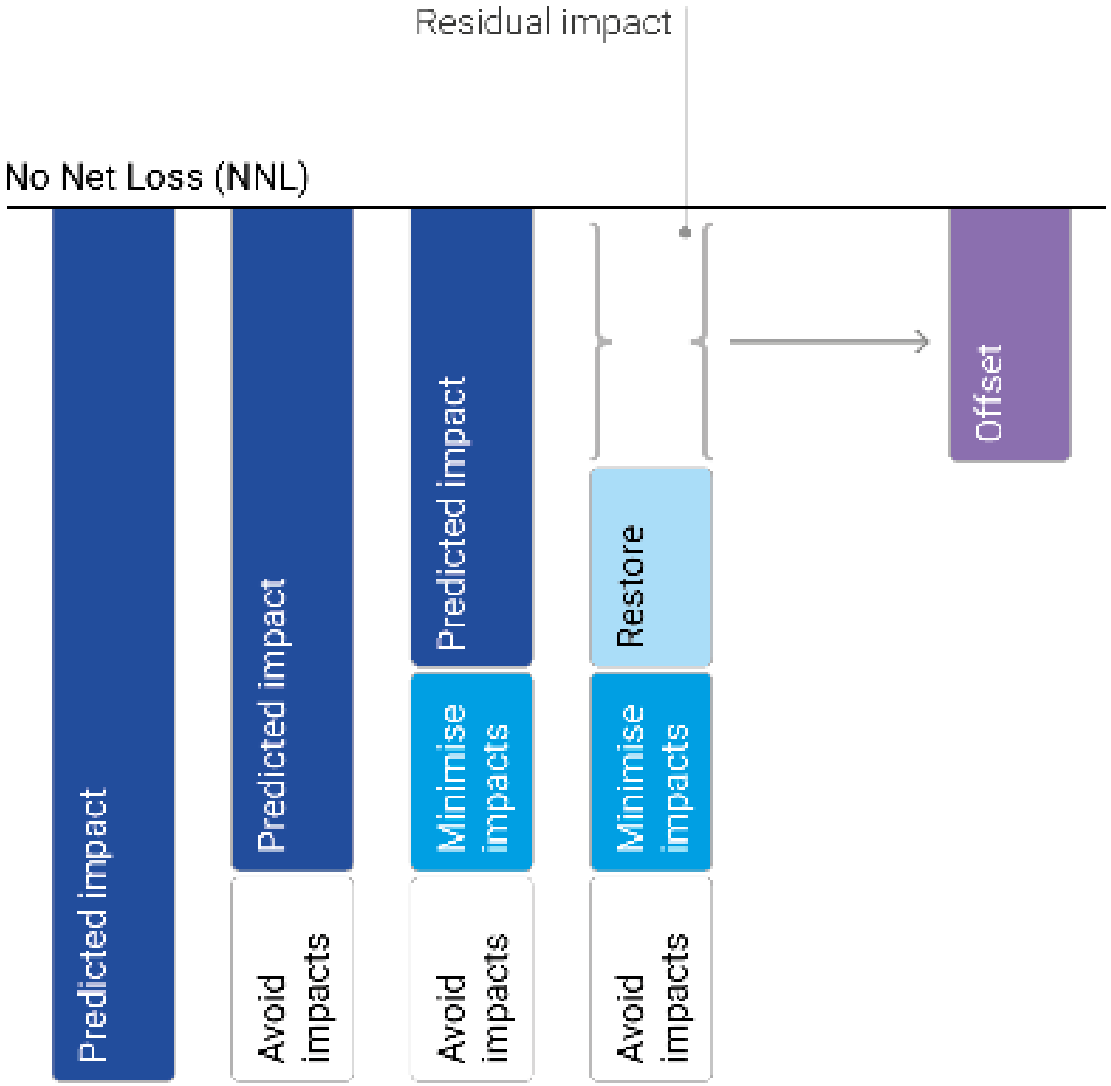
Temporal considerations

Abundance of biodiversity values may vary temporally.

STAGES OF BIODIVERSITY MANAGEMENT



FOLLOW THE MITIGATION HIERARCHY



WHAT ARE BIODIVERSITY ACTION PLANS?

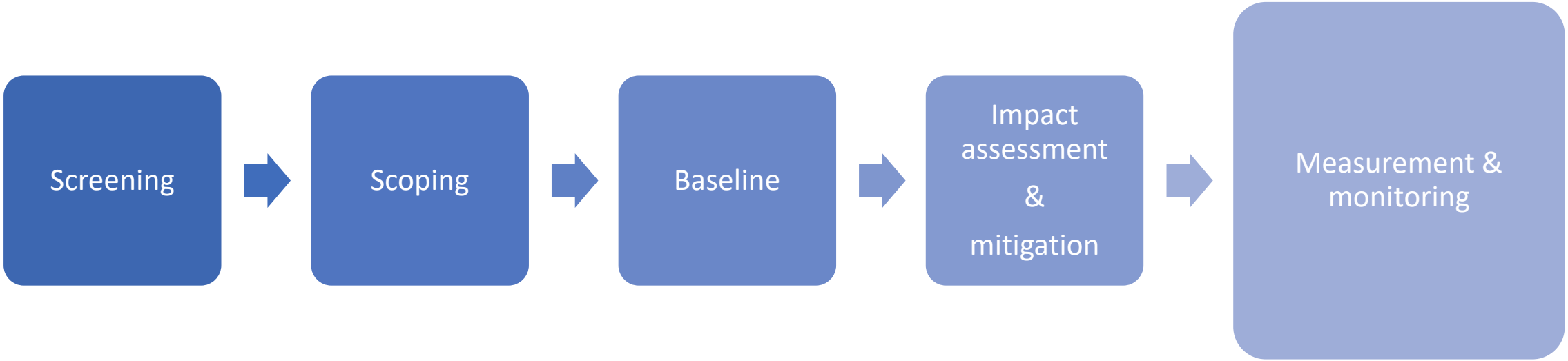
- BAPS are inspired from National Biodiversity Strategies and Action Plans (NBSAPs) which are required by the CBD for parties to protect and restore biodiversity and ecosystems.
- A set of future actions that will lead to the conservation or enhancement of biodiversity.
- Can be implemented at multiple levels.

WHAT DO BAPS INCLUDE?

Principal elements of BAPs typically include:

- Preparing inventories of biological information for selected species/habitats
- Assessing the conservation status of species within specified ecosystems
- Creation of targets for conservation and restoration
    - what is required to deliver NNL or BNG
    - the Project's mitigation strategy to achieve NNL or BNG
- Forming budgets, timelines and institutional partnerships for implementation

STAGES OF BIODIVERSITY MANAGEMENT



MONITORING, INDICATORS, AND VERIFICATION

Monitoring	The continuous or frequent standardized measurement and observation of the environment (air, water, land/soil, biota), often used for warning and control
Indicators	A quantitative or qualitative factor or variable that provides a simple and reliable means to measure performance
Verification	The process of establishing the truth, accuracy, or validity of something

WHEN DOES MONITORING TAKE PLACE?

Baseline study area → Scoping → Desk studies → Field studies → Baseline report → **Monitoring**

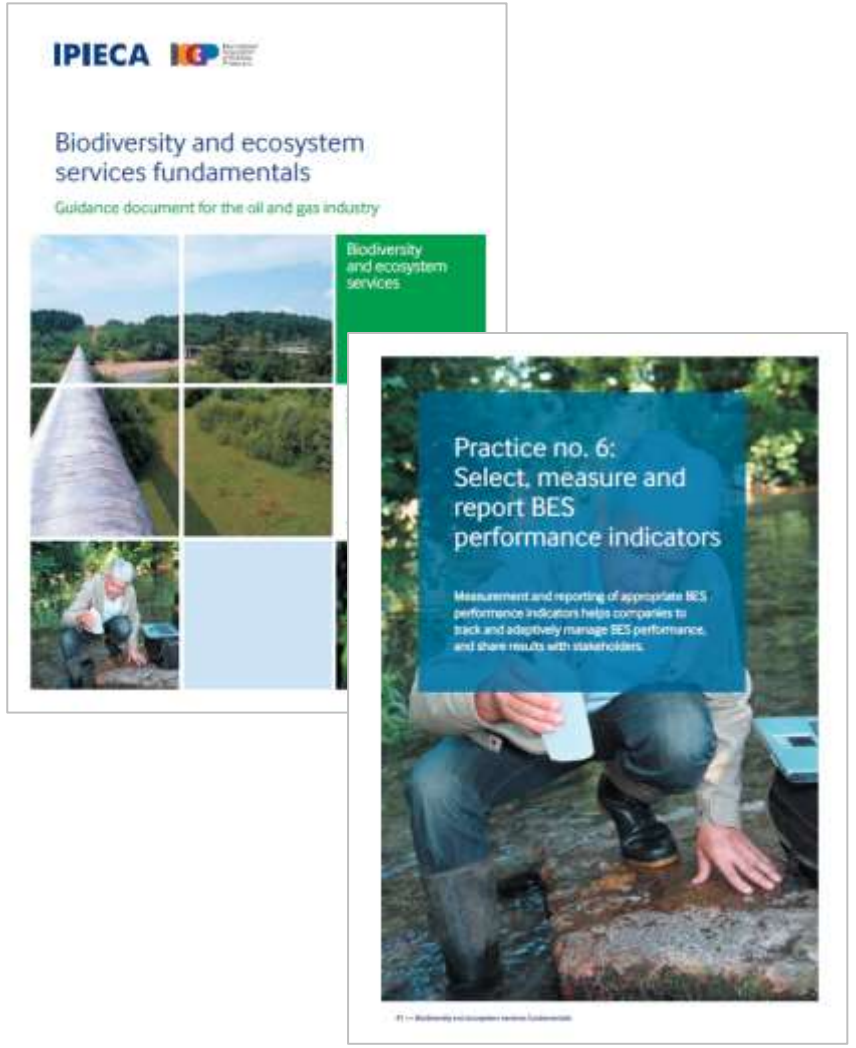
- After Environmental and Social Impact Assessment, project permitting and baseline assessment

- Helps to understand if:
  - Impact predictions were accurate
  - Biodiversity management interventions are being effective

GUIDANCE ON MONITORING

Monitoring should:

- Have a clear objective
- Help identify impacts/risk to biodiversity
- Consider what methods/variables to use
- Use data collected in the field
- Involve data interpretation and report results
- Help inform adaptive management



Newmont™

Newmont Biodiversity Overview

NOVEMBER 2022

KEY BIODIVERSITY VALUES (KBVS) AND THE NEWMONT STANDARD

- **Species of Conservation Priority:** Species listed as Endangered or Critically Endangered on the IUCN Red List or equivalently listed on national, regional, and/or state/provincial lists.
- **Critical Habitat:** Habitat supporting one or more species of conservation priority as defined above, highly threatened and/or unique ecosystems, and/or areas associated with key evolutionary processes.
- **Natural Habitat:** Areas composed of viable assemblages of plant and/or animal species of largely native origin, and/or where human activity has not essentially modified an area's primary ecological functions and species composition.

Type of Project	Requirement
Exploration	Develop understanding of KBVs via desktop and on-the-ground assessments before any ground-disturbing activities to ensure NNL of KBVs.
New Projects and Expansions	No net loss of key biodiversity values as a result of mine-related activities or a net gain, when possible, within 10 years post mine closure.
Operational Sites	No additional loss of key biodiversity values as a result of mine-related activities by the time of mine closure.
Legacy Sites	Seek to enhance the long-term health and resiliency of species and ecosystems in affected areas and/or managed areas in accordance with regional conservation goals and long-term land use plans.

STUDY/PROJECT REQUIREMENTS BY STAGE

Investment Stage	Level of Effort for Biodiversity Baselines
Stage 0 – Conceptual	• Screening-level Assessment. A desktop assessment should be conducted to understand the potential for the presence of KBVs. • Consultation with biodiversity experts and reconnaissance-level field surveys may be necessary. • Documentation should list and map all potentially present KBVs and identify data gaps and areas for further investigation. • The project area of influence and the larger biodiversity baseline study area should be identified.
Stage 1 – Scoping	• Potential KBVs identified and mapped. • A thorough understanding of the presence or absence of KBVs and their relation to the regional and global biodiversity context is necessary at this stage. • Detailed field surveys may be necessary to develop a biodiversity inventory and mapping to inform project options, material issues and major risks to the project. • Mitigation options should be explored, and potential options identified.
Stage 2a – Pre-feasibility	• A biodiversity impact assessment should be conducted at this stage, mitigation options identified including set asides, project alternatives, and offsets. • This will require more detailed baseline characterization in both the project area of influence and an appropriate regional study area. • Some baseline data will also be required for potential or preferred offset sites.
Stage 2b – Feasibility	• Baseline data should be sufficient to allow mitigation options to be identified and fully characterized, including any potential offset areas.
Stage 3 – Definitive Feasibility	• Baseline data will be sufficient to inform a Biodiversity Action Plan to be completed by this stage. • Monitoring against pre-project baseline conditions may begin at this stage and throughout the life of the project.

BIODIVERSITY RISK ASSESSMENT TOOL - EXAMPLE

			Mine Life Stage						Unmitigated Risk			
Biodiversity Feature (KBV)	Risk	Description of Consequence	Exploration	Construction	Operation	Closure	Impact Category	Contributing Factors/Other Information	Consequence Rating	Likelihood Rating	Risk Rating	
Hooded vulture	Reduction of hooded vulture population as a result of good management of company's inert waste landfill which is feeding source	Reduction or loss of hooded vulture species within concession area			X	X	Environment	Loss of feeding resource for this species Regular capping of inert waste with saprolite to manage vector	4	3	18	Extreme
	Reduction/loss of species within the concession area	Company linked to reduction or loss of a CR species within concession area			X	X	Reputation	Loss / reduction of CR species highlighted by any opposing NGOs / CS groups	3	3	13	High
Cola boxiana	Removal of mother trees in the pit area within the forest reserve resulting in reduced population of species	Loss and reduction of EN species			X	X	Environment	Current interest by Research on any perceived importance of species	3	5	20	Extreme

BIODIVERSITY RISK ASSESSMENT TOOL - EXAMPLE

Biodiversity Feature (KBV)					Revised Potential Risk						
	Current Controls	Reasons why current controls are NOT 100% Effective	Proposed Controls	Proposed Controls Owner	Consequence Rating	Likelihood Rating	Risk Rating		Associated Management Plan(s)	Required Monitoring	Required Documentation or Reporting
Hooded vulture	Monitoring to determine species local abundance and range; No hunting on NGRL mine site Concurrent reclamation around the their food sources	Hooded vulture migrates to any where in search for feeding sources	1. Monitor hooded vulture in areas immediately adjacent to the concession to determine presence and abundance of vultures 2. Conduct educational awareness	Environment Department	4	2	14	High	Akyem Mine Wild Life monitoring plan	Annual wildlife monitoring	Annual wildlife monitoring report Vulture monitoring as part of the wildlife monitoring scope and report to be circulated to SLT and Reg. S&ER
	Monitoring to determine species local abundance and range; No hunting on NGRL mine site	Hooded vulture migrates to any where in search for feeding sources	Monitor hooded vulture in areas immediately adjacent to the concession to determine presence and abundance of vultures	Environment Department	3	2	9	Medium	Akyem Mine Wild Life monitoring plan	Annual wildlife monitoring	Annual wildlife monitoring report Vulture monitoring as part of the wildlife monitoring scope and report to be
Cola boxiana	Salvaged wildlings and seeds Raising and planting of seedlings at biodiversity offset site to avoid reduction of the species.	Cola boxiana natural habitat presence is an indicator of the forest ecology	Biodiversity Offset - The development of offsets is focused at compensating for its residual adverse impacts and to achieve its aim of no net loss for key biodiversity values and if possible a net gain for Critical Habitat. This will be through protection, conservation, enrichment planting etc. Planting of seedlings is aimed at the site to be selected which already have the Cola Boxiana if Newmont secured a site of like to like.	Environment Department	2	1	3	Low	Biodiversity Offset Management Plan	Biodiversity Offset monitoring for no net loss or gain	Annual biodiversity offset report

NEWMONT'S BIODIVERSITY OFFSETS

SITE	KEY BIODIVERSITY VALUES (KBVs)	MITIGATION ACTIONS
Akyem (Ghana)	Impacts to Ajenjua Bepo Forest Reserve and *Cola boxiana* (endangered) and *Necrosyrtes monachus* (critically endangered) species.	Completing pre-feasibility studies for Akyem offset. Partnering with Conservation Alliance to implement critical species management program and established nurseries to support closure activities.
Yanacocha (Peru)	Tropical Andes (biodiversity hotspot defined by Conservation International including forest habitat and habitat for *Pristimantis simonsii* (Paramo Andes frog), (critically endangered).	Developed management and action plan with a target of NNL by reclaiming areas with local species and biomonitoring to identify changes associated with our operations or other activities in the area.
Boddington (Australia)	Woodland and shrubland habitat for black cockatoo; *Calyptorhynchus latirostris* (endangered). *Calyptorhynchus baudinii* (endangered) and *Bettongia penicillate* (critically endangered).	Established 192-hectare Hotham Farm Conservation Covenant areas over remnant Jarrah forest. Committed to restoring and improving 470 hectares of Hotham Farm. Founding partner of SW Biodiversity Partnership to work collaboratively with neighboring mine sites on pest and land management. Partnering with Peel Harvey Catchment Council on River Action Plan to improve ecosystem health and function.
Merian (Suriname)	Upland and lowland ever-humid forest habitat including tree species *Virola surinamensis* (baboonwood) (endangered) and *Vauacapoua americana* (bruinhart) (critically endangered)	Implemented a process to avoid and minimize vegetation disturbance and unnecessary impacts to natural habitats. Creating an offset to compensate for biodiversity impacts and completed a pilot for the reforestation of land impacted by artisanal small-scale mining (ASM) with Merian's right of exploitation (RoE).

- Sites that are not included do not require offsets at this time to meet No Net Loss commitment
- There are some regulatory-based requirements for offsets of wetlands at Eleonore and expansions may result in requirements for offsets at Musselwhite, Porcupine, and Penasquito.

TRENDS IN CORPORATE BIODIVERSITY INDICATORS

- Increasing demand for credible reporting and disclosure approaches driven by investors, policy makers and businesses
- Different reporting initiatives often meet different information needs
- Enhanced transparency and better reporting & disclosure
- Significant progress made, with broad landscape of metrics, methods and frameworks under development
    - Aligning Accounting Approaches For Nature (Align)
    - Biodiversity Indicators For Site-based Impacts (BISI)
    - Taskforce on Nature-related Financial Disclosure (TNFD)
    - Science Based Targets Network (SBTN)

IN SUMMARY

- The Mitigation Hierarchy provides a framework to manage impacts on biodiversity.
- Good-practice biodiversity management typically follows a multi-step process including screening, scoping, baseline assessment, impact assessment, mitigation and monitoring.
- Monitoring and adaptive management are important to ensure desired outcomes are achieved.

Introduction to biodiversity management

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