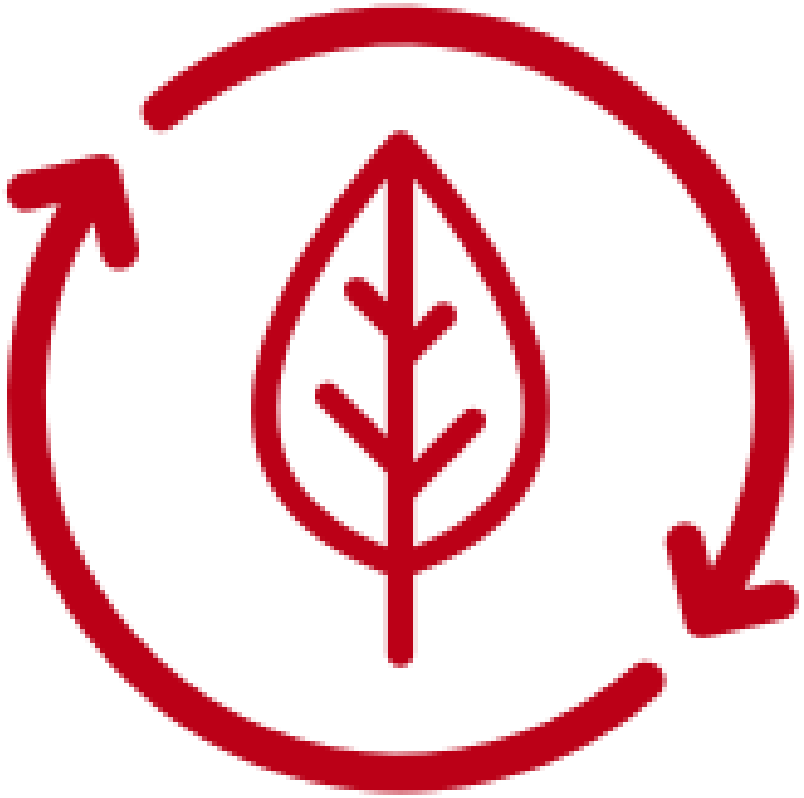
Towns Fund Delivery Partner

Measuring Impacts: Environment

12 October 2021



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Introduction

Speaker

AMY CARROLL

Business Case Specialist, TFDP

Associate and economist (Arup) specialising in business case development and economic appraisals, particularly infrastructure projects.

Recent project experience includes working with the Environment Agency to develop a business case for a climate resilience and adaptation strategy.

Purpose

Brief guidance on how to adopt a natural capital approach to measure environmental impact

Agenda

- the natural capital approach and framework
- economic valuation of the environment
- how project appraisal can incorporate natural capital
- natural capital accounting principles and methods, benefits and challenges
- applying natural capital at a local level
- Q+A

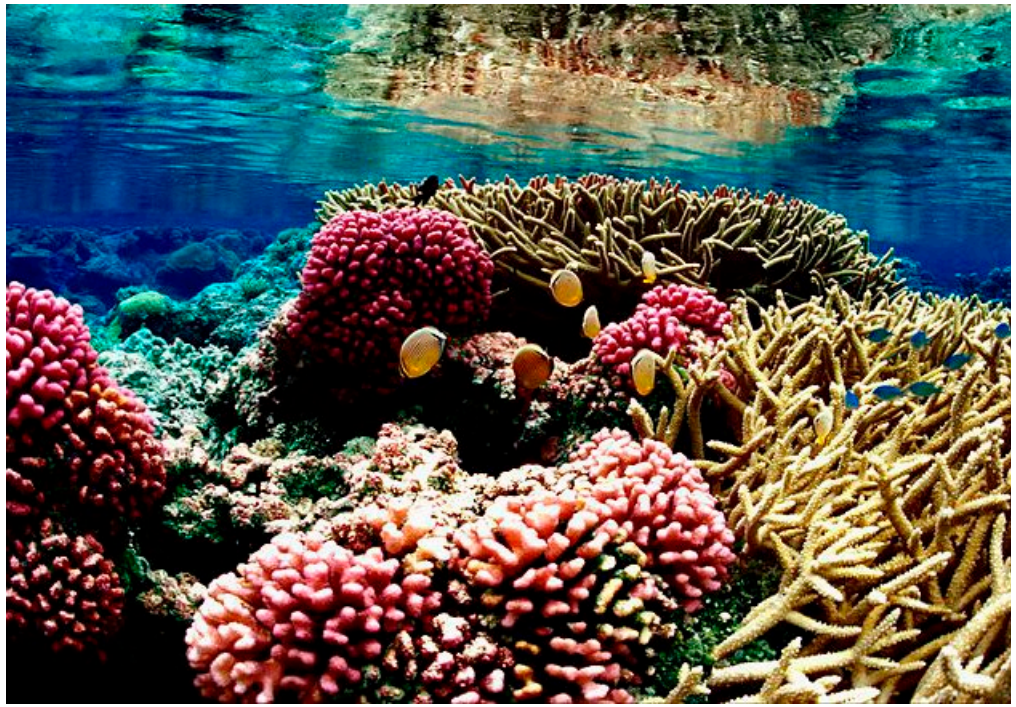
Natural Capital Introduction

Definition

- Natural capital includes certain stocks of the elements of nature that have value to society, such as forests, fisheries, rivers, biodiversity, land and minerals. Natural capital includes both the living and non-living aspects of ecosystems.

- Stocks of natural capital provide flows of environmental or 'ecosystem' services over time. These services, often in combination with other forms of capital (human, produced and social) produce a wide range of benefits.

- This wide range of benefits include **use values** that involve interaction with the resource and which can have a market value (minerals, timber, freshwater) or **non-market value** (such as outdoor recreation, landscape amenity).



They also include **non-use values**, such as the value people place on the existence of particular habitats or species.

Natural Capital Introduction

Natural Capital Framework

- A natural capital approach is about thinking of nature as an asset, or set of assets, from which people benefit.
- Figure 1 shows how the quantity, quality and location of natural assets deliver ecosystem services which, combined with other economic inputs, provide benefits to people and society.
- At each stage of this chain there are pressures and drivers for change, and also potential management interventions.

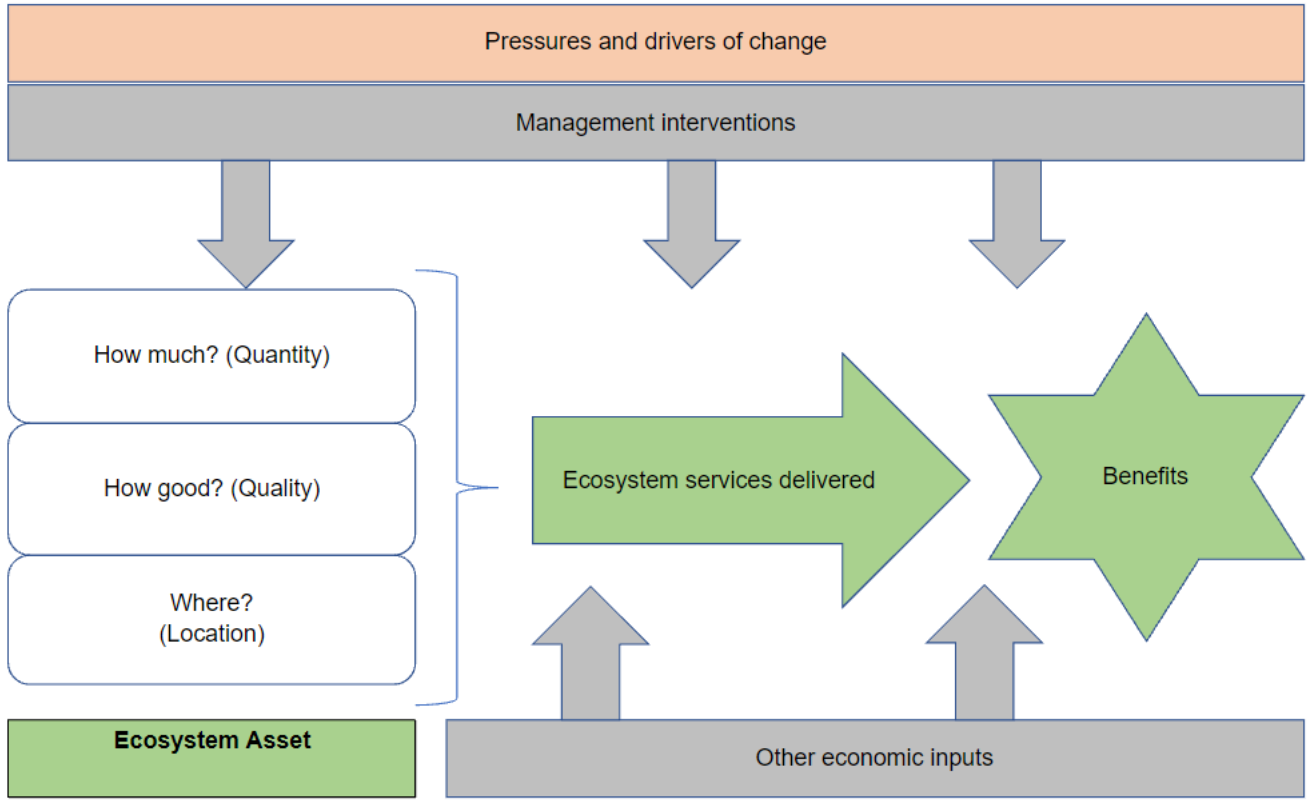


Figure 1: The Natural Capital Framework (Source: ENCA)

Natural Capital Introduction

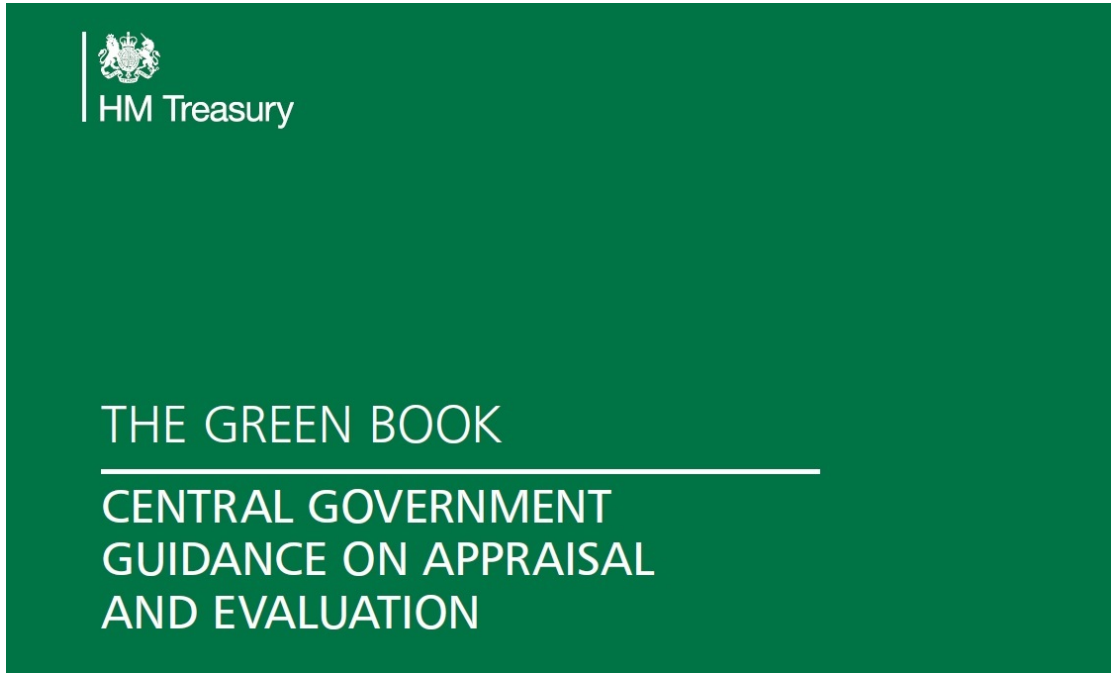
Why take a Natural Capital Approach

- A natural capital approach supports better decision making.
- Understanding nature as an asset which provides flows of services to deliver benefits provides us with a framework to manage it well to deliver for society's needs.
- The framework also helps to better understand how policies can have unintended effects on the environment.
- It also enables different disciplines to adopt a shared framework and understanding in both research and practical initiatives.

Natural Capital Approach Guidance

Enabling a Natural Capital Approach

- A natural capital approach to policy and decision making considers the value of the natural environment for people and the economy.
- *Enabling a Natural Capital Approach* (ENCA) is a suite of Defra resources recommended for use by HM Treasury's Green Book: appraisal and evaluation in central government (2020) and represents supplementary guidance to the Green Book.
- ENCA resource are data, guidance and tools to help understand natural capital and know how to take it into account.



HM Treasury Green Book (2020)

Natural Capital Approach Guidance

Application of ENCA

- ENCA aims to:
  - Build capacity among users to assess and value the natural environment by providing comprehensive information and resources
  - Reduce search costs for analysts and decision makers
  - Provide a platform to update tools and guidance as knowledge develops
  - Identify new evidence and areas for development

You should check that you're using the latest versions of these resources. Defra updates them regularly with new evidence

Use ENCA resources if you're:

- Government economist or analyst
- Public sector organisation interested in understanding the scientific and economic evidence around the natural environment
- Private practitioner, interested in natural capital evidence, tools and resources used in government

- **ENCA aims to minimise the need for specialist expertise:** it enables users to undertake strategic thinking around natural capital, 'ask the right questions' and 'become intelligent customers' where specialist expertise is used. Where detailed assessment is required, in appraisal, accounting or place-based contexts, input from scientists and economics will usually be needed

Natural Capital Approach Guidance

Application of ENCA

- Natural capital has a wide range of applications. ENCA guidance aims to meet the needs of various users.

Area of interest	ENCA section / resources
Overview of natural capital and its relevance	Section 1: Introduction to natural capital
Applying HM Treasury Green Book guidance on Natural Capital	Section 3 / ENCA 4 Step template
Understanding whether my proposal will affect nature	Section 3.3 - 3.4 / ENCA Featured Tools
How ENCA can support my policy priorities	Section 3.2 and Annex 1 / ENCA Case Studies
Find monetary values for environmental effects	Section 2 and Section 6. ENCA Services Databook, ENCA Assets Databook and ENCA Featured Tools
Assessing natural capital that I own or manage	Section 4 and Section 5.1
Developing a natural capital account	Section 4
Experience with natural capital approaches	Section 3.5 and Section 5.6 / ENCA Case Studies
Tools and data	Section 5.2 and Section 7 / ENCA Featured Tools
Local economic development	Section 5.4 and Annex 1
Generating new income streams to support the natural environment	Section 5.5 / ENCA Case Studies

Table 1: ENCA guidance sections / resources

Natural capital in project appraisal

Overview

- Figure 2 is taken from HM Treasury's Green Book and provides a simple representation of how policies or proposals may affect stocks of natural capital directly and in turn affect social welfare.

- Natural capital thinking can be applied at each stage of the appraisal cycle (rationale for intervention, generating options, assessing impacts and monitoring and evaluation).

- A more comprehensive understanding of the state and role of the environment in assessing policy – one that considers both the stocks of natural capital and the benefits that it provides – can also identify nature-based solutions to achieving a range of policy goals.

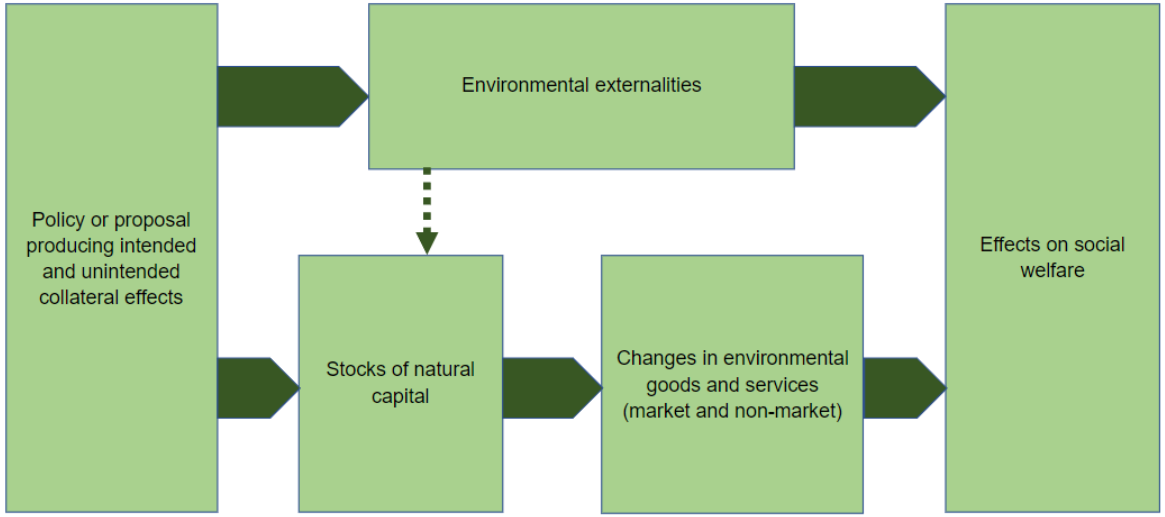


Figure 2: HM Treasury Green Book Impact Pathway Framework

How nature-based approaches can support policy goals

Policy goals

- Physical health
  - Nature-based recreation (various habitats)
  - Settings for walking and cycling routes
  - Reducing air pollution
- Mental Health
  - Nature-based recreation for different ages
  - Mitigation of road traffic noise
  - Incorporating views of greenspace from schools, hospitals and workplaces
  - Nature volunteering and green prescriptions
- Local Economic Development
  - Nature-based tourism and outdoor leisure
  - Green space amenity in workplaces and settings for business locations
  - Cooling effect of urban green and blue space during extreme temperatures (mitigating output loss)
- Housing and place-making
  - Provision of recreation and amenity
  - Contribution to sense of place
  - Mitigation of pollution pressures from new development
  - Streamlined approaches to compensating for biodiversity loss
- Net zero emissions
  - Woodland creation
  - Peatland restoration
  - Saltmarsh creation
  - Grassland restoration
- Climate resilience
  - Natural flood management approaches
  - Sustainable urban drainage schemes
  - Cooling effect of vegetation in cities
  - Habitat restoration
- Transport
  - Settings for cycling and walking
  - Supporting resilience
  - Mitigating pollution and noise
  - Ecological corridors
- Education
  - Provision of recreation and amenity
  - Contribution to sense of place
  - Mitigation of pollution pressures from new development
  - Streamlined approaches to compensating for biodiversity loss
- Levelling up
  - Addressing regional deficits in accessible natural greenspace
- Social cohesion and loneliness
  - Good quality green space provides opportunities for community events and interaction
  - Safer more welcoming outdoor environments
  - Nature based volunteering
- Cultural heritage
  - Many aspects of cultural heritage (for example, historic landscapes, ancient monuments)are underpinned or surrounded by natural capital

Natural capital in project appraisal

Screening and Natural Capital Assessment

- Use the Green Book screening questions (paragraph 6.50) to consider the possibility of unintended consequences on, or missed opportunities for, natural capital. The questions relate to different aspects of the natural capital framework

- If further assessment is required, use the Green Book four-step approach to assess natural capital effects.

A Microsoft Excel template provided is useful for gathering relevant information for each step in a simple structured way.

Further assessment is recommended if:
1.you have answered 'yes' to at least one question
2.you have answered 'possibly' to at least two questions

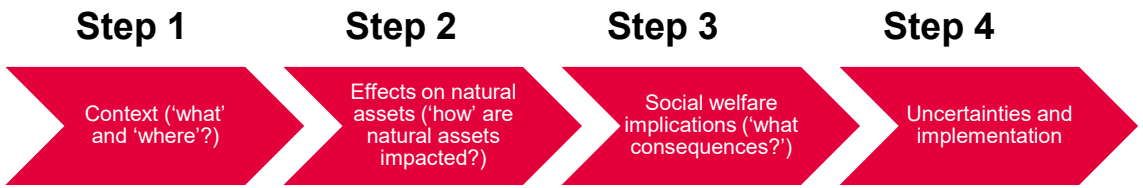


Figure 3: Green Book 4-step process

- The Green Book four-step process can inform a Theory of Change which is a key tool in developing an evaluation plan following the principles of the government's Magenta Book.

Assessing the impact on natural capital assets

Assets Databook

- ENCA Assets Databook collates over 100 UK data sources, tools and studies for eight natural capital asset categories
- It is structured around the Broad Habitat categories used by the UK National Ecosystem Assessment to classify the UK's natural environment.

- Enclosed farmland

- Woodland

- Urban natural capital

- Coastal Margins

- Mountain, moor and heathland

- Marine environment

- Freshwater

- Semi-natural grassland

Enabling a Natural Capital Approach (ENCA)

Services Databook

- This ENCA Services Databook enables quick investigation of key sources for specific environmental impacts, with indicative values where appropriate, alongside selected biophysical metrics and sources.
- The Databook collates the most nationally relevant and up to date sources, studies and key estimates for 25 categories of environmental service.
- It does not provide 'total' or 'standard' values for particular types of land cover (for example, woodland, wetland) because these will vary according to the characteristics, condition and extent of the asset or effect in question, its location and availability of substitutes.

Databook category	ENCA section / resources	Examples
Provisioning services	Tangible outputs that can be obtained from ecosystems that meet human needs	Food, timber, water supply, crops
Abiotic flows of natural capital	Flows which are not dependent upon functioning ecosystems	Minerals, oil and gas, solar, wind and tidal power
Regulating services	Ecological processes that regulate and reduce pollution and other adverse effects	Air filtration, water regulation, carbon sequestration
Cultural services	Environmental settings that enable cultural interaction and activity	Settings for recreation, education, tourism
Aggregated and bundled services	The benefits provided by nature are not easy to attribute to specific ecosystem services or can reflect a bundle of cultural or regulating services	Amenity, biodiversity, landscape, water quality, non-use values

Table 2: Summary of ENCA Services Databook

Enabling a Natural Capital Approach (ENCA)

Services Databook

- 25 categories of environmental service covered

Provisioning services

Abiotic flows of natural capital

Regulating services

Cultural Services

Aggregate / bundled services

- Each tab includes valuation sources and selected values where possible

Databook Tab and link	Bio-physical sources	Selected bio-physical estimates	Valuation sources	Selected values	Guidance notes
GDP Deflator	Updated to June 2021 version; calculator added				
Food	*	*	*	*	*
Timber	*	*	*	*	*
Water supply	*	*	*	*	*
Fish		*		*	
Renewable energy	*			*	*
Air pollutant removal		*		*	*
Carbon reduction	*	*	*	*	*
Flood regulation	*	*	*	*	*
Noise reduction		*			
Temperature regulation				*	*
Recreation	*	*	*	*	*
Physical health		*		*	*
Mental health	New tab				
Education	*				*
Volunteering	*	*	*	*	*
Amenity	*	*	*	*	*
Biodiversity	*				*
Soil	*				
Water quality	*		*	*	*
Landscape	*				*
Non-use values					
Air pollution	*		*		
Noise	*				
Flood damage	*			*	
Invasive species	*		*		*

Application of valuation evidence

Robustness considerations

- Values taken from the ENCA Services Databook can be used a indicative values to give a sense of how significant certain impacts might be and to identify key sensitivities where more accurate valuation is needed.
- The more localised the effect, the more robust or specific a value will need to be.
- Where proposed interventions are novel, large-scale or high-risk, then more expert assessment and stakeholder engagement is recommended.

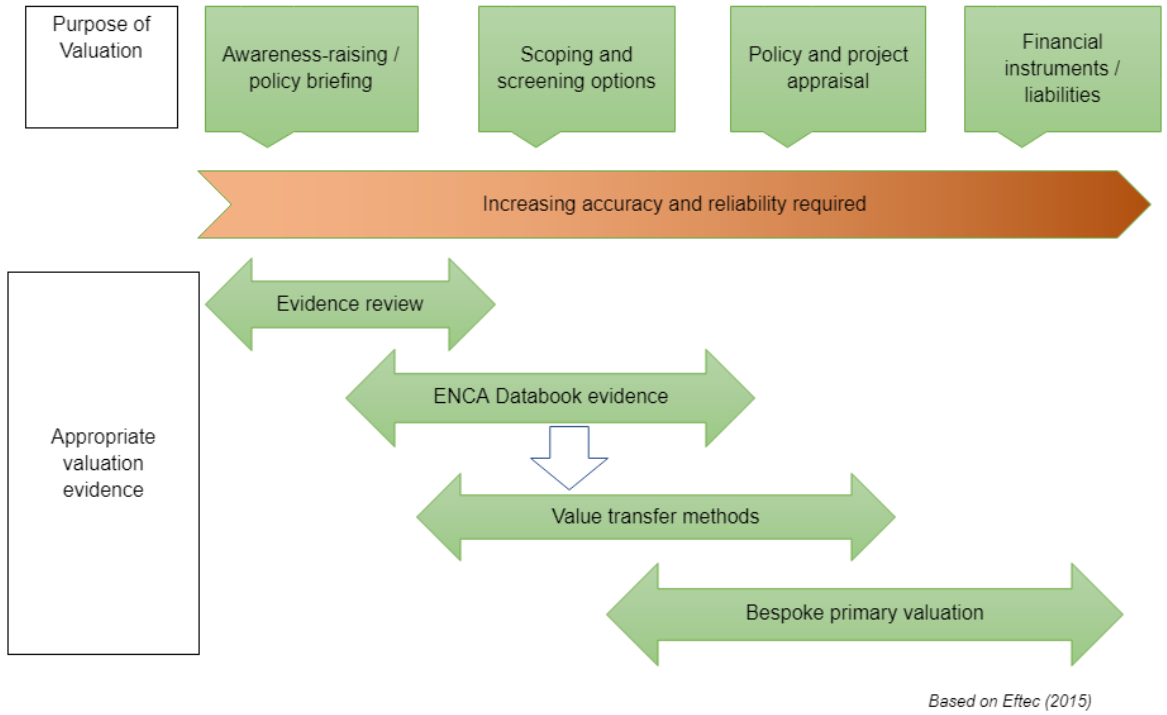


Figure 4: How robust should valuation evidence be?
Source: ENCA Guidance

Natural capital appraisal vs. accounting

Different spheres of natural capital approach

- ENCA covers the different applications of a natural capital approach
- The guidance is structures around three broad overlapping spheres of application:
  - Incorporating natural capital into policy or project appraisal (Section 3)
  - Natural capital accounting (Section 4)
  - Place-based implementation of natural capital principles (Section 5)

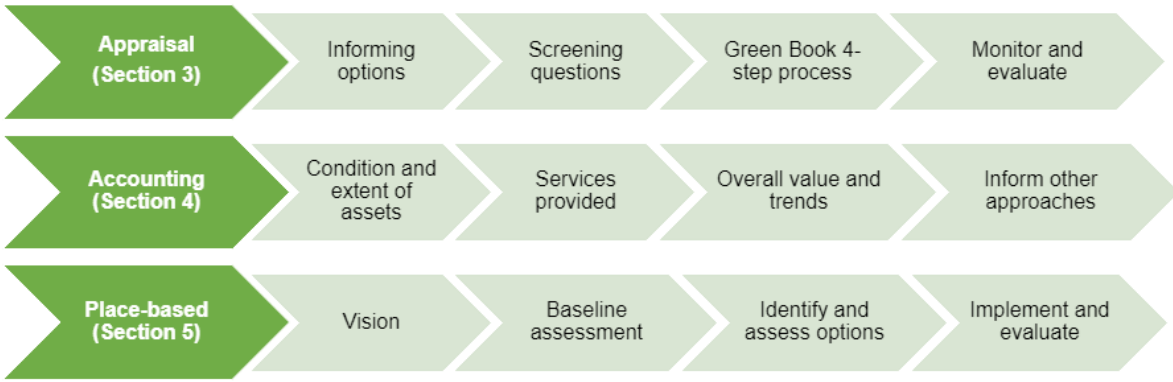


Figure 5: Different spheres of natural capital approach
(source: ENCA guidance)

Natural Capital Accounting

Principles of natural capital accounting

- Natural capital accounting attempts to bring a systematic, standardised and repeatable framework to recording information on natural capital and the services it provides, whether or not those services have a market value.

- Accounts can help to measure, value, monitor and communicate the state of natural assets (it can be done at national, regional, local or organisational level).

- A key distinction in accounting systems is that of stocks and flows, which reflects the distinction in the natural capital framework between assets and services.

- Natural capital accounting seeks to answer a number of key questions in an integrated and systematic way.

- What are the assets we own, manage or have responsibility for?
- What condition are they in?
- What services do they provide?
- What is the value of those services now?
- What is the expected value of those services in the future?

- Further guidance is provided in *Principles of Natural Capital Accounting* produced by the Office for National Statistics and Defra. The British Standards Institution has issued a Natural Capital Accounting Standard which provides specifications and principles for the preparation of natural capital accounts by organisations.

Further ENCA resources

Featured Tools

- ENCA Featured Tools for assessing natural capital and environmental valuation are selected based on the following criteria:
  - Cross-cutting ecosystem services and habitats
  - Developed or funded by government
  - Helpful in valuing or assessing natural capital
- It does not provide an exhaustive list of tools. Defra does not endorse how you use these tools, nor does it provide a comparative assessment. It is your responsibility to assess the relevance and robustness of any particular tool you may wish to use. The commentaries provided aim to support this judgement.

- The following tools are featured:

1. Tool Assessor
2. Defra Biodiversity Metric
3. Environmental Benefits for Nature Tool
4. Natural Capital Atlases
5. Natural Capital Register and Account Tool
6. Managing for Ecosystem Services Evidence Review Toolkit
7. Local Environment and Economic Development (LEED) Toolkit
8. Environmental Valuation Reference Inventory (EVRI)
9. Natural Environmental Valuation Online (NEVO)
10. Outdoor Recreation Valuation Tool (ORVal)
11. Woodland Valuation Tool

Further ENCA resources

Case Studies

- ENCA Case Studies are real-world examples of how:
  - Natural capital approaches are used at a range of spatial scales
  - Economic valuation is used to inform decision making
  - Natural capital accounting works at various spatial-scales
  - Projects attempt to create new streams of income from investment and maintenance of ecosystem services

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Q+A


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