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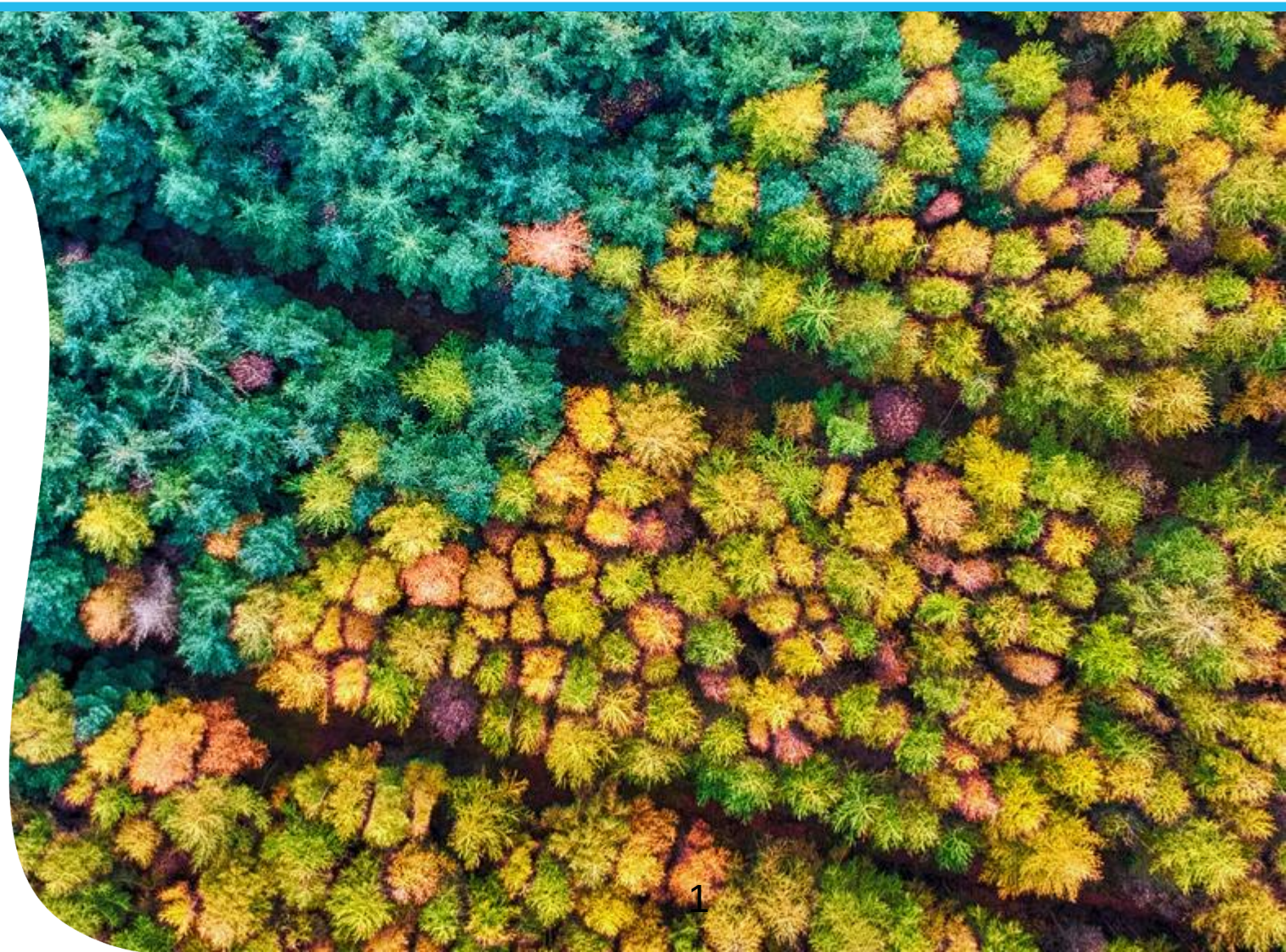
Business training on natural capital and biodiversity

Measuring & Valuing Nature in a Natural Capital Assessment

Three-hour training session

DATE



We Value Nature – Who are we?

We Value Nature is a campaign **supporting businesses** and the **natural capital community** to **make valuing nature the new normal** for business across Europe, by:

1. Sharing **research, resources & best practices**;
2. Identifying **barriers & opportunities** for adopting a natural capital approach;
3. **Providing practical support** to help business improve their risk management, communication & stakeholder engagement;
4. Reinforcing & boosting the work of the **Natural Capital Coalition.**

ICAEW wbcsd IUCN oppla WE VALUE NATURE

Supporting NATURAL CAPITAL COALITION

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 821303

Module 3 training development – Acknowledging contributors

We Value Nature's module 3 training is based on *the Natural Capital Protocol and WBCSD's BET training material*.

Module 3 training content and material was developed in collaboration with

UN environment programme WCMC

The training material has been **reviewed by and tested with a group of 10 businesses from a variety of sectors** as well as delivered as a test trial to nearly 90 participants representing businesses, NGOs, and consultancies, as part of WBCSD's virtual event series.

Finally, **12 experts from the Advisory Board** have provided their input into the training material.

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We Value Nature training is open

You are free to:

- **Share** — copy and redistribute the material in any medium or format
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- **Attribution** — You must give appropriate credit, link to the licence & indicate if changes were made (but not suggest endorsement).
- **No additional restrictions** — You may not legally restrict others from doing anything the license permits.

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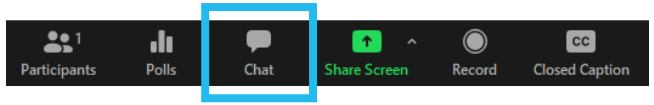
A few “house rules”

Make sure to be joining us through **Zoom app or computer**

Please **change your username** to your full name and (organization)

E.g. John Doe (WBCSD)

Please submit **comments or questions** in the **chat** function



We invite you to **turn on your camera** if possible

Ensure that you are on **mute** when not taking part in discussions

Be prepared for some **interactivity:** We’ll be using **breakout rooms**

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A few “house rules” – in person training

- Take part in discussions but respect people’s views and session timings.
- Chatham House Rule will apply.
- We will be using some quizzes during the session.
- Please ask any questions during relevant points in the presentations and exercises.
- Contribute and share your experiences – we can all learn from one another!

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We Value Nature's business training on natural capital – link to M1 & M2

Module 1

Understanding natural capital and the relationships with business decision-making & risk management

Module 2

Acquiring the resources & understanding needed to scope a first natural capital assessment, and how to integrate biodiversity

Module 3

Understanding how to measure and value changes to the state of natural capital & biodiversity, in order to undertake a natural capital assessment

Today's training

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Learning objectives of module 3

The aim of We Value Nature's module 3 training is:

- Review process for **mapping impact drivers** and **dependencies**.
- Build an understanding on how to **measure impact drivers** that are material to a business, and the **associated data requirements**.
- Understand the **process for determining a change in natural capital assets**, assessing trends, and commissioning measurement.
- Develop an understanding on various **valuation methods** available.
- Understand how biodiversity is integrated into the **natural capital assessment processes**, and how biodiversity can be **valued beyond monetisation**.
- Build confidence on the process to undertake a **natural capital assessment** and understand **available methodologies** and **datasets**.

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Target audience

Assumptions

- Initial understanding of **natural capital**
- Familiarised with concepts on the **benefits** of a natural capital **assessment** to business
- Aware of steps required to **scope** a natural capital assessment
- Suggest familiarising yourself with the contents prior to attending the Module 3 workshop:
  - **Module 1**: Introduction to natural capital
  - **Module 2**: Scoping a first natural capital assessment

Audience: Sustainability practitioners of business

Check out here our interactive mountain tool

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Agenda

Time (XXX)	Session
10 mins	Welcome & introductions
15 mins	Setting the scene & brief recap on Modules 1 & 2
30 mins	Mapping your impact drivers & dependencies
30 mins	Group Exercise
15 mins	Coffee Break
30 mins	Introduction to natural capital measurement
30 mins	Valuing changes to the state of natural capital & biodiversity
10 mins	Questions
10 mins	Wrap up & close

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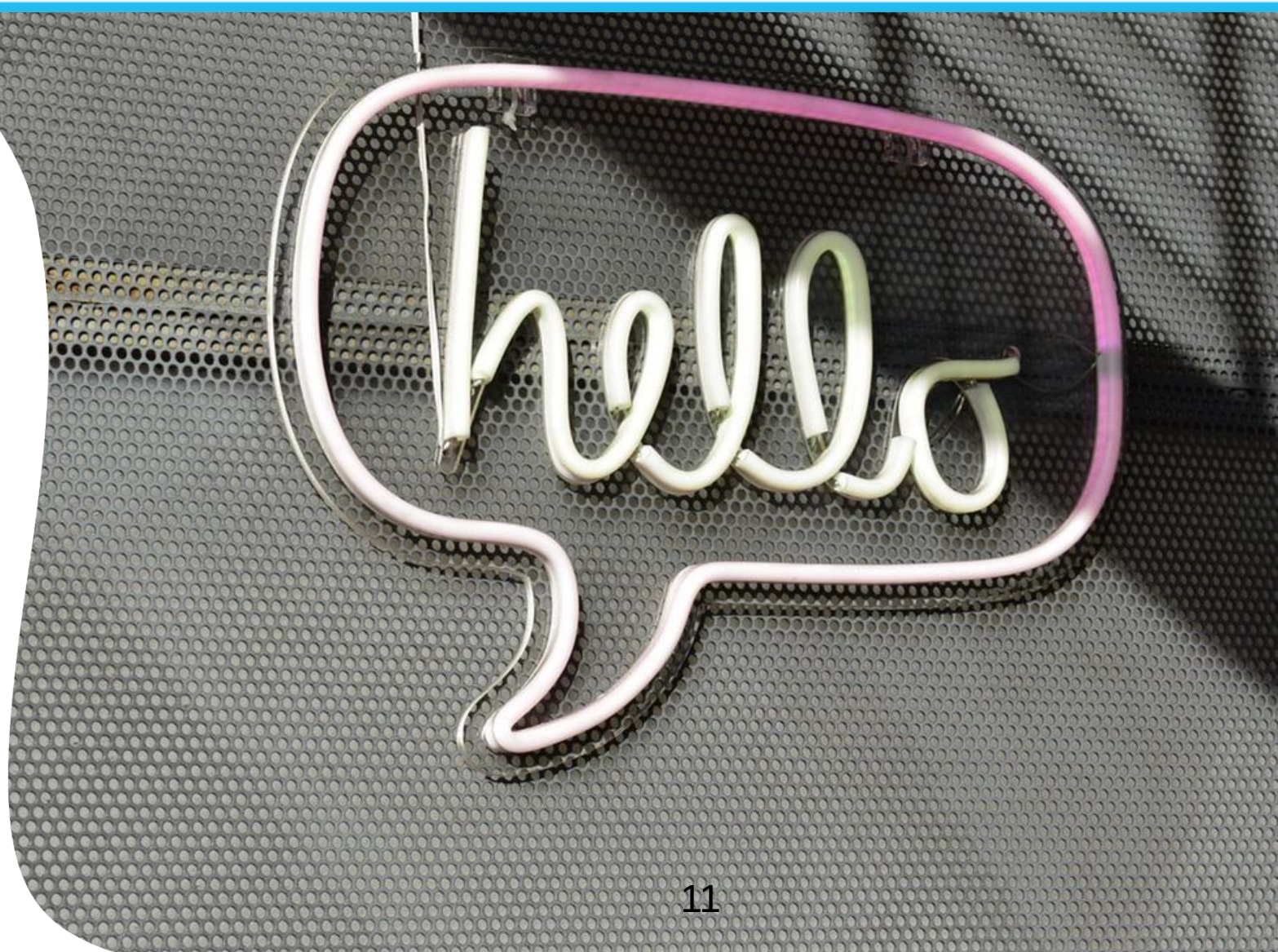
Introductions



Who is your support team for today?

insert picture of trainer

Name

[*insert logo of organisation*]

insert picture of trainer

Name

[*insert logo of organisation*]

insert picture of trainer

Name

[*insert logo of organisation*]

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Who is in the room?

NAME *Company*	NAME *Company*	NAME *Company*	

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Introductions – virtual

Please introduce yourselves by sharing your name, company, role

1. Go to **www.menti.com**
2. Enter this code: **XXXXXX**
3. Submit your answer

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Introductions – in person

- **Ice breaker**

  - On your tables, please introduce yourselves by sharing your name, company, role and why you are interested in measuring and valuing a natural capital assessment

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Introductions – virtual

Do you have any specific expectations for today?

1. Go to **www.menti.com**
2. Enter this code: **XXXXXX**
3. Submit your answer

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Introductions – in person

- **Please tell us more by sharing :**
  - Any specific expectation(s) for today?

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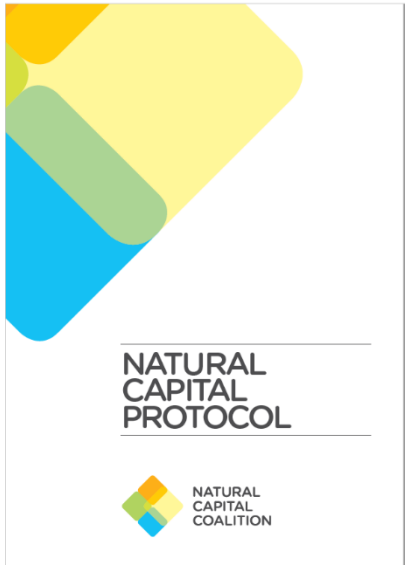
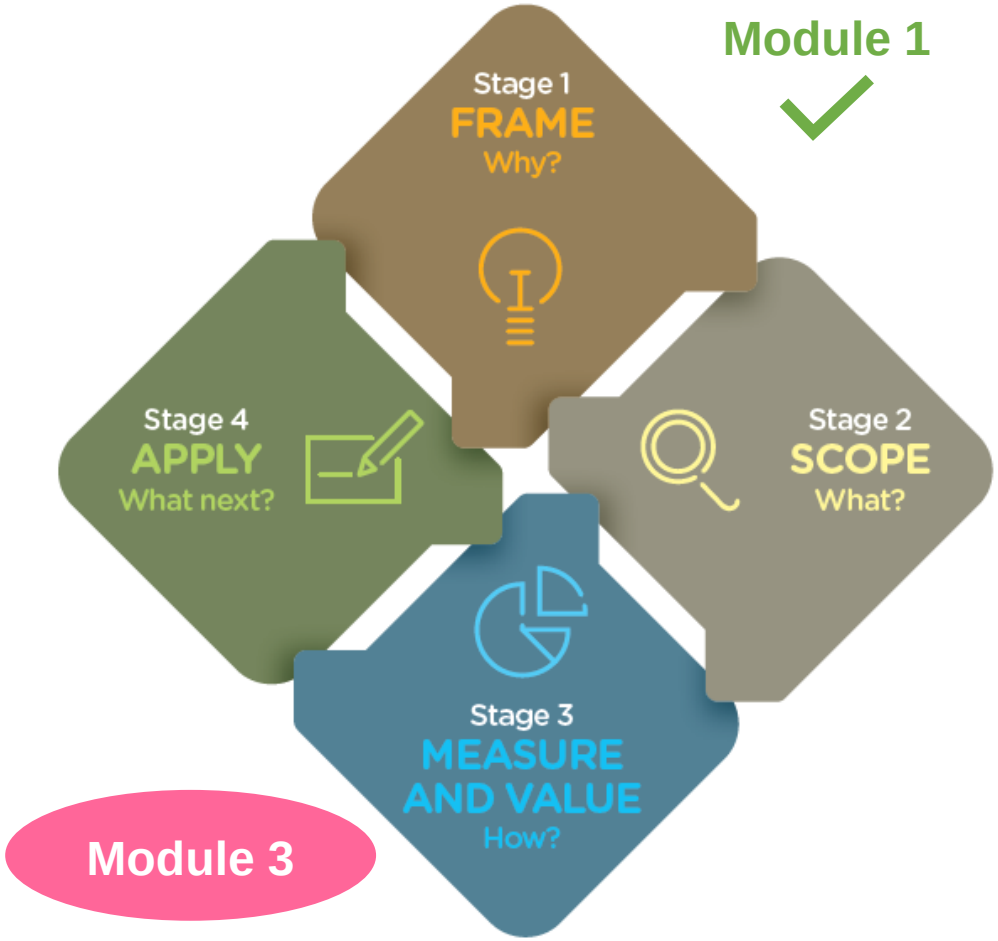
Setting the scene & brief recap on Modules 1&2

What parts of the Natural Capital Protocol will we cover?

Refer to the Natural Capital Protocol



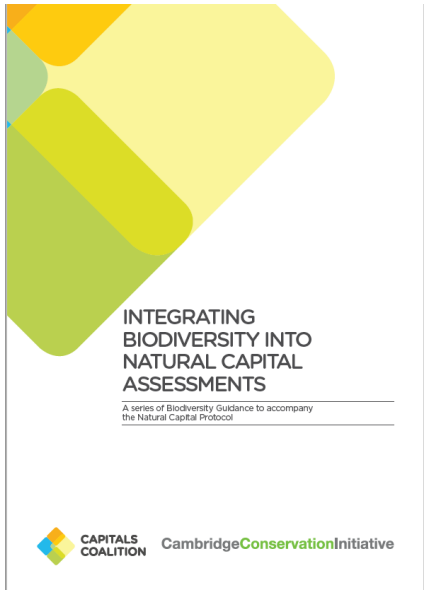


Module 1

Module 2

Module 3

Refer to the Biodiversity Guidance



Source: Natural Capital Protocol

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Biodiversity & the current economic system

- The economy is embedded within the biosphere
- **Value of biodiversity needs to be embedded within economic thinking**
- Demand to embed nature and biodiversity into decision-making exits from multiple stakeholders:
  - **International policy** drivers (e.g. post-2020 biodiversity framework)
  - **Finance** (e.g. Taskforce on Nature-related Financial Disclosures)
  - **Standard setters** (e.g. Global Reporting Initiative)
  - **Consumers** wanting increased transparency

Source: [Economics of Biodiversity: Dasgupta Review. 2020. HM Treasury]

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Anticipated private sector inclusion within the post-2020 biodiversity framework

DRAFT* Target 15:

"All businesses (public and private, large, medium and small) assess and report on their dependencies and impacts on biodiversity, from local to global, and progressively reduce negative impacts, by at least half and increase positive impacts, reducing biodiversity-related risks to businesses and moving towards the full sustainability of extraction and production practices, sourcing and supply chains, and use and disposal."

Source: Convention Biological Diversity, 2021

** Target still to be negotiated at CBD COP in 2022. Current draft signals the inclusion of the private sector with a specific mention of businesses.*

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Anticipated drivers for increased disclosure

EFRAG
European Financial Reporting Advisory Group

- **Standard setters** updating frameworks to include biodiversity
- Mixture of **voluntary** (e.g. TNFD, GRI, CDSB) and **mandatory** (e.g. CSRD/EFRAG) incentives
- Anticipate **mandatory reporting** requirements to **increase** with time (International Sustainability Standards Board supports this shift)

NATURAL CAPITAL COALITION

CDSB

Align | Aligning accounting approaches for nature

TNFD Taskforce on Nature-related Financial Disclosures

CDP

ipbes

TRANSPARENT

GRI

SCIENCE BASED TARGETS NETWORK
GLOBAL COMMONS ALLIANCE

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Business case for natural capital assessments

Refer to **p.15** of the Biodiversity Guidance

1

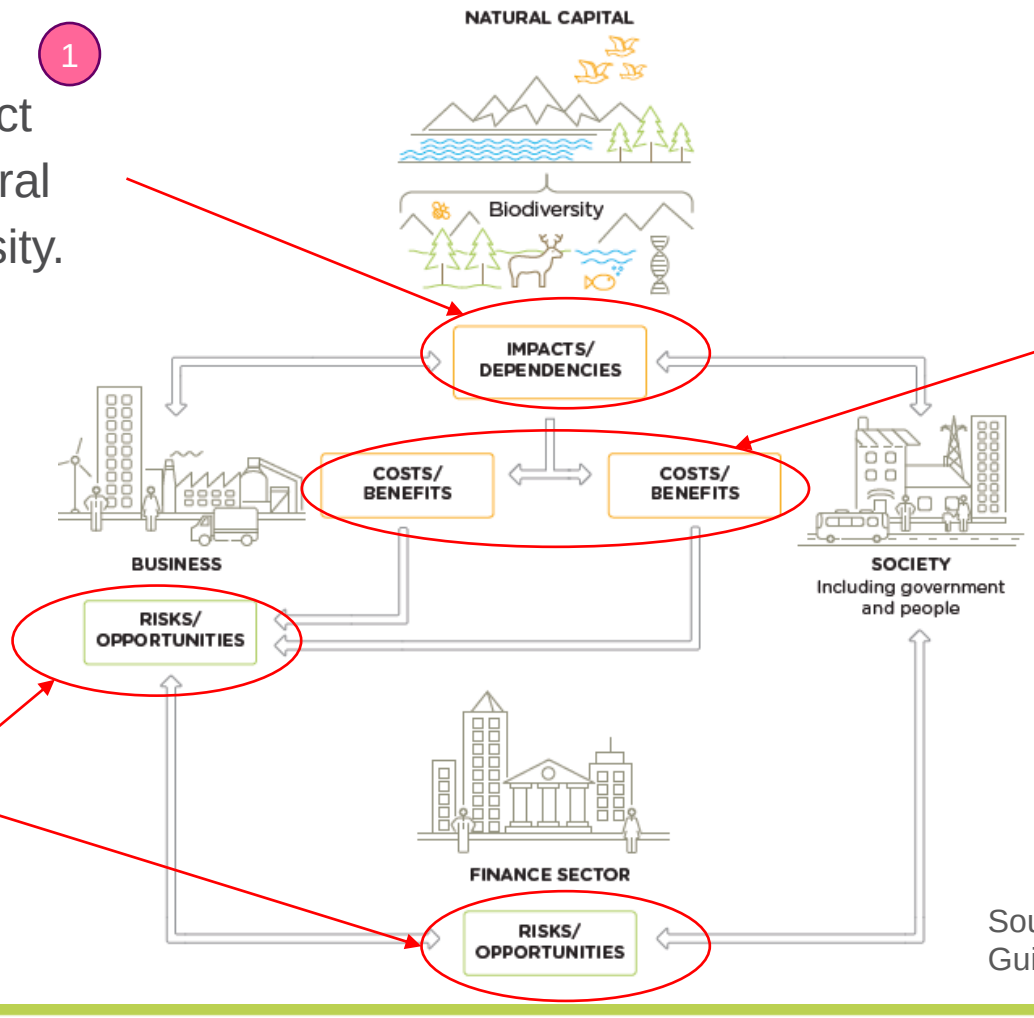
All businesses impact and depend on natural capital and biodiversity.

2

These result in **economic costs and benefits** for business and society

3

Integrating natural capital & biodiversity allows you to identify risks and opportunities that might otherwise be hidden or missed.



Source: Biodiversity Guidance

Businesses are at risk due to the unsustainable use of natural capital.

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Business applications (a refresher)

Refer to **p.20** of the Natural Capital Protocol

Natural capital and biodiversity **information** can be used in plenty of ways.

You need to decide what information you need and how it will be used.

Type of Business Application
Assess risks and opportunities
Compare options
Assess impacts on stakeholders
Estimate total value and/or net impact
Communicate internally or externally

Table: Potential business applications of a natural capital assessment (adapted from Natural Capital Protocol)

Defining objectives & scoping an assessment

Refer to **p.42** of the Natural Capital Protocol

Determine the **organizational focus**	Corporate / product / project
Determine the **value-chain boundary**	Upstream / direct operations / downstream
Specify whose **value perspective**	Business / society
Decide on assessing **impacts and/or dependencies**	Impacts / dependencies / both
Decide which **types of value** you will consider	Qualitative / quantitative / monetary

Source: Natural Capital Protocol

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Understanding materiality

Refer to **p.43** of the Natural Capital Protocol

Materiality

An **impact or dependency** on natural capital is material if consideration of its **value**, as part of the set of information used for decision making, has the **potential to alter that decision**

Materiality assessment

The process that involves **identifying** what is (or is potentially) **material** in relation to the natural capital assessment's **objective and application**

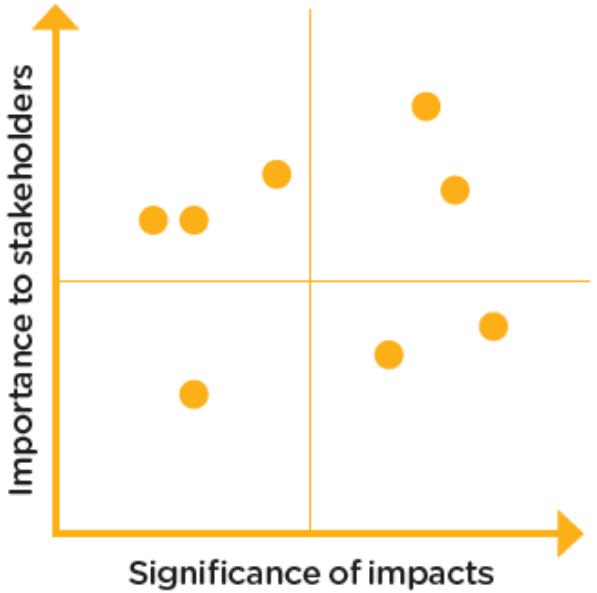

Figure: Examples of materiality matrices (Figure 4.3, Natural Capital Protocol)

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Concrete steps to undertaking a 1st natural capital assessment

ASSESSMENT STEPS

Define your objective

Identify your impacts and/or dependencies

Scope your assessment

- Organizational focus; value-chain boundary; value perspective; impacts and or dependencies; type of value; materiality

Practicalities

- Baseline, scenarios, spatial & temporal boundaries, etc.

Measure and Value

- Identify changes in natural capital; assess trends; select valuation techniques; ecosystem valuation tools

Next steps

PLANNING

Iterative process

Timing

Skills

Data

Resources

Stakeholders

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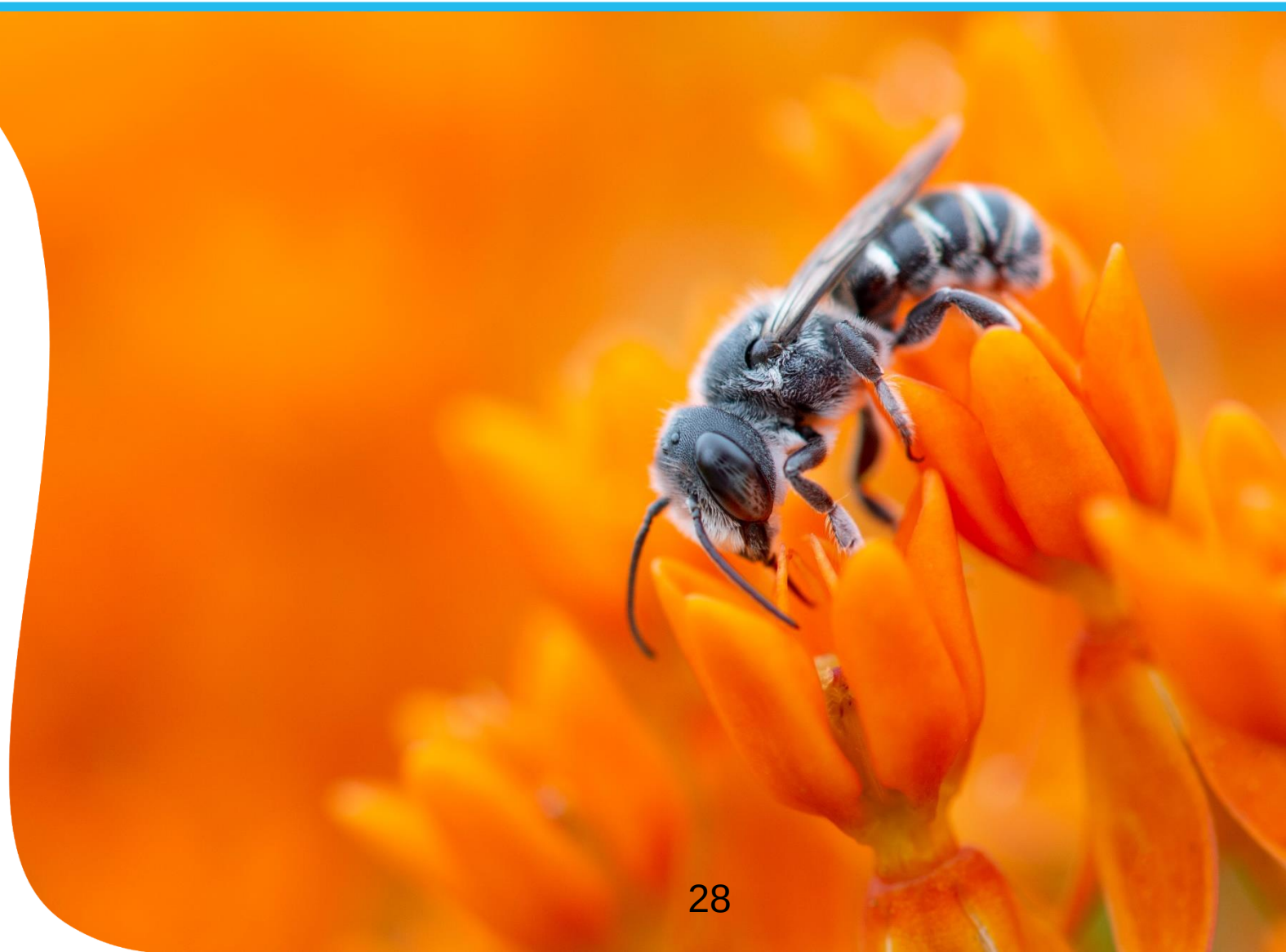
Mapping impact drivers & dependencies



Part 1: Steps to complete before starting on measurement

Actions

Define your value perspective
Develop your impact and dependency pathways (including identification of impact drivers)
Define which impact drivers and/or dependencies you will measure
Identify how you will measure impact drivers and/or dependencies
Understand methods available for measuring changes to natural capital & biodiversity
Identify your data needs
Collect impact driver and dependency data

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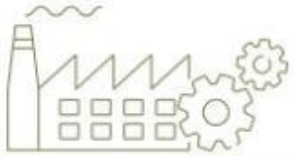
Defining value perspectives

Whose value perspective?

- Business
- Society

Impacts and/or dependencies?

- Impacts on your business
- Your impacts on society
- Your business dependencies

	Value to business	Value to society
Impacts	**Business Impacts** Costs/benefits to the business of its own impacts 	**Societal Impacts** Costs/benefits to society of business impacts 
Dependencies	**Business Dependencies** Costs/benefits to the business of its dependencies 	Dependencies that results in societal costs/benefits are the same as impacts

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How to identify impact drivers

Refer to **pp.44-55** of the Natural Capital Protocol

Impact drivers are:

- **Measurable quantities** of a natural resource used as an **input** to production

  (e.g. fresh water)

Or:

- **Measurable** non-product **output** of a business activity

  (e.g. water discharges)

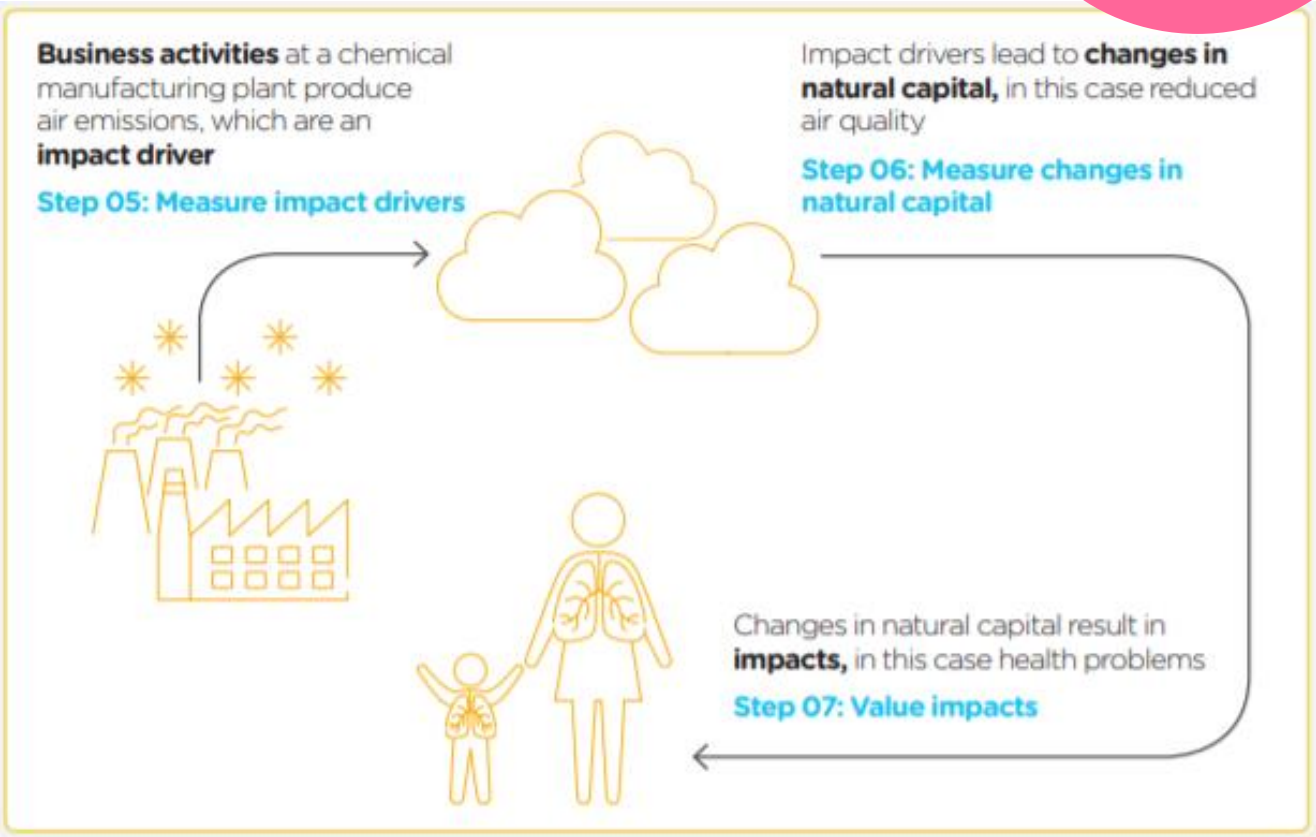

Figure: Generic steps in impact pathways (Natural Capital Protocol)

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Natural capital impacts

Refer to **p.16** of the Natural Capital Protocol

Impact: The negative or positive effect of business activity on natural capital

Business impacts on biodiversity may be **direct, indirect,** and/or **cumulative**

Source: Natural Capital Protocol

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Examples of identified impact drivers

Refer to **p.47** of the Natural Capital Protocol

Business input or output	Impact driver category	Examples of specific, measurable impact drivers
Inputs	Water use	Volume of groundwater/surface water consumed, etc.
	Terrestrial ecosystem use	Area of agriculture by type, area of forest plantation by type, etc.
	Fresh water ecosystem use	Area of wetland, ponds, lakes, etc. necessary to provide ecosystem services
	Marine ecosystem use	Area of aquaculture by type, etc.
Outputs	Water pollutants	Volume discharged to receiving water body of nutrients (e.g. nitrates, phosphates) or other substances (e.g. heavy metals)
	Soil pollutants	Volume of waste matter discharged and retained in soil over a given period

Table: Examples of possible impact drivers (adapted from Natural Capital Protocol)

Determining dependencies on natural capital

Refer **p.17** of the Natural Capital Protocol

Dependency: A business reliance on or use of natural capital

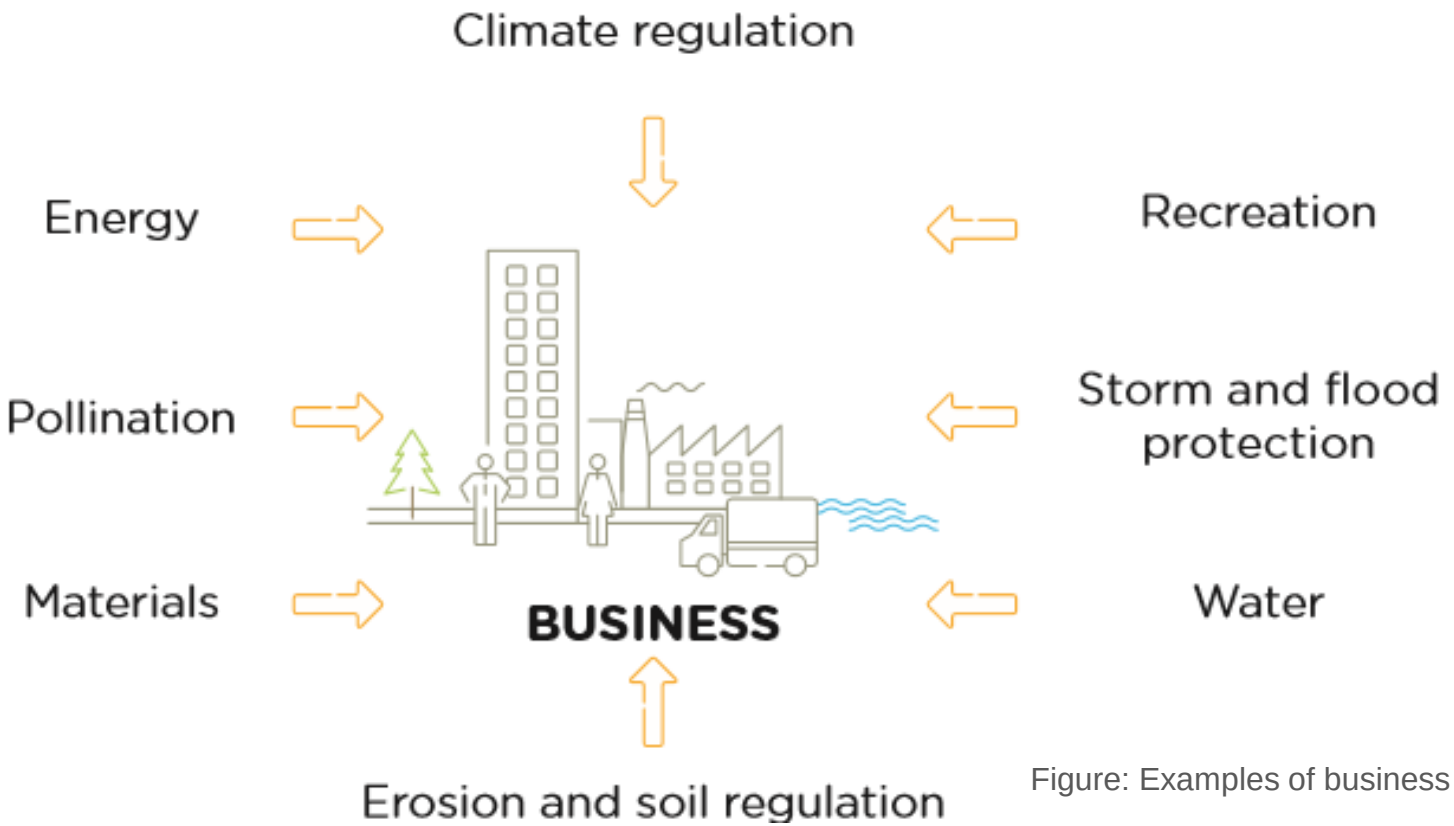

Figure: Examples of business dependencies on natural capital (Natural Capital Protocol)

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Menti Question

Identify a dependency most material to your business activities

e.g. pollination, water abstraction, nutrient cycling, hydropower etc.

1. Go to **www.menti.com**
2. Enter this code: **XXXXXX**
3. Submit your answer

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Determining dependency pathways

Refer to **p.46** of the Natural Capital Protocol

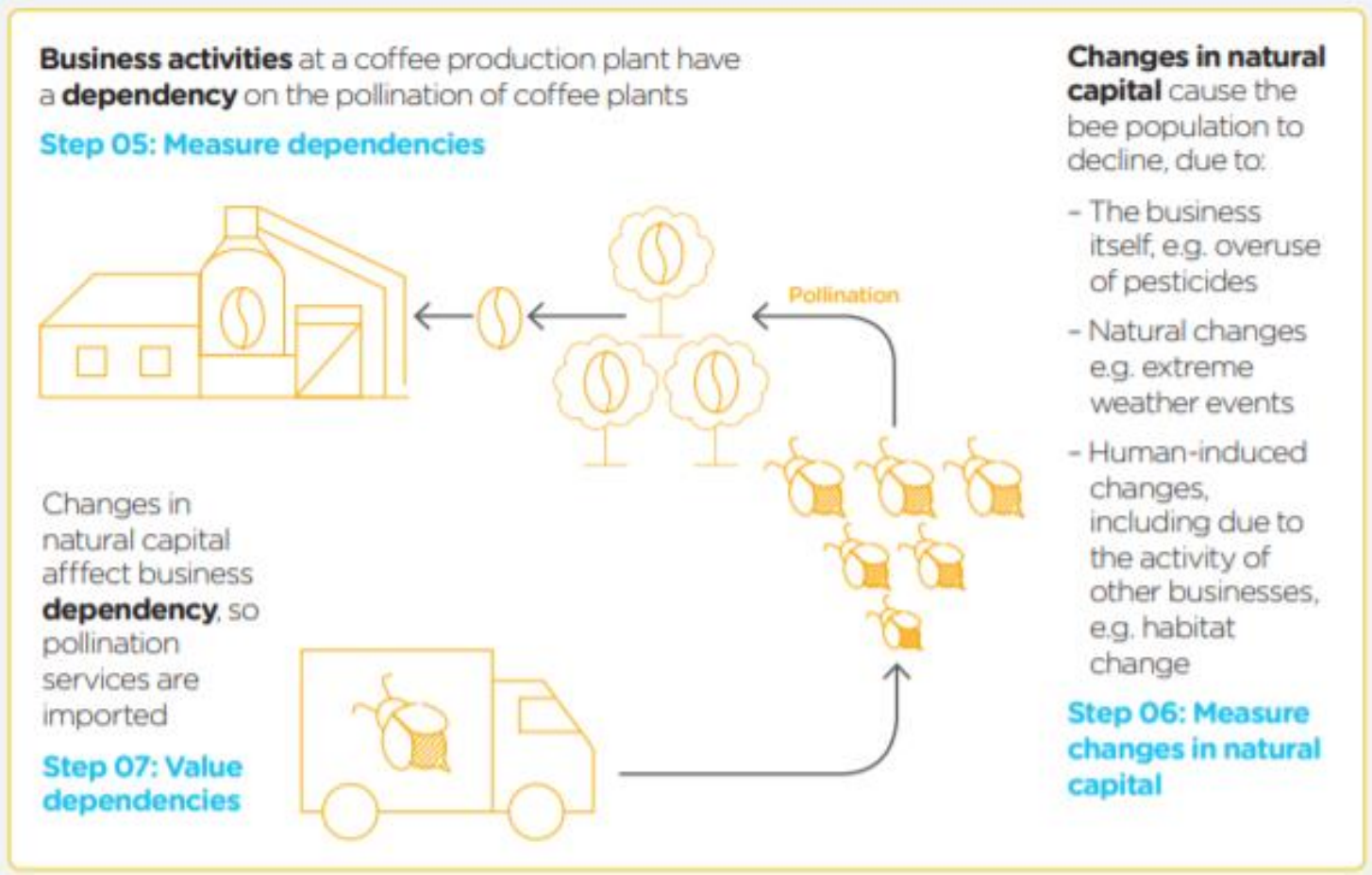

Figure: Generic steps in dependency pathways (Natural Capital Protocol)

- Business activities can be **dependent on specific features** of natural capital and biodiversity
- A dependency pathway can **identify how changes** in specific features of natural capital and biodiversity can **affect these activities**
- Knowing how changes affect business activities helps you identify the **cost of doing business**

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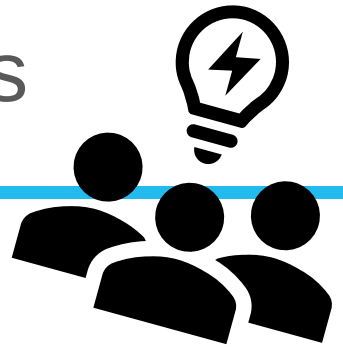
Quiz time: Identifying impact drivers vs. dependencies



Quiz time: identify the impact drivers or dependencies as quickly as you can

1. Go to **www.menti.com**
2. Enter this code: **XXXXXX**
3. Submit your answer

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Mentimeter question

Question

Identify if this is an impact driver, dependency or impact.

A flower company uses 10 litres of freshwater/day to ensure its products are plump and ready for sale, which requires extraction of water from a nearby lake (answer in bold)

1. ***Impact driver***
2. Dependency
3. Impact

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Mentimeter question

Question

Now identify if the impact driver is an input or output. What is the impact driver category?

A flower company uses 10 litres of freshwater/day to ensure its products are plump and ready for sale.

1. It is an ***input***
2. The category is ***freshwater use***

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Mentimeter question

Question

Now identify if the impact driver is an input or output. What is the impact driver category?

A water company discharges untreated wastewater into a riverway. Is this a:

1. It is an ***output***
2. The category is ***water pollutant***

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Mentimeter question

Question

Identify if this is an impact driver, dependency or impact.

A gold mine requires 100 litres water/day to process ore. Is this a:

1. Impact driver
2. ***Dependency***
3. Impact

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Mentimeter question

Question

Now identify what category the dependency is?

A gold mine requires 100 litres water/day to process ore. Is this a:
riverway. Is this a

1. The category is ***freshwater dependence***

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Mentimeter question

Question

You are a flower bulb farmer, what are potential impact drivers?

Select all that apply

1. ***Soil pollutants discharged***
2. ***Air pollutants discharged***
3. ***Water extraction***
4. ***Land use***

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Practicalities on data collection & available datasets

Introduction to data needs for an assessment

Refer to **p.42** of the Biodiversity Guidance

- **Data collection** is required to complete a natural capital assessment
- Companies can **utilise existing data** - this will help determine which **measurement approaches** are **applicable** for your assessment
- Likely that new data will need to be acquired and can consist of:
  - **Primary data**: Internal business data; site-level impact driver data; supplier/customer data
  - **Secondary data**: Published, peer-reviewed, and grey literature; publicly available datasets (e.g. FAOSTAT Crops); productivity models; mass balance models, etc.

How to go about collecting data

Refer to **p.42** of the Biodiversity Guidance

Refer **p.60** of the Natural Capital Protocol

Which data/datasets will be used will depend on the business application, time/resources available, and the measurement technique to be applied.

It is recommended that the measurement technique and the associated impact driver data needed be identified BEFORE data collection begins.

Tip* Collaborating with departments across a company is recommended as there may be data available for use within an assessment that has already been collected

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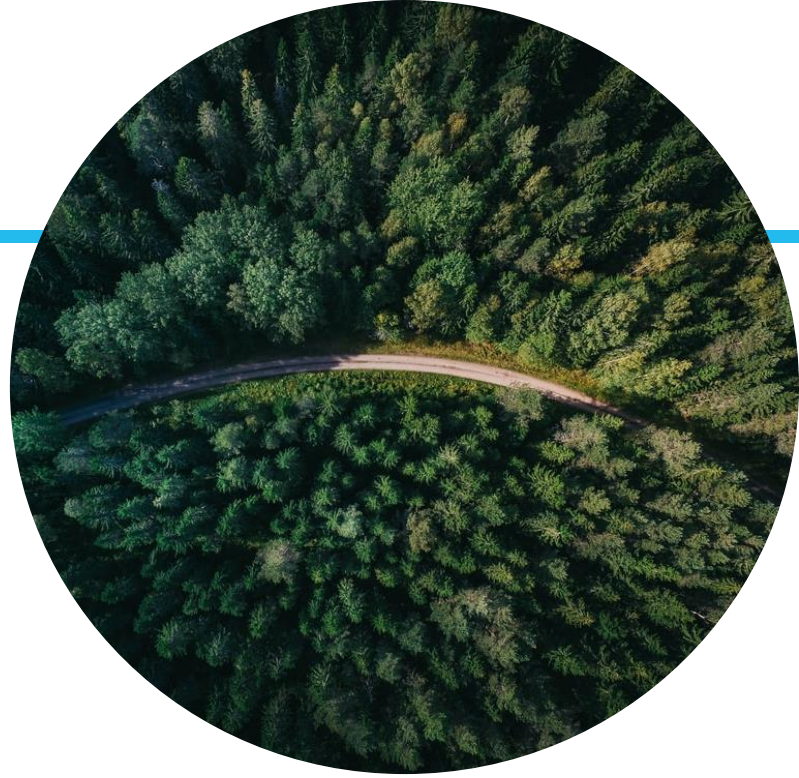
Data considerations

- Data isn't always numerical (**quantitative**). It can also be descriptive (**qualitative**)
- In most cases, you will want to select a **metric/indicator** that you can use in the next step of your **assessment**
- For example, number of **'x' hectares** of forest, **'x' litres** of water
- Individual indicators can be **aggregated** to create '**composite**' **indicators** to understand the condition/integrity of an ecosystem assessment.



Tip* The IUCN Guidelines for planning and monitoring corporate biodiversity performance describes available datasets and how to consider aggregation of biodiversity data.

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Determining data sources

Refer to **p.43** of the Biodiversity Guidance

Activity	Impact driver	Data source
Site-level impact: mining for ore	**Land-use change** (i.e. habitat loss)	**Primary data:** Direct collection, observations
Product-level impact: manufacturing leather shoes	**Direct exploitation** (i.e. species lost from sourcing materials)	**Secondary data**: Global datasets, local/regional datasets
Portfolio- or sector-level impact: food production	**Land-use change** (i.e. biodiversity footprint of a food industry portfolio)	**Secondary data:** Public data (annual reports), private databases (fee required), and internal data collected (at global level)

Table: Examples of business activities that result in an impact driver, and associated data sources (adapted from Biodiversity Guidance)

Example indicators for identified impact drivers

Refer **p.61** of the Natural Capital Protocol

Impact driver category	Example quantitative indicators (for a given location and over a given period of time)
Water use	Cubic meters of water abstracted from surface water
Terrestrial ecosystem use	Hectares of degraded land converted to agricultural land
Fresh water ecosystem use	Kilowatt-hours (kWh) or megawatt-hours (MWh) of hydropower energy produced
Marine ecosystem use	Hectares of mangrove protected and/or restored
Water pollutants	Kilograms of arsenic released to surface water
Soil pollutants	Kilograms of organophosphate pesticide discharged to soil

Table: Example indicators for different impact drivers (adapted from Natural Capital Protocol)

Example indicators for identified dependencies

Refer **p.62** of the Natural Capital Protocol

Dependencies	Example quantitative indicators (for a given location and over a given period of time)
Energy	Kilowatt hours of energy
Water	Cubic meters or turbidity of water
Nutrition	Joules of energy consumed
Materials	Tons or cubic meters of wood
Regulation of physical environment	Hectares of habitat providing water filtration; cubic meters /day of water filtered by vegetation
Regulation of waste and emissions	Grams of pollutant assimilated per kilometre of river

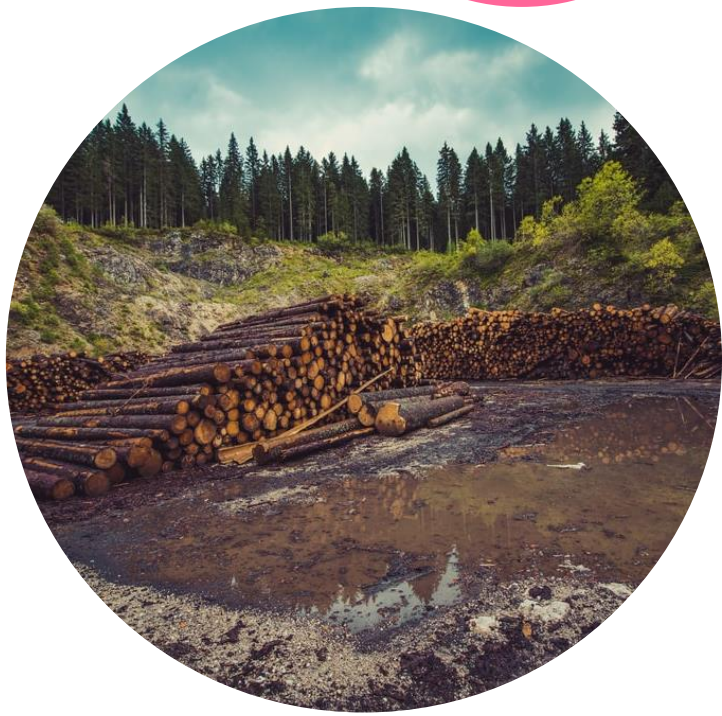

Table: Example indicators for different dependencies (adapted from Natural Capital Protocol)

Exploring available data sources

Theme specific

- **Eurostat** – statistics on waste generation and treatment
- **The Marine Plastic Footprint** – data on marine plastic leakage
- **EPA** – air emissions
- **EMEP/EEA** – European air pollutant emissions
- **WaterStat** – statistics on water footprint
- **Greenhouse Gas Protocol** – GHG calculation tools
- **Navigation Tool** – identify biodiversity measurement approaches
- **World Food LCA Database** – high-quality emissions factors/environmental footprint data

Tools & useful resources

ENCORE: A tool to help identify impacts and dependencies

ENCORE (Exploring Natural Capital Opportunities, Risks and Exposure)

- Synthesises large body of literature on natural capital
- Helps users build understanding of dependencies and impacts
- Provides a foundation for further detailed analyses

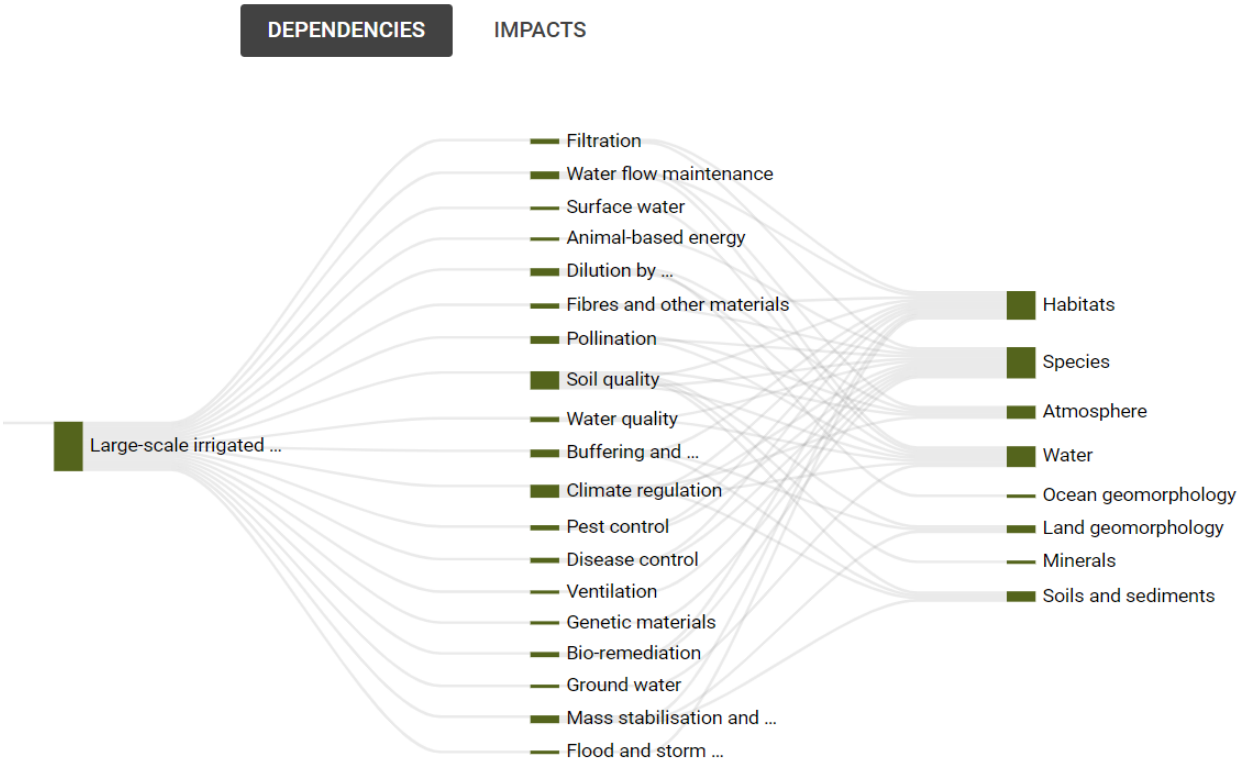

Figure: Agricultural products industry dependencies (ENCORE)

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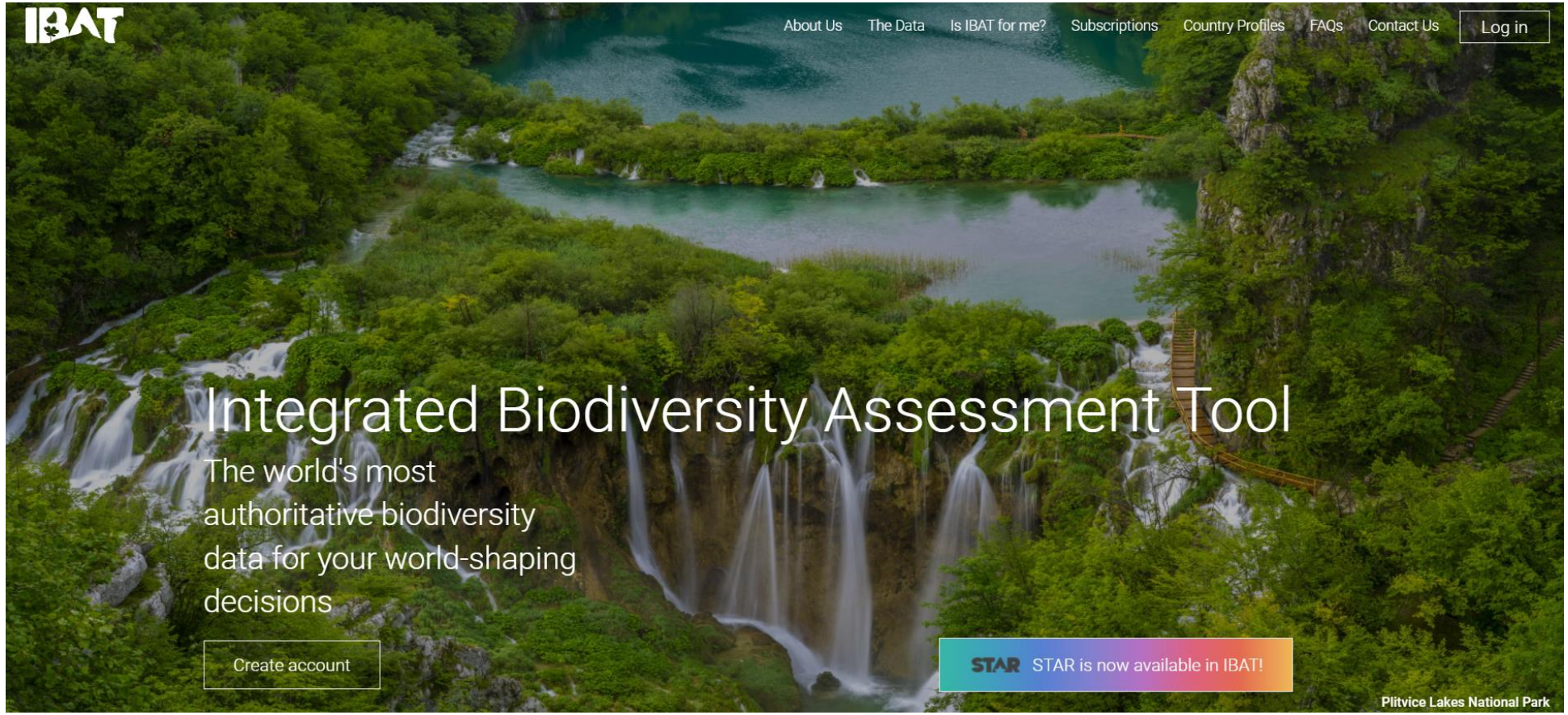
IBAT: A tool to help identify priority sites for measuring

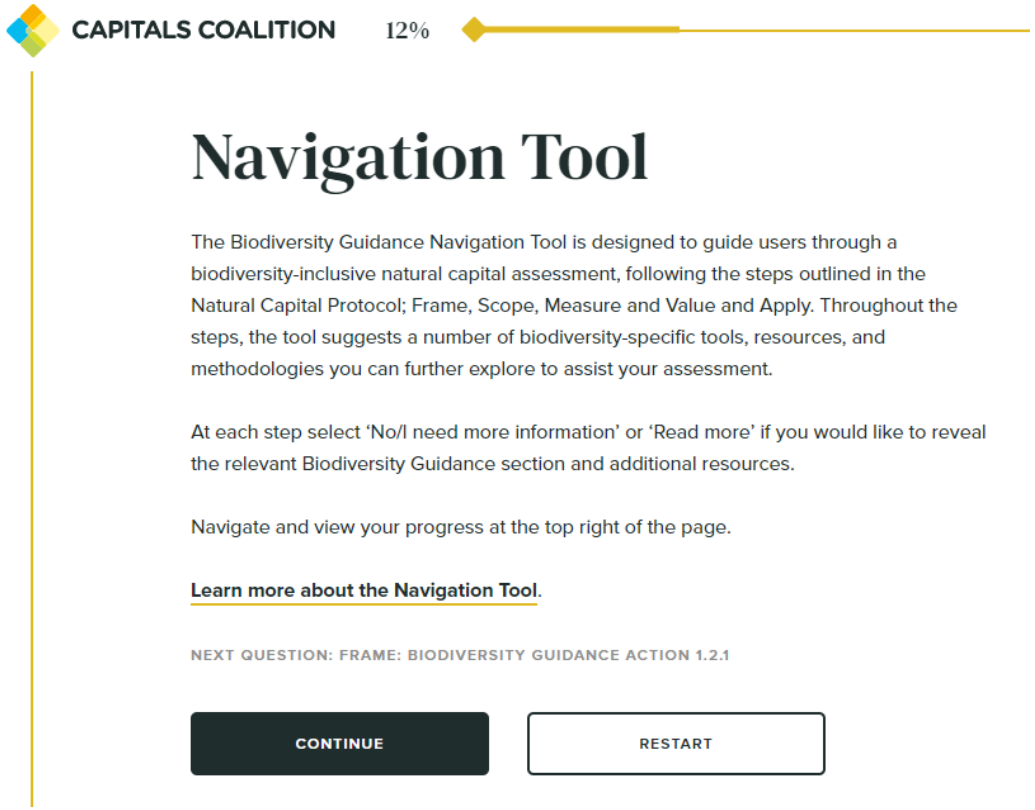


Provides access to:

- Protected Areas
- Key Biodiversity Areas
- IUCN Red List of Species including the STAR Layer

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

Glancing ahead: biodiversity data needs



BIODIVERSITY MEASUREMENT APPROACH	DEVELOPER	LAND USE CHANGE	BIOLOGICAL RESOURCE USE	WATER USE	INVASIVE ALIEN SPECIES	ATMOSPHERIC NITROGEN DEPOSITION	NUTRIENT EMISSIONS TO WATER	CLIMATE CHANGE	MATURITY
Agrobiodiversity Index	Bioversity International								★
Biodiversity Footprint Methodology	Plansup	✓	✗	✓	✗	✗	✓	✓	★★★
Biodiversity Impact Metric	University of Cambridge Institute for Sustainable Leadership	✓	✗	Indirectly	✗	✗	Indirectly	✗	★★
Biodiversity Monitoring System for the Food Sector	Lake Constance Foundation	✓	✗	✓	✓	✗	✓	✗	★
Biological Diversity Protocol	Endangered Wildlife Trust	✓	✓	✗	✓	✗	✗	✗	★
Corporate Biodiversity Footprint	Iceberg Data Lab	✓	✗	✓	✗	✓	✓	✓	★★
Environmental Profit & Loss Account (EP&L)	Kering	✓	✗	✓	✗	✓	✓	✓	★
Global Biodiversity Score	CDC Biodiversité	✓	✗	✓	✗	✓	✓	✓	★★
LIFE Impact Index	LIFE Institute	✓	✗	✓	✗	✗	✓	✓	★★
Product Biodiversity Footprint	I Care & Consult	✓	✓	✓	✓	✓	✓	✓	★★★
ReCiPe	Radboud University, RIVM, Norwegian University of Science and Technology, PRé Sustainability	✓	✗	✓	✗	✓	✓	✓	★★★
Species Threat Abatement and Recovery (STAR) Metric	IUCN	✓	✓	✓	✓	✗	✓	✓	★★

Biodiversity Guidance Navigation Tool: https://capitalscoalition.org/tools/navigation-tool/

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Case study: Yorkshire Water

Yorkshire Water Case Study

- Yorkshire Water applied the Natural Capital Protocol to a trial site at Rivelin Water Treatment Works
- They followed the **Scoping, Measure and Value and Apply** stages of the Protocol
- Key impacts were identified for **global climate, air quality, pollination and cultural/spiritual values** in the area.
- The assessment confirmed that the **chosen solution provided less negative and more positive environmental impacts.**

YorkshireWater

Natural Capital Protocol: Case Study for Yorkshire Water

Piloting the Natural Capital Protocol at Yorkshire Water proved a valuable exercise that has led us to adopt the concept of the Capitals and work to embed this thinking throughout our decision making processes and corporate strategy. I would encourage others to consider how the Protocol and the concept of the Capitals can inform an organisation's understanding of risk, opportunity and value.

Gordon Rogers, Head of Sustainability, Yorkshire Water

Audience	Organizational focus	Value chain boundary
☒ Internal	☐ Corporate	☒ Operations
☒ External	☒ Project/product/site/process	☐ Upstream
		☐ Downstream
Value Perspective	**Impacts and/or dependencies**	**Type of Value**
☐ Business	☐ Business impacts	☐ Qualitative
☒ Society	☐ Business dependencies	☒ Quantitative
	☒ Societal impacts	☒ Monetary

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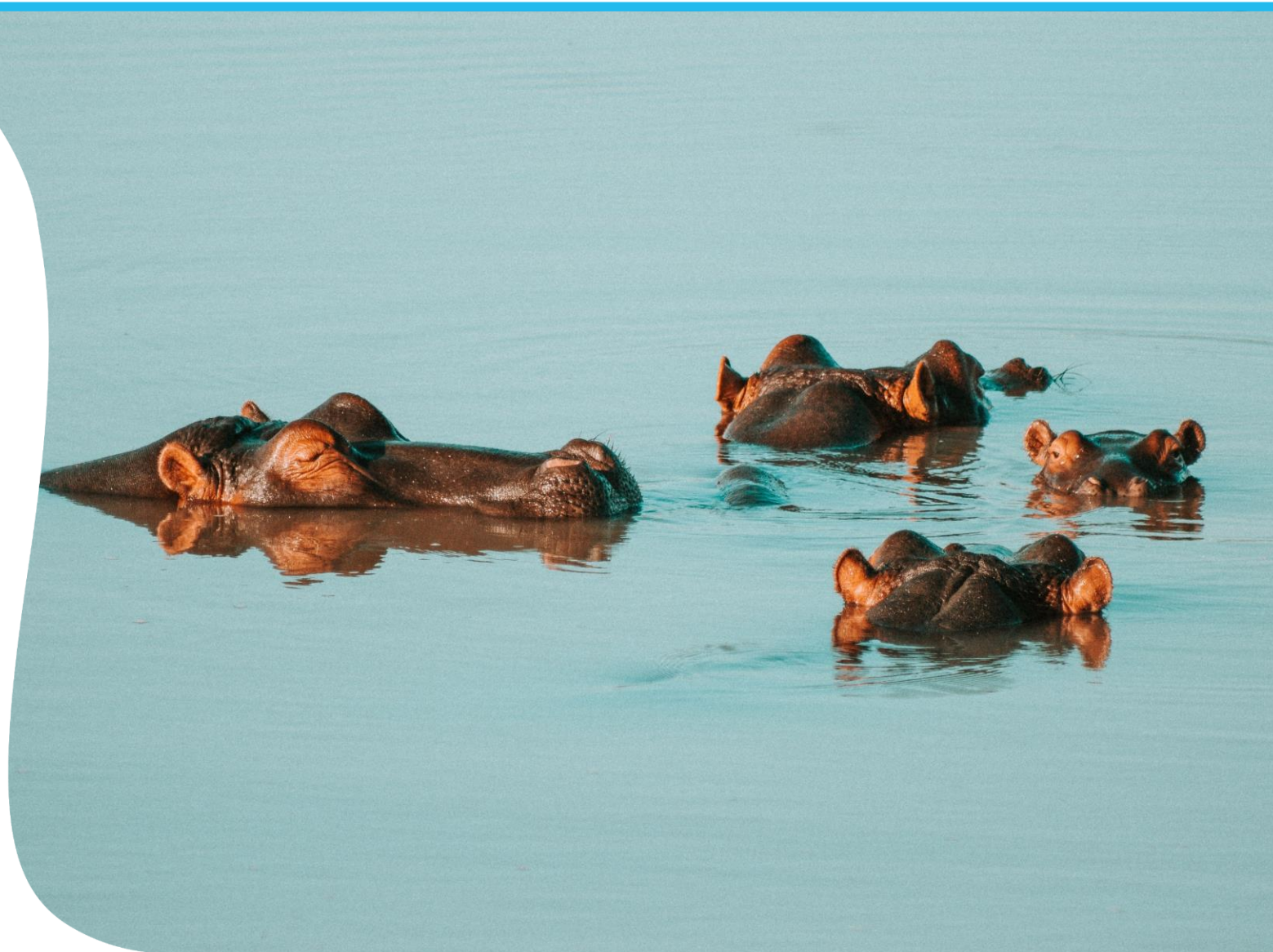
Group Exercise



Exercise: Soy farm, Brazil

Natural Capital Impact Driver:
A measurable quantity of a natural resource that is used as an input to production, or a measurable non-product output of business activity

Natural Capital Impact:
The negative or positive effect of business activity on natural capital (e.g. water extraction)

Natural Capital Dependency:
Business reliance on or use of natural capital (e.g. pollination)

Soy farm key impact drivers, impacts and dependencies

Business Activity	Does this activity result in an input or an output?	What is the measurable quantity of this input or output (i.e. what is the impact driver)?	What is the change on natural capital (i.e. what is your impact)?	Does this business activity depend on specific areas of natural capital (i.e. what are your dependencies)?
Land acquisition/ farm set up (Land use change)				
Soy production (through irrigation)				
Combine harvesting of soy product				

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Group exercise in breakout rooms - virtual

- We will now split into **breakout rooms**
  - Approx. 3 groups of 4
- You will work through a table to **identify impact drivers, impacts** and **dependencies** for a **soy farm in Brazil**
- You will have **15 minutes** to discuss in your group
- You will be notified when you have **5'** of the time left
- Each group will have one of the **support team members to take notes**
- One member per group will be asked to **feedback in plenary** on the main points & reflections that came out

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Group exercise in breakout rooms – in person

- We will now split into **discussion groups**
  - Approx. 3 groups of 4
- You will work through a table to **identify impact drivers, impacts** and **dependencies** for a **soy farm in Brazil**
- You will have **15 minutes** to discuss in your group
- You will be notified when you have **5'** of the time left
- Each group will have one of the **support team members to take notes**
- One member per group will be asked to **feedback to the room** on the main points & reflections that came out

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Example: Soy farm, Brazil

Soy farm key impact drivers, impacts and dependencies

Business Activity	Does this activity result in an input or an output?	What is the measurable quantity of this input or output (i.e. what is the impact driver)?	What is the change on natural capital (i.e. what is your impact)?	Does this business activity depend on specific areas of natural capital (i.e. what are your dependencies)?
Land acquisition/farm set up (Land use change)	Input	Terrestrial ecosystem use (hectares of farmland created)	Decrease in natural habitat	Land conversion
Soy production (through irrigation)	Input	Freshwater use (litres of water)	Decrease in local freshwater reserve	Water abstraction
Combine harvesting of soy product	Output	Air emissions (Kg of emissions of particulates per ton of soy produced)	Reduction in air quality	Regulation of biological environment for a successful crop yield

Where we are in the learning objectives

Review process for **mapping impact drivers** and **dependencies**.

- Build an understanding on how to **measure impact drivers** that are material to a business, and the **associated data requirements**.
- Understand the **process for determining a change in natural capital assets**, assessing trends, and commissioning measurement.
- Develop an understanding on various **valuation methods** available.
- Understand how biodiversity is integrated into the **natural capital assessment processes**, and how biodiversity can be **valued beyond monetisation**.
- Build confidence on the process to undertake a **natural capital assessment**, and understand available methodologies and datasets.


15’

Introduction to Natural Capital Measurement

Knowledge Check: measuring & valuing natural capital

Refer to **p.82** of the Natural Capital Protocol

To measure ≠ to value

- **To measure:** determine the **amounts, extent and condition** in physical terms
  - e.g. m^3, tons, number of injuries, number of jobs
- **To value:** estimate the **relative importance, worth, or usefulness** of natural / social / human capital to people (or to a business), in a particular context.

Qualitative

Quantitative

Monetary

→ Costs and benefits to the business, and to society

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Part 2: Steps to complete during measurement

Actions

Identify changes in the state of natural capital to be measured (what are you impacts/dependencies to be measured?)
Determine how you will measure changes to natural capital & biodiversity (i.e. your impacts & dependencies)
Understand the tools available and identify which are most applicable for your assessment
Determine if modelling is required to estimate changes
Consider the geographic & resourcing needs for your assessment
Undertake or commission measurement

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Determining appropriate measurement methods

Refer to **p.72** of the Natural Capital Protocol

- You must identify the most appropriate **method(s)** based on your **business application (or objective)** and area along the value chain
- Consider the **type of data** you have or can obtain (**primary vs. secondary**)
- This will influence if you can complete **direct measurement** or **modelling based measurements**
- Different **measurement methodologies** will be needed for **different natural capital assets** (e.g. you will measure water impacts differently than measuring impacts to biodiversity)

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Identifying changes in the state of natural capital: *Impact Drivers*

Refer to **p.69** of the Natural Capital Protocol

Refer to **p.45** of the Biodiversity Guidance

Impact driver category	**Change in natural capital, in a given location, resulting from the impact driver**
Water use	Change in physical water resources
Biodiversity	Reduction in the number of species present in a given area.
GHG emissions	Change in CO_2e concentration and contribution to global climate change
Soil pollutants	Change in organophosphate concentration and reduction in invertebrate abundance

Table: Examples of relevant changes in natural capital for different impact drivers (adapted from Natural Capital Protocol and Biodiversity Guidance)

Identifying changes in the state of natural capital: *Dependencies*

Refer to **p.71** of the Natural Capital Protocol

Refer to **p.45** of the Biodiversity Guidance

Dependencies	**Change in natural capital influencing your business' dependency**
Energy	Siltation of a hydropower reservoir
Water	Diversion or desiccation of a river that provided a source of process water
Biodiversity	Change in the population of pollinator species
Materials	Forest fires destroying raw material (fibre) inputs
Regulation of physical environment	Loss of mangrove habitat resulting in reduced protection from extreme weather events
Knowledge	Loss of traditional knowledge about the uses of species

Table: Examples of changes in natural capital influencing dependencies (adapted from Natural Capital Protocol and Biodiversity Guidance)

Measuring various aspects of natural capital

Refer to **p.72** of the Natural Capital Protocol

- **Direct measurement**: necessary in some cases to quantify the stocks and flow of natural capital
- **Estimation:** used when changes in natural capital are not directly observable or measurable
  - e.g. site-level analysis of ecosystem and/or abiotic services may require modelling exercises, to determine change in the system that can be attributed to business activities
- **Qualitative terms**: may be sufficient in some cases
  - e.g. some air pollution models make assumptions on pollution levels that can be confirmed using qualitative methods

Measuring various aspects of natural capital: Examples

Refer to **p.72** of the Natural Capital Protocol

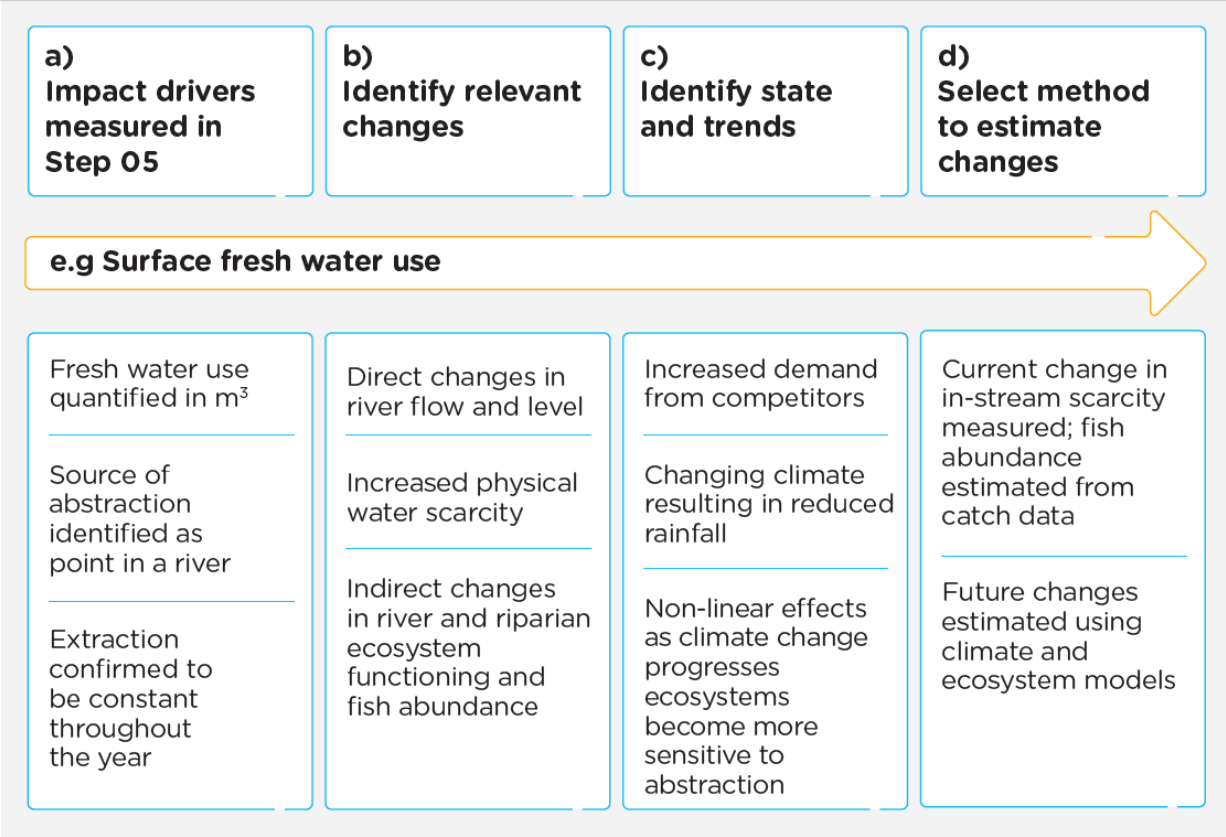

Figure: Example of how to identify natural capital changes related to impact drivers and external factors (Natural Capital Protocol)

- A **business uses fresh water** from a river (a), leading to a reduction in water availability.
- The **impact pathways identified key changes in natural capital** associated with in-stream flows of water and associated changes in fresh water ecosystems of the river (b).
- **Water availability is predicted to decrease** over the next few years, due to climate change and increased demand (c).
- Hence **the business wants to understand both current and future changes** in business/private sector demand for natural capital, and climate change projections (d).

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Measuring biodiversity

Refer to **p.50** of the Biodiversity Guidance

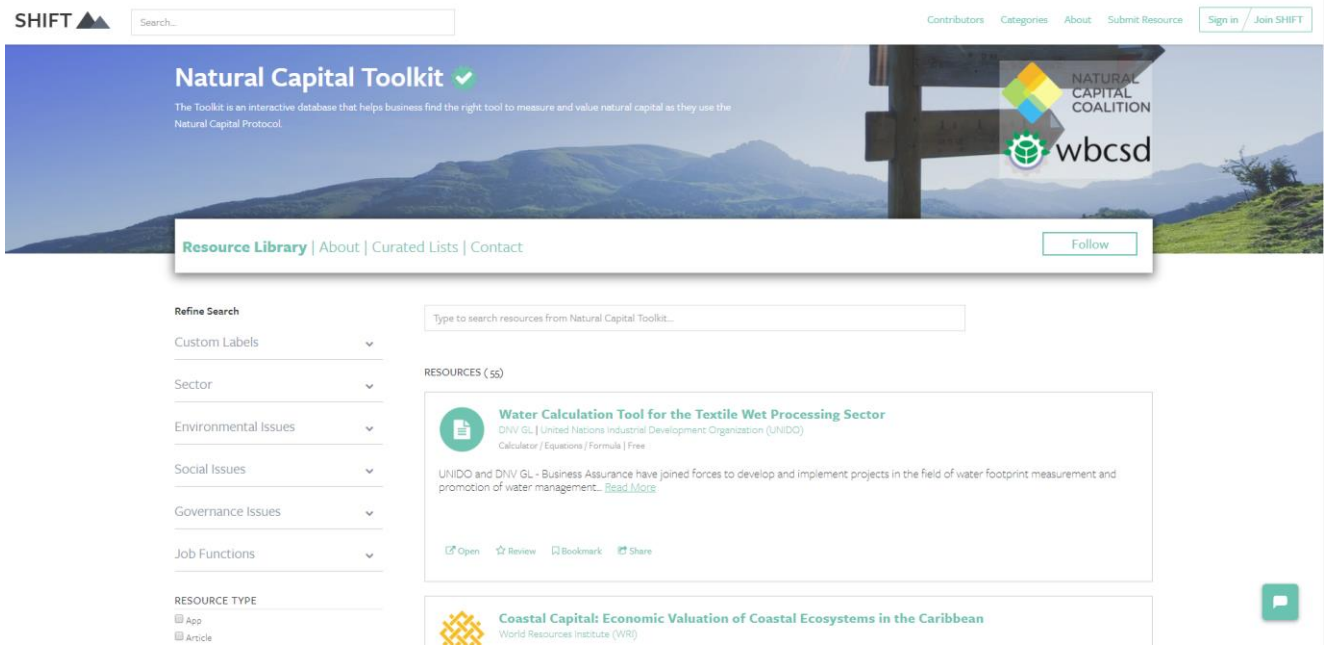
- Commonly used metrics include:
  - **Mean species abundance** (MSA)
  - **Potentially disappeared fraction of species** (PDF)
  - **Species Threat Abatement and Recovery** (STAR)
- Some metrics may be more applicable depending on the activity or impact driver

Example Metric	Description	Data Used
Mean species abundance (MSA)	Indicator of biodiversity intactness (the average abundance of biodiversity in a given area, relative to baseline populations)	Often estimated using the GLOBIO model, which aims at assessing scenarios of human-induced changes in biodiversity
Potentially disappeared fraction of species (PDF)	Indicator of decline in species richness in an area over a time period	Often estimated using the ReCiPe model, which links economic activity to changes in biodiversity
Species and habitat diversity (richness and abundance)	On-the-ground monitoring/measurement of species and habitat determine species richness, abundance and trends over time	Direct measurement; Relies on local datasets
Species Threat Abatement and Recovery (STAR)	Assesses potential reduction in extinction risk gained from removal of threats (such as mining) in a given area	IUCN STAR layer (based on IUCN Red List data)

Table: Examples of underlying metrics within corporate biodiversity measurement approaches (adapted from Biodiversity Guidance)

SHIFT Platform and the Natural Capital Toolkit

There are lots of useful tools out there. SHIFT.tools is a searchable repository of tools, including the Natural Capital Toolkit.



SHIFT

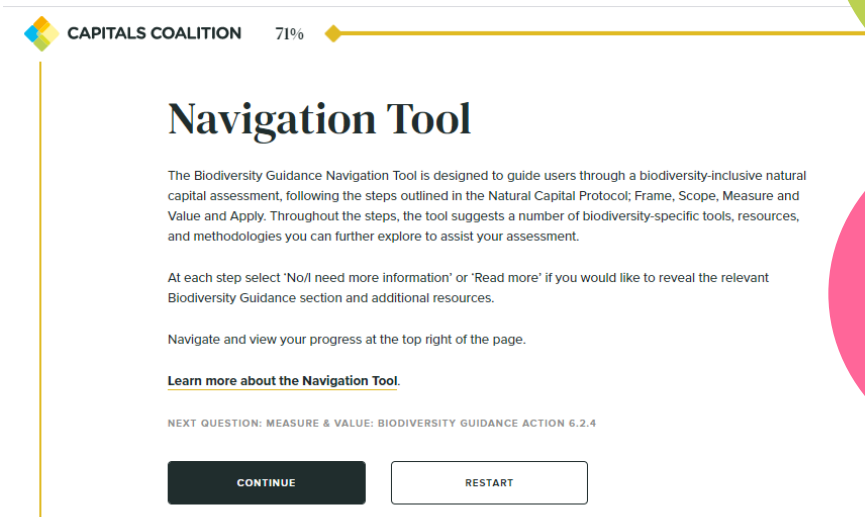
Natural Capital Toolkit

wbcsd WE VALUE NATURE

Biodiversity Guidance Navigation Tool

Refer to **p.48** of the [Biodiversity Guidance]

Business application supported	Organisational focus					
	Product/ service	Site/project	Supply chain	Corporate	Portfolio/ sector	Country/ region
1. Current performance	ABD PBF	ABD LIFE BISI STAR BD BMS BPI	ABD LIFE BD PBF BIM BMS EPL	BD GBS BISI LIFE BIM BMS EPL	BFFI LIFE GBS	ABD LIFE
2. Future performance	PBF	LIFE STAR BPT	LIFE PBF	GBS LIFE	BFFI LIFE GBS	LIFE
3. Tracking target progress	ABD PBS	ABD BISI BD LIFE STAR	ABD STAR BD LIFE	ABD BIM BD LIFE GBS STAR	ABD LIFE BFFI STAR GBS	ABD STAR
4. Comparing options	ABD PBS	ABD STAR BISI	ABD LIFE BIM EPL	ABD BIM BISI GBS EPL	ABD GBS BFFI LIFE	ABD LIFE
5. Third party assessments/ ratings		LIFE		GBS LIFE	GBS LIFE BFFI	LIFE
6. Third party certification		BD LIFE BMS	BD LIFE BMS	BD LIFE BMS	LIFE	LIFE
7. Risk & opportunity assessment	ABD	ABD BISI BPI	ABD EPL	ABD BISI EPL	ABD	ABD
8. Biodiversity accounting		BD	BD	BD		



Refer to the [Biodiversity Navigation Tool]

Key

ABD	Agrobiodiversity index	BISI	Biodiversity Indicators for Site-based Impacts	LIFE	LIFE Impact index
BFFI	Biodiversity Footprint Financials	BD	Biological Diversity Protocol	PBF	Product Biodiversity Footprint
BIM	Biodiversity Impact Metric	GBS	Global Biodiversity Score	STAR	Species Threat Abatement & Recovery
BMS	Biodiversity Monitoring System for the Food Sector	EPL	Environment Profit & Loss	BPT	Biodiversity Performance Tool
	Addresses biodiversity		Addresses ecosystem services		Biodiversity & ecosystem services

Figure: Examples of corporate biodiversity measurement approaches within the Biodiversity Guidance, used to develop the Biodiversity Navigation Tool: https://capitalscoalition.org/tools/navigation-tool/

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Considerations when choosing a methodology

Refer to **p.74** of the Natural Capital Protocol

In some cases, changes cannot be directly measured but must be estimated/modelled. Changes in natural capital may be unobservable due to:

- **Time lags:** it may take several years before any results are observable.
- **Distance:** for example, impacts that occur upstream in the supply chain may be out of sight, but this does not mean they are unimportant or should be excluded from further consideration.
- **Confounding factors:** changes may be difficult to attribute to a particular impact driver where there are multiple influencing factors that cannot easily be disentangled.

Geographic & resourcing considerations

- **Regulatory requirements** of the country/area you are working in as this will influence what you need to measure (**voluntary** vs. **mandatory** requirements)
- **Collaboration** with local NGOs, universities, or research institutions
- **Data availability** in your activity locations (data rich vs. data poor areas)
- You may have combination of **primary** and **secondary data**
- Practicalities:
  - **Level of detail** required
  - **Time**
  - **Resources**
  - **Geographic scope**

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Case study on measuring natural capital: Process

Refer to **p.51** of the Biodiversity Guidance

- **BNP Paribas** completed an initial piloting of the Measuring Guidance to:
  - 1) determine the **measurement approaches available** to a financial institution completing a portfolio-level **natural capital assessment**
  - 2) complete a **gap analysis** and identify the pros and cons of each measurement approach identified
- The **Biodiversity Guidance** matrix was used to identify the measurement approaches most relevant for corporate and portfolio assessments.
- The approaches identified as potential methods for commissioning measurement were the **Global Biodiversity Score**, the **Biodiversity Footprint for Financial Institutions**, and the **LIFE index**.

Case study on measuring natural capital: Results

Refer to **p.51** of the Biodiversity Guidance

- It was identified that a **combination of approaches** is needed to cover the spectrum of biodiversity goals.
- E.g. combining STAR and Global Biodiversity Score measurement approaches would capture information relating to **species extinction** and **ecosystem integrity**.
- Recognized that using a **single measurement approach will not allow for a comprehensive understanding** of the impacts and dependencies on biodiversity.
- Users need to **investigate the use of each measurement approach individually** to ensure the assumptions of each produce results that build upon one another
- A measurement approach that works for one company may not be applicable for another.

Discussion

What do you anticipate challenges of implementation to be, and how can they be overcome?

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Where we are in the learning objectives

- Review process for **mapping impact drivers** and **dependencies**.
- Build an understanding on how to **measure impact drivers** that are material to a business, and the **associated data requirements**.
- Understand the **process for determining a change in natural capital assets**, assessing trends, and commissioning measurement.
  - Develop an understanding on various **valuation methods** available.
  - Understand how biodiversity is integrated into the **natural capital assessment processes**, and how biodiversity can be **valued beyond monetisation**.
  - Build confidence on the process to undertake a **natural capital assessment**, and understand available methodologies and datasets.

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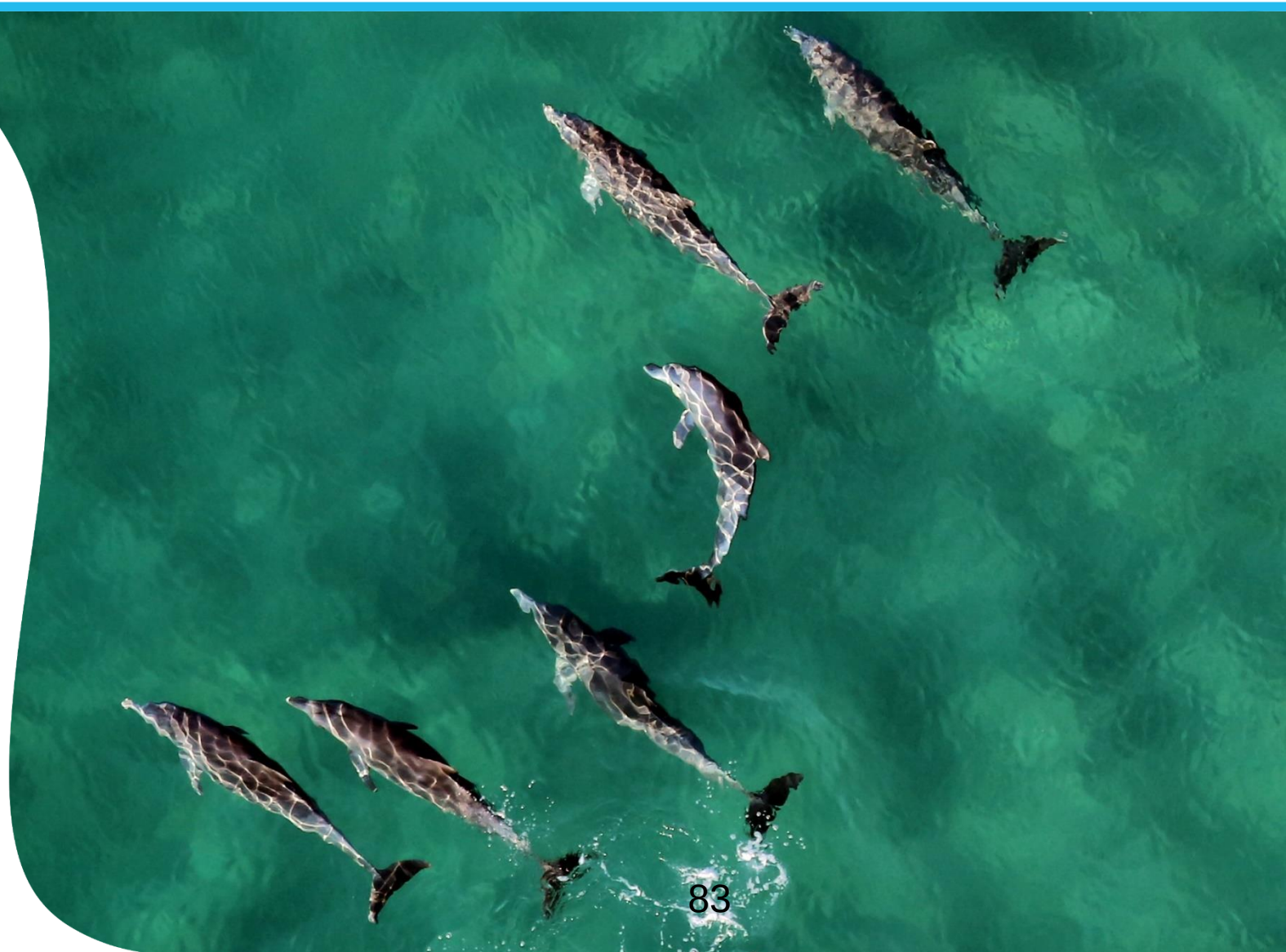
Valuing changes to the state of natural capital & biodiversity



Part 3: Steps to complete during valuation

Actions

Consider the total economic value associated with your business activities
Determine the valuation method most appropriate for your assessment
Select the appropriate technique to carry out a valuation assessment
Undertake or commission valuation

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What is the value of your natural capital impacts and/or dependencies?

Refer to **p.84** of the Natural Capital Protocol

Valuation: The process of determining the importance, worth, or usefulness of something in a particular context.

- Understanding the **social, environmental,** and/or **economic context** is essential
- "**Value transfer**" involves using the results of previous assessments, rather than collecting primary data
- Valuation techniques differ for **qualitative, quantitative, and monetary values**
- Choice of valuation technique depends on which natural capital **impact drivers or dependencies** you wish to assess

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What is the value of your natural capital impacts and/or dependencies?

Refer to **p.84** of the Natural Capital Protocol

Common valuation techniques include:

- **Net Present Value (NPV)** – commonly applied across businesses to analyse projected impacts/products & losses of a specific project

Example: Kering Environmental Profit and Loss (EP&L) accounting

- To **measure, monetize and manage** their environmental impacts in their own operations, and across the entire supply chain
- EP&L analysis helps Kering **find effective solutions** to mitigate their footprint
- EP&L revealed that **93% of their impacts lie in the supply chain** and, with only 7% of impacts from their own operations
- Kering shifted focus to finding innovative solutions and **leveraging changes across the supply chain**

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Biodiversity & Total Economic Value (TEV)

Refer to **p.15** of the Natural Capital Protocol

Use

Non-use

Direct values
Outputs that can be consumed directly, such as fish, medicines, wild foods, recreation, etc.

Indirect values
Ecological services, such as catchment protection, flood control, carbon sequestration, climatic control, aesthetics, etc.

Option values
The premium placed on maintaining resources and landscapes for future possible direct and indirect uses, some of which may not be known now.

Existence, altruistic and bequest values
The intrinsic value of resources and landscapes, irrespective of their use.

Source: Pearce, D.W., Markandya, A. and Barbier, E. (1989). Blueprint for a green economy. Earthscan, London WBCSD Connecting the dots

Determining appropriate valuation techniques

Refer to **p.82** of the Natural Capital Protocol

Qualitative

Quantitative

Monetary

- **Qualitative values** inform the scale of costs and benefits in non-numerical terms.
- **Quantitative values** use numerical data as indicators of costs and benefits.
- **Monetary values** translate costs and benefits into a common currency

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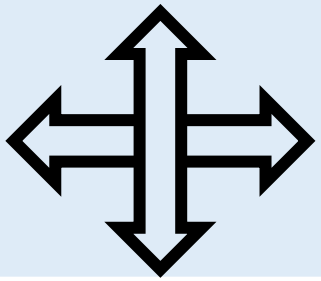
Selecting a method to commission valuation

Qualitative

- **Non-numerical**
- Opinion surveys
- Deliberative approaches
- Relative valuation

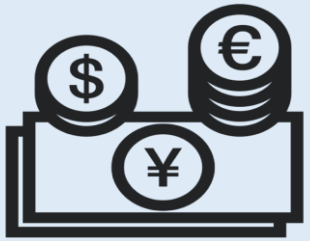


Quantitative

- **Numerical**
- Structured surveys
- Requires indicators
- Multicriteria analysis

Monetary

- **Common currency**
- Market prices
- Financial prices
- Production function



Strengths and limitations of monetary valuation

Refer to **p.35-38** of the Natural Capital Protocol

Strengths	Limitations
• Uses **common unit** of measure • Can measure **social preferences** • Used to determine **overall value for money of a project** (i.e. whether it should go ahead or not; do the benefits exceed the costs?) • Can be used to **measure risks** and **mitigate them** before these are quantified by others	• **Unable to quantify everything in monetary terms** (e.g. biodiversity) • Is often **time consuming and expensive**, depending on technique or approach used • Requires attention to avoid **double counting** • **Cultural and ethical concerns** with placing value on nature

Table: Key considerations for monetary valuation (adapted from Natural Capital Protocol)

Monetary valuation data sources

Cross thematic

- **Environmental Value Look-up (EVL)** – monetary values for a range of environmental impacts
- **EU KIP-INCA** – Datasets on monetary valuation of ecosystems and their services
- **De Groot, et al. (2012). Global estimates of the value of ecosystems and their services in monetary units. Ecosystem services, 1(1), pp.50-61** – monetary valuation of ecosystem services

Theme specific

- **The Economics of Ecosystems and Biodiversity (TEEB)** –economic impacts of biodiversity loss
- **Ecosystem Services Valuation Database (ESVD)** – monetary values of ecosystem services across all biomes
- **Social Cost of Carbon (SCC)** – costs resulting from emitting one additional ton of GHG into the atmosphere
- **Social Value UK** – database on social values, social return on investment, and cost-benefit analysis

Measuring and valuing in practice

	Dependency on the regulation of the physical environment: Flood risk	Impact of habitat removal near manufacturing facility on biodiversity
What is happening?	***Flow of ecosystem service:*** Loss of surrounding forest near manufacturing building leading to increased flood risks	***Stock of biodiversity:*** Decrease in local mean species abundance of pollinators due to habitat degradation
	Increased flood risk incurs cost to the business	Collect mean species abundance (MSA) data in-situ using field surveys
How do you measure?	Determine engineering costs of implementing green & hard infrastructure to maintain risk at an acceptable level	Conduct quantitative surveys with surrounding community to understand impacts of change in local species populations (e.g., affects to harvesting)
How do you value these changes?	Estimate replacement cost to the business over a 10-year period ($ USD)	Estimate cost of food insecurity to local community due to decreased pollination

Diagram: Hypothetical example of measuring and valuing in practice (adapted from Natural Capital Protocol, p78)

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Case study: Coca-Cola's natural capital story

Coca-Cola Case Study

- The Coca-Cola Company **quantified ecosystem services** related to freshwater sources
- A **natural capital assessment** was initiated to **monetize the ecosystem services** in order to **identify opportunities and maximize impact**
- Found that **water restoration projects can enhance a range of other ecosystem services**
- Coca-Cola are now **exploring how to further integrate natural capital** into decision-making processes
- See further examples of Natural Capital stories at: https://wevaluenature.eu/natural-capital-stories

7 ecosystem services identified

7 pilot projects

Value of ecosystem services in Belarus **40 times** higher than original investment

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Case study: Biodiversity

Refer to **p.53** of the Biodiversity Guidance

Refer to the UK NEA

The United Kingdom's National Ecosystem Assessment

- **Hybrid approach: non-monetary valuation techniques** were used to consider biodiversity's value, alongside **monetary values**
- Impacts on farmland bird species and bird diversity were valued using **multi-criteria analysis**
- Monetary valuation techniques applied to other impact drivers such as agricultural output and GHG emissions
- Difficult to assess cultural goods though monetary techniques alone, emphasizing the importance of **recognizing values using a range of techniques**

Self-reflections

Individually reflect on the following questions in the context of valuing your own assessment:

- How could I value the **role of biodiversity** in my business activities?
- What **direct** vs. **indirect values of biodiversity** do I rely upon in my business?
- What **valuation techniques** would be useful for my natural capital assessment?

→ **The bottom line is that although valuation seems like a complex task, it is achievable using different techniques**

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Commissioning valuation

Refer to **p.90** of the Natural Capital Protocol

- Valuation requires significant training and applied experience which may require external consultants
- The outputs of a valuation assessment should include:
  - A **completed valuation** (whether qualitative, quantitative, and/or monetary) of costs and benefits.
  - Documentation of all **key assumptions, sources of data, methods used, and resulting values**.

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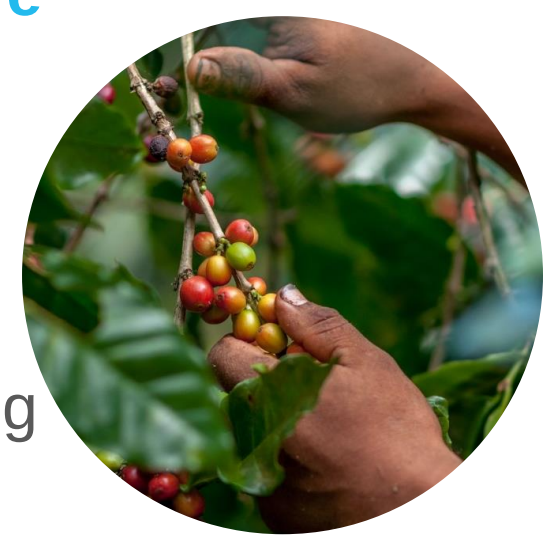
Tips for valuation

- **Test more than one value (sensitivity testing)**
- Report a **range**
- Convert values to the **same time period**
- Consider **local country context of values**
- Understand where the **tipping point** leads to a **change in a decision**
- Consider using **peer reviewers**
- Consider conducting **annual or quarterly valuations** to inform **comparative analysis and trends** in ecosystem condition

Practical considerations & success factors for a valuation assessment

Refer to **p.55** of the Biodiversity Guidance

- Avoid **double-counting**
- Use the **optimal valuation technique** for the **ecosystem/objective**
- Be aware of **subjectivity**
- Use the **correct measure** of **monetary unit**
- **Economic uncertainty** may reduce reliability of results
- Be wary of **"commoditization"** of biodiversity: expressing biodiversity value in monetary units can be misinterpreted as pricing biodiversity
- Consider wider **socio-economic, legal, and business context**
- Document **limitations**
- Seek assistance from **external experts**
- Do not value for the sake of **putting a number on nature**



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- ? Build confidence on the process to undertake a **natural capital assessment**, and understand available methodologies and datasets.

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Wrap up & close

Discussion – in person

What are some of your concerns about getting started on measurement?
What solutions have been identified in the training?

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Discussion – virtual

What are some of your concerns about getting started on measurement?
What solutions have been identified in the training?

1. Go to **www.menti.com**
2. Enter this code: **XXXXXX**
3. Submit your answer

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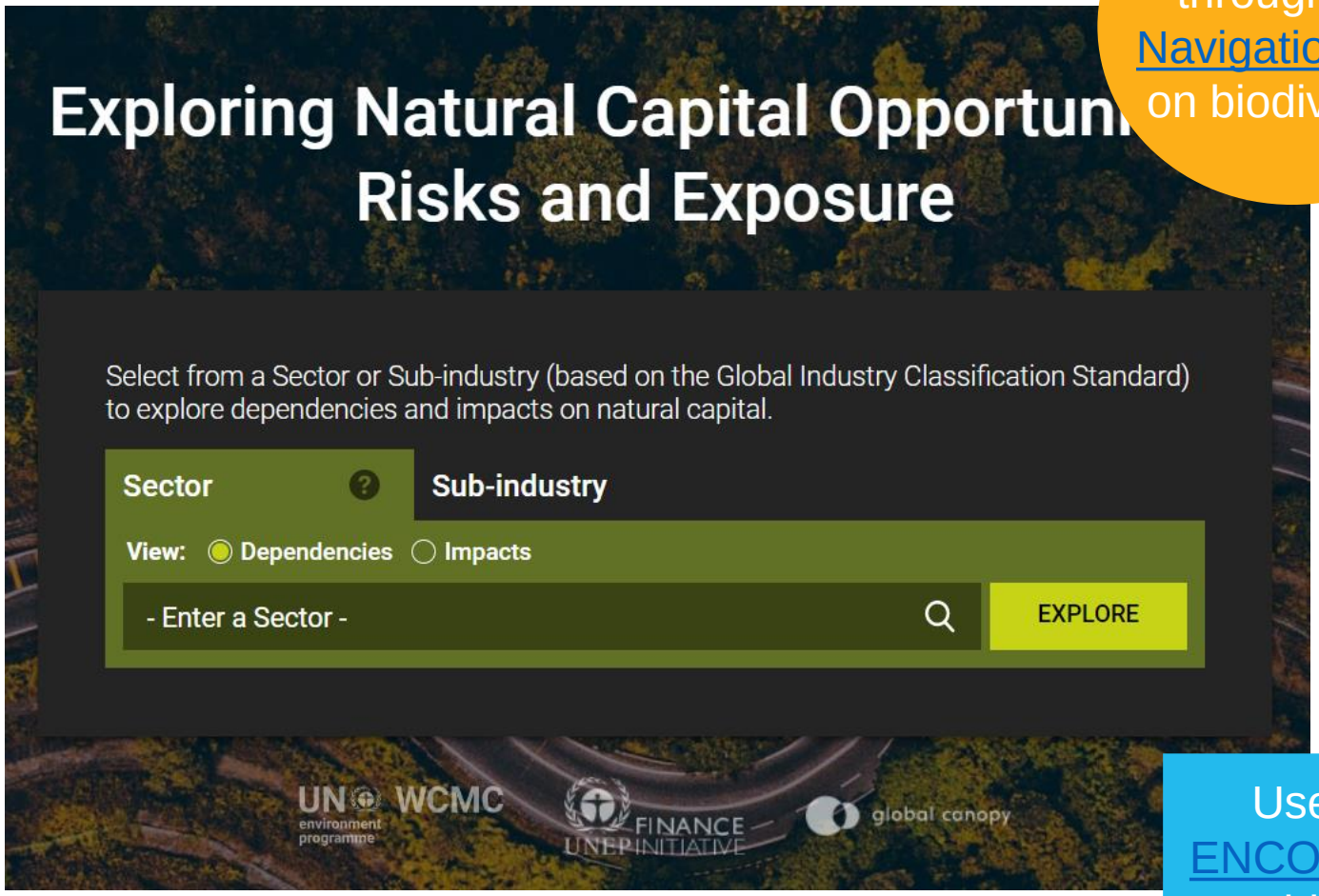
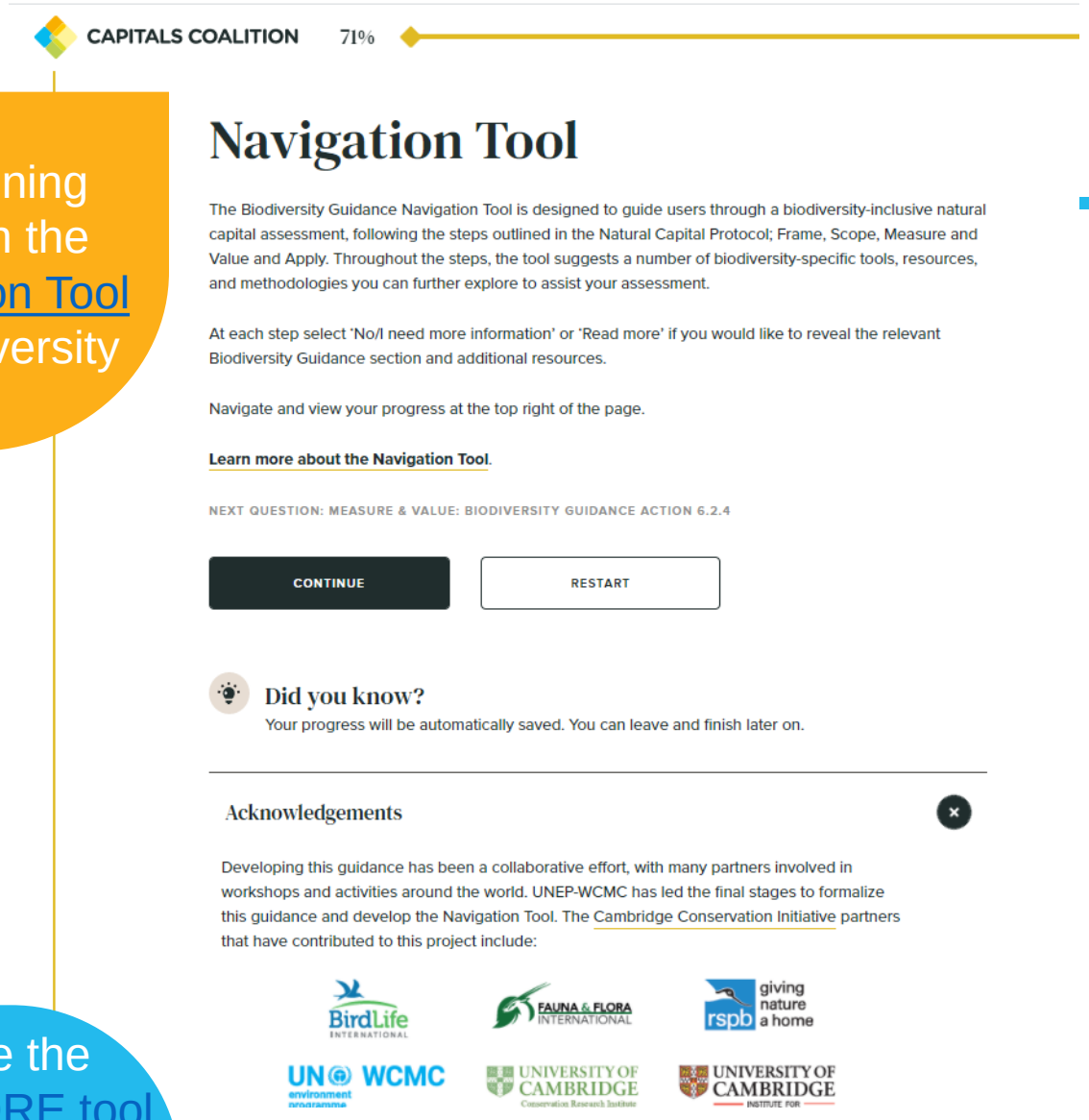
Eager to get started?



Try running through the [Navigation Tool]() on biodiversity



Use the [ENCORE tool]() to identify impact pathways

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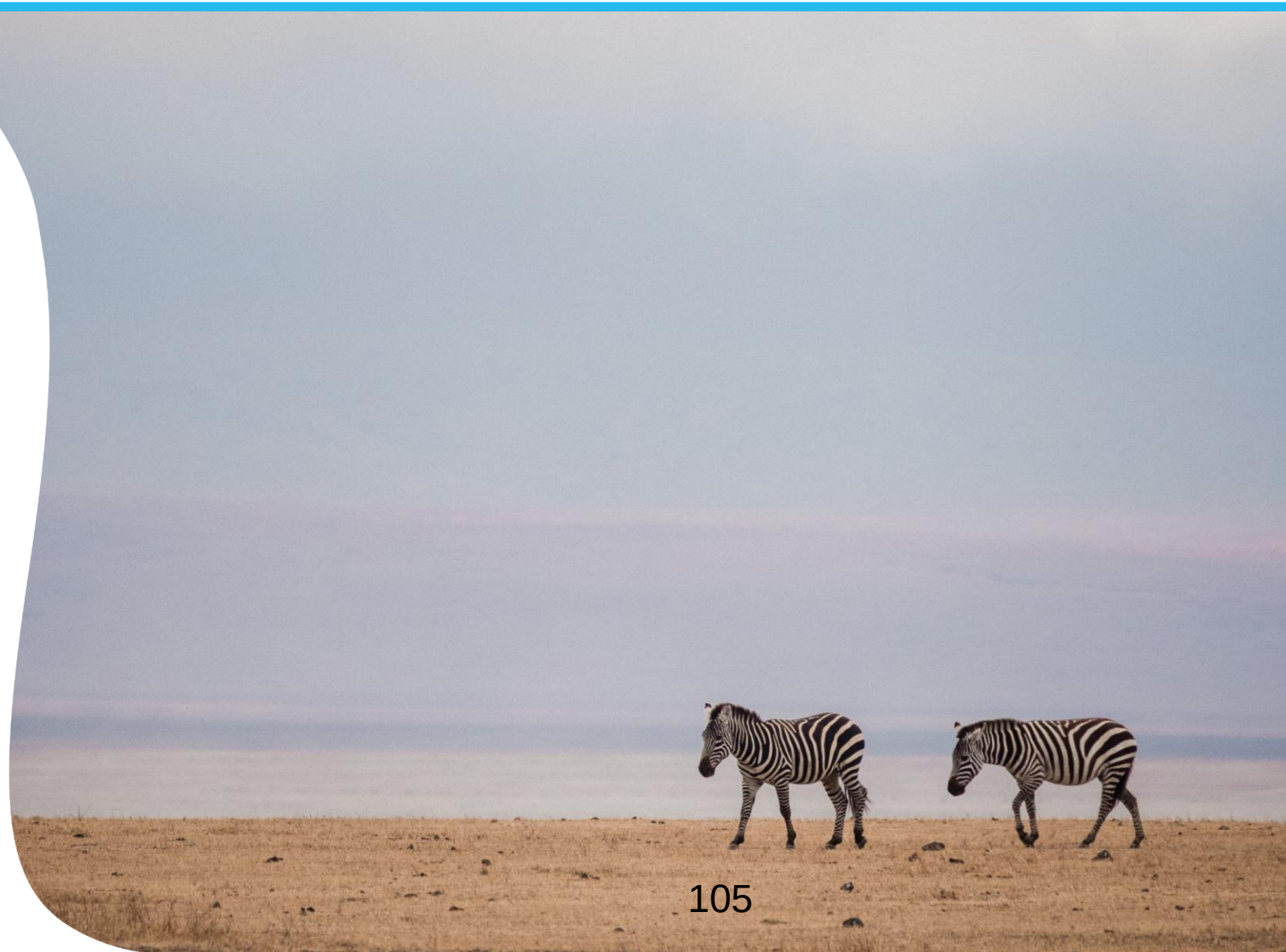
Thank you!



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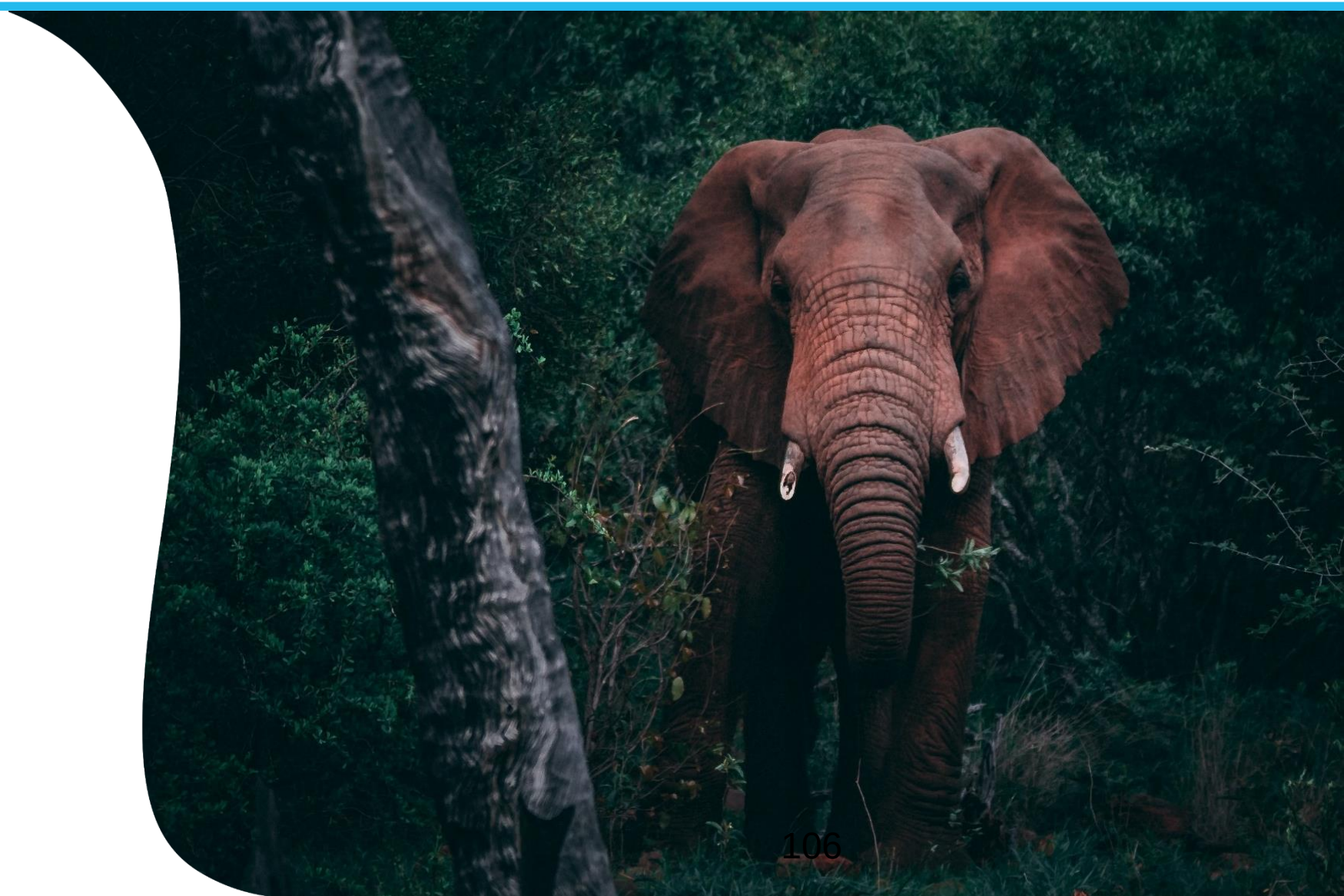
Questions?



We are here to help!

- Deep-dive webinars
- In-person training
- Helpdesk calls
- Virtual office hour/ Q&A
- Online training
- Train-the-trainer

Keep in touch & sign-up:

https://wevaluenature.eu/

Exchange with peers (Linkedin group):

We Value Nature - Natural Capital uptake support group

Provide your feedback: Survey

We want to learn too – how have we helped?

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ICAEW

wbcsd

IUCN

oppla

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Supporting

NATURAL CAPITAL COALITION

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October 2021

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