How to start using your NATURAL CAPITAL ATLAS

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Photo Attributions

Guide Structure

This advice document is designed to accompany the natural capital atlases, helping in their interpretation and application. It gives a steer on how to use your atlas to help improve the provision of a suite of ecosystem services and well-being benefits from the natural environment.

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How to start using your natural capital atlas

So, you have a natural capital atlas but how can you make best use of it? How can it help you with place making and plans for nature's recovery? How can you use it to enhance the natural capital in your place to benefit both people and nature? This note is designed to accompany your atlas, and help you to get started with it. It includes summary sheets for which maps to look at for key ecosystem services and a worked example of how it could be applied to target habitat creation.

Our natural environment provides us with many benefits for our health, wealth and well-being. We need to protect and enhance it so that we can keep getting these benefits into the future. We have an opportunity to both improve the state of the nature for its own sake and for our own well-being by using nature-based solutions[1] to address the ecological and climate emergency. We need to be smart about what we do where - we can be low carbon and high wildlife if we plan well. To do this we need to understand the current state of our natural capital and what good looks like.

What do the Natural Capital Atlases show?

Linking environmental properties to benefits

The atlas provides a framework showing the links between environmental properties and the key benefits they provide to people. Which ecosystem services and benefits we get from a place depends on how much and what type of ecosystems are present, what condition they are in and where they are located. These connections are shown in the logic chain in Figure 1. In Natural Capital Indicators: for defining and measuring change in natural capital - NERR076 we developed detailed versions of this logic chain for key ecosystem services from the following broad habitat types: freshwater; woodland; semi-natural grassland; enclosed farmland; mountains, moors and heaths; urban; coastal and marine. From these we identified the key indicators for measuring change in ecosystem quantity, quality, location and ecosystem services. The Natural Capital Atlases map as many of these indicators as we can, using nationally consistent available data.

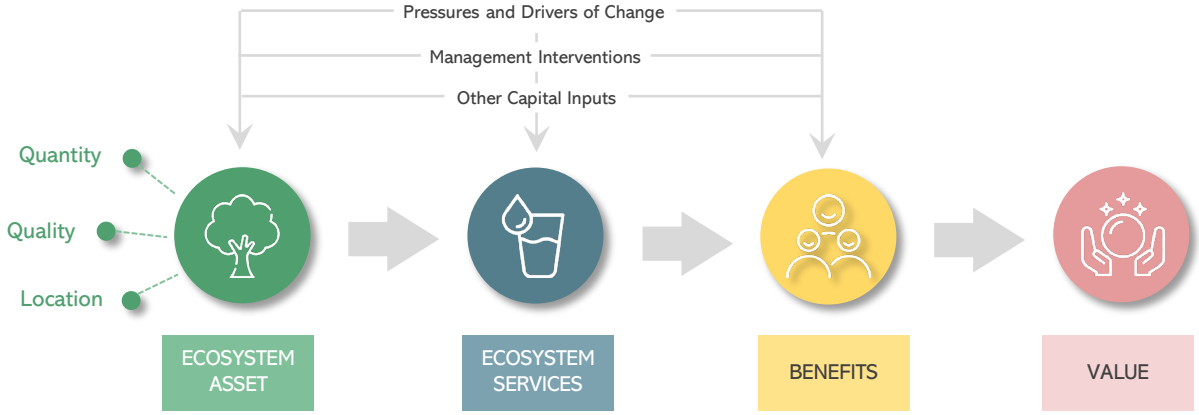


Figure 1: Generalised natural capital logic chain.

[1] The IUCN defines Nature Based Solutions as "actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and provide human well-being and biodiversity benefits"

How to start using your natural capital atlas

Action for ecosystem assets – the rationale

The atlas focuses on natural capital, or ecosystem, assets, such as heathland, woodland, freshwater etc. This is where the management and investment is needed to ensure the continued provision of ecosystem services. As well as increasing the extent of some ecosystems, we need to improve the condition of the ones we have already. For example, a healthy functioning peat bog will both capture and store carbon from the atmosphere but one degraded by peat extraction, drainage or burning will be a source, not a sink, of greenhouse gases.

The natural capital quality indicators tell us about the condition of our assets. They are based on the natural processes and functions that support ecosystem services: hydrology and geomorphology; soil and sediment processes; nutrient and chemical status; species composition and vegetation characteristics. This helps us to consider: what is the condition of our ecosystem assets? Our wellbeing also depends heavily on our personal interactions with the natural environment so including quality indicators for cultural ecosystem services is vital. For example, where do we need to improve the condition of the historic environment, or increase access to green-space in and around cities?

To be able to sustainably provide multiple benefits into the future, we need to consider a number of questions:

- Which environmental properties support which services and benefits?
- Which ecosystem assets do we want more of?
- Where do we need to improve their condition/quality?
- Where do they need to be located to strengthen what we have already, support multiple ecosystem services and meet the needs of both people and wildlife?

Having the links between the benefits and the state of the environment in the atlas helps address these questions, by telling us if we enhance the quantity or quality of this ecosystem, and place it here, it will provide these services and benefits. This gives us a rationale for the actions needed to enhance our natural capital assets and deliver nature-based solutions. It means that we can align our investment and management with protecting and enhancing the natural environment.

Photo: [Flickr] ianpreston (CC BY 2.0)

A natural capital baseline

Mapping data - the art of the possible

Datasets are only used in the atlas if they measure natural capital indicators of change: i.e. they show the state of natural capital in terms of its quantity, quality or location, or the provision of an ecosystem service. What we have been able to map is determined by the available data. The atlases are made up of openly accessible national data sets, or ones where we have licensing agreements to share them in the atlas. As such, the atlases are a thorough exploration of nationally available and accessible data sets for mapping the state of natural capital.

Part of a national picture

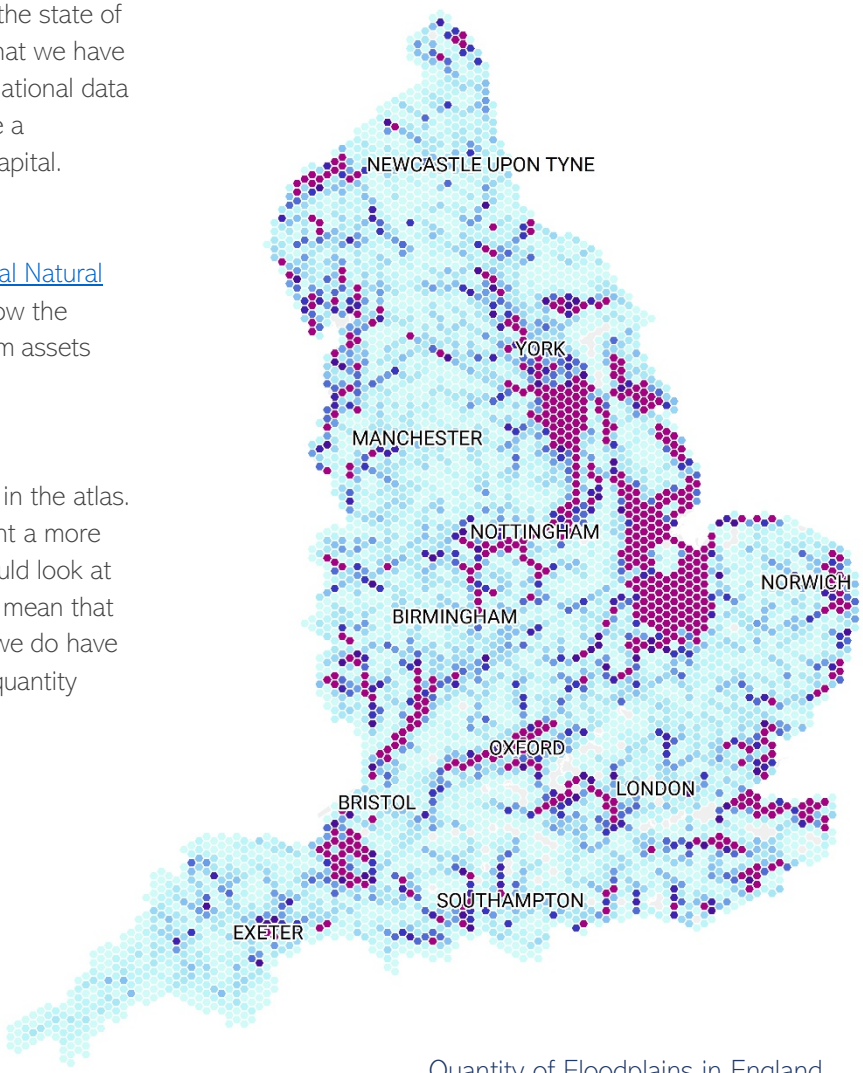
The county and core city atlases take the same approach, and map the same indicators, as our National Natural Capital Atlas for England. You can use your local atlas, in combination with the national one, to see how the natural capital of your place fits into the national picture. This can help you to identify which ecosystem assets your place is particularly important for, and which you may want to enhance.

Filling the data gaps

Where there is a lack of a suitable national data set to map an indicator, there is effectively a data gap in the atlas. You may have local data, that you could consider alongside the atlas, to fill a particular gap. If you want a more detailed picture of a specific indicator, you may have local data that is at a higher resolution, or you could look at the source data used to map the atlas hexagons. Despite the existence of data gaps, the logic chains mean that we can provide a linked picture of what we do know, building together the parts of the jigsaw, where we do have data. For example, we may not have data to measure a specific ecosystem service but we may have quantity (and some quality) data on the ecosystem assets which support that service.

Baseline of the state of natural capital in your place

Bringing all of this data together in one place, in an atlas, provides a mapped baseline assessment of the state of natural capital. Looking forward, the atlases could be repeated in 5-10 years to assess changes in natural capital. This means that we could assess how our interventions have enhanced natural capital, as well as where it has declined due to the impact of pressures and drivers of change. As ever, how effective the atlases are at measuring change will depend on the accuracy of the data, how regularly it is updated and the sensitivity of the method to picking up change.



Quantity of Floodplains in England

From the National Natural Capital Atlas: Mapping Indicators project

Practical applications of your natural capital atlas

Your Natural Capital Atlas is a versatile tool which can be used in different ways to understand and enhance natural capital in your place. Here are three examples of potential applications.

Strategy

Strategic planning requires a broad overview of the current situation, around which plans for the future can be discussed and shaped. The natural capital atlas maps can provide this overview for your area.

Your atlas provides a mapped natural capital evidence base directly linking natural assets to a broad range of ecosystem services.

- It tells you what natural capital you have got, what condition it is in and which ecosystem services it underpins.
- You can use this as a basis for collaborative decision making on what needs improving
- It provides a baseline against which to measure change. So you can evaluate whether or not your planning and management for your natural capital has been successful.

Engagement

Maps get people talking. The natural capital atlas maps can be used as an engagement tool to start discussions with local stakeholders.

Your atlas maps can help partners and stakeholders to look at the environment through a natural capital lens.

- Linking ecosystem assets to the main ecosystem services provided by your place.
- Looking at where the assets are and where they need enhancing

Targeting measures

Looking at the maps of the current state of your natural capital can help with thinking about where to target actions to enhance it.

- It shows you where the best areas already are and whether you could make them bigger or better.
- It shows you where there are gaps in provision and whether there are opportunities for land owners who are interested in new nature-based solutions, such as tree planting.

Ceri Lewis, from the Ox-Cam Local Natural Capital Plan Pilot, said:
"Our atlas created a visual starting point for collaboration and has helped us engage effectively with a range of stakeholders. It has provided us with a fantastic base for explaining the inter-relationships between natural assets and the ecosystem services they provide, as well as which datasets were available to use."

Example: Targeting woodland creation

Where to look in your atlas

Woodland creation is an example of a nature-based solution that, if targeted appropriately, can help tackle climate change, improve air and water quality, increase natural flood protection and reduce declines in wildlife. Here is a worked example that shows which maps you can use in your atlas to help target woodland creation.

The atlas can be used to provide a broad steer on where to plant woodland and some initial issues to consider. This broad steer aims to add to, rather than replace, local knowledge and evidence, including consideration of the landscape context for woodland creation. The right tree in the right place is essential for woodland to benefit both wildlife and people.

As the atlas depicts the natural capital indicators at 5km^2 hexagon scale, there will be a need to refer back to the source data, for finer resolution targeting and consideration of further opportunities and constraints. For example, Historic Environment Records can range from a whole National Park World Heritage Site, where woodland creation is desirable, to individual Scheduled Monuments, which may be damaged by scrub encroachment.

What do you have already? Where could you extend or join up existing woodlands?

Look at the current quantity of woodland in the Quantity sections of the atlas:

- Woodland: **28**, **29** and **31**
- Freshwater: **11**
- Mountains, Moors and Heaths: **26** and **27**
- Urban: **32-36**

Which are the best woodlands for wildlife?

Look at the current quantity of different woodland types in the Quantity sections of the atlas:

- Woodland: **30** and **31**
- Mountains, Moors and Heaths: **26**

Where to avoid planting trees?

Consider avoiding important existing habitats such as:

- Semi-natural grasslands: **16** and **17**
- Some upland habitats: **18**, **19**, **22** and **25**
- Freshwater habitats: **4**, **5** and **8**
- Coastal habitats: **41**
- Deep peat: **58**
- Designated sites for culture and heritage: **65** and **66** (not all SSSIs or Designated Historic Environment Assets will be a constraint on woodland creation)

Which ecosystem services can woodland provide?

Key ecosystem services provided by woodland are shown in the Asset Quantity indicator tables in the Woodland, Freshwater, Mountains, Moors and Heaths and Urban sections.

Where does woodland need to be to provide ecosystem services?

- Location indicators for different ecosystem services are shown in the Indicator Summary: Asset Location lists (page 12 of the atlas).
- Where ecosystem assets need to be to support a range of core ecosystem services are summarised in the Ecosystem service summary sheets for nature based solutions (pages 11-16 of this document).

Where are the potential opportunities for woodland creation?

- Extending or connecting existing woodland, see "What do you have already?" and "Which are the best woodlands for wildlife?" (above).
- Floodplain woodland, see maps **1** and **2** in Freshwater Asset Quantity section. Not all flood plains will be suitable for woodland creation. Impacts to be avoided may include existing semi-natural habitats (see above) and areas important for wading and wetland birds, and other species requiring conservation.
- Urban green space (**33**) in Urban Asset Quantity section.
- Woodland beside water courses, see River maps – **6** in Freshwater Asset Quantity and **23** in Mountains, Moors and Heaths Asset Quantity sections.
- To potentially reduce diffuse pollution, see Nutrient Status of Water Bodies map (**56**), in Asset Quality - Nutrient and Chemical Status section.
- Bracken – although this indicator isn't mapped in the atlas, bracken beds are located on sites previously wooded and often support remnant woodland flora. Bracken beds are also often the least favoured areas agriculturally.
- Wider opportunities - where farmers are interested in woodland creation, there will also be opportunities on areas currently used for crops and improved grassland.

Pink numbers = Map ID in atlas

How can you build on your natural capital atlas?

Your Natural Capital Atlas maps key indicators of change. It can help you decide where to take action to change the state of natural capital. Because it is based on indicators it doesn't map everything that underpins the provision of ecosystem services. This section suggests how the atlas fits with other sources of evidence and local information.

Local environmental context:

National Character Area profiles - GOV.UK provide useful summaries of the local environmental context for 159 character areas covering the whole of England. This includes for example:

- Local geology, geomorphology, land forms, landscapes, culture and history which affect where ecosystems are, and can, occur;
- Local ecosystems, and the species they support, that are of national or international importance. Some, but not all, of these are designated as Protected Sites.
- Drivers of change, past, current and future which affect the natural capital of a place. This includes local issues which need to be addressed to enable natural capital to be enhanced, e.g. sources of pollution, recreational impacts or resource pressures such as water abstraction.
- Analysis of the ecosystem services provided by a Natural Character Area.

Local knowledge:

The best local knowledge of ecosystems and the services they provide, is likely to be in the heads of those who know a place well. The atlases can be used as a starting point to collect this wealth of knowledge.

Local data:

The atlases thoroughly explore the accessible national data sets which can be used to map the state of natural capital. They also show the data gaps that need to be filled. You may have local data which could be used to measure an indicator, where there is currently a gap in the atlas. Depending on its source, local data may also be at a finer resolution, more up to data or accurate than the national data.

Local studies:

Local research, studies and mapping may provide further insight to the natural capital of your place. This might range from mapping of ecosystem service demand to specific local studies, such as where to plant trees to reduce soil erosion.

Further evidence:

There is a wealth of useful detailed literature, for example on ecosystem and habitat creation, restoration, management, networks and adaptation for climate change, of relevance to enhancing natural capital. This note on how to start using your atlas doesn't attempt to capture or replace this wider evidence.

The Managing for Ecosystem Services Evidence Review (MESER) is a searchable web-based literature review tool of the evidence on how management actions affect ecosystem services: https://meser.simomics.com. You can search it for the evidence on how management actions in different habitats affect a range of ecosystem services.

The Nature Networks Evidence Handbook - NERR081 provides evidence to assist in the design and planning of a nature network.

Geographical Information System analysis:

You can also use the GIS layers which accompany this atlas. Using these layers directly will allow you to explore patterns more closely and with different boundaries.

Source data:

You may also want to look at the source data used to create the hexagons in the atlases. This may give you further detail and be at a finer resolution.

Ecosystem service summary sheets – for nature-based solutions

The following one-page summaries focus on a core selection of key ecosystem services that particularly help with identifying nature-based solutions to environmental and societal problems, such as addressing the climate emergency, the biodiversity crisis, air quality and flooding. These need to be a core component of clean growth and sustainable development.

By definition, a nature-based solution is one which simultaneously benefits biodiversity and tackles a societal challenge. Some ecosystem services need to be provided everywhere, such as thriving wildlife, climate regulation, water quality and cultural services. Others will be dependent on the characteristics and needs of your place. Do you need to tackle air quality? Or flooding? Are there particular communities and areas where the need is greatest? Which services and benefits you prioritise will be determined locally, ideally through participatory engagement with stakeholders and the local community. Remember your atlas covers a wide range of ecosystem services; the ones summarised here provide examples of how the atlases can be used.

Whilst looking after and enhancing natural capital is vital, other actions will be needed. These range from tackling external pressures (such as sources of pollution to air, water and soil) to encouraging people to make the most of nature, through the provision of facilities, infrastructure and events. Investment is often needed in both natural and other assets together, for example natural flood management in combination with engineered flood defences.

Photo by Will Paterson via Unsplash

Biodiversity

Thriving plants and wildlife

This ecosystem service needs to be a priority everywhere.

Photo: [Flickr] Natural England/Allan Drewitt (CC BY-NC-ND 2.0)

Who benefits, how and where are they?

Biodiversity - the diversity of life on earth, its habitats, species and genes – is vital for the well-being of all. Its role in providing the water we drink, air we breathe and food we eat, as well as in storing and capturing carbon, reducing flooding and contributing to our cultural well-being, is covered in the other parts of this advice. Global biodiversity is important, but it is locally where we have our more frequent contact with nature and wildlife. This sheet focuses on the importance of biodiversity in its own right, now and for future generations.

Location: Where do natural capital assets need to be?

Where ecosystems are, and where they can be created, is determined by geology, geomorphology, hydrology, soils, land forms, landscapes, cultural and historic factors. The following location aspects are important for biodiversity, for example:

- Developing nature networks of bigger, better more and joined semi-natural habitats;
- Ensuring a transition and connectivity between marine, freshwater and terrestrial habitats.
- Allowing enough space for the dynamic movement and development of coastal habitats, such as saltmarshes and sand dunes.

Key to Map Guide (right)

Black text = Included in atlas

Grey text = Not included in atlas

Pink text = Map ID in atlas

AML = Above Moorland Line

Note: the guide to the right includes Coastal and Marine indicators, however not all the atlases include these maps

How can you enhance this service: which natural capital maps do you need to look at?

Investment in management and actions which enhance the quantity, quality and location of the following, to improve biodiversity (individual habitats and species will have their own specific management requirements, not covered here):

Note: Greyed out aspects are still relevant - we just didn't have suitable national open-source data to map them in the atlases

Quantity

Freshwater
- 2 Coastal and floodplain grazing marsh
- 3 Lakes and standing waters
- 4 Lowland Fens
- 5 Lowland raised bog
- 6 Rivers
- 8 Reedbeds
- 9 Ponds

Grassland
- 16 Meadows
- 17 Other semi-natural grasslands

Woodland
- 28 Broadleaved, mix & yew woodland
- 30 Ancient woodland (individual trees/veteran trees)
- 31 Woodland priority habitats

Mountains, moors and heaths
- 18 Blanket bog
- 19 Dwarf shrub heath
- 20 Inland rock, scree & pavement (AML)
- 21 Lakes (AML)
- 22 Mountain heath and willow scrub
- 23 Rivers (AML)
- 24 Semi-natural grassland (AML)
- 25 Upland flushes fens and swamps
- 26 Wood pasture (AML)
- 27 Woodland (AML)

Urban
- 32 Blue space
- 33 Green space - not semi-natural
- 34 Open mosaic habitats
- 35 Semi-natural habitats
- 36 Woodland, scrub and hedge

Coastal
- 37 Beach
- 38 Coastal lagoons
- 39 Mudflats
- 40 Salt marsh
- 41 Sand dunes
- 42 Sea cliff
- 43 Shingle

Marine
- 44 Intertidal rock
- 45 Maerl beds
- 46 Reefs
- 47 Sea grass beds
- 48 Shallow subtidal sediment
- 49 Shelf subtidal sediment
- 50 Subtidal rock

Quality

Hydrology and Geomorphology
- Extent of artificial drainage
- Naturalness of flooding regime
- 52 Naturalness of flow regime
- Naturalness of lake hydrological regime
- Naturalness of water level regime
- 53 Lack of physical modifications of water bodies
- 54 River continuity – lack of obstructions

Nutrient and Chemical Status
- Atmospheric deposition - exceedance of critical loads
- 55 Chemical status of water bodies
- 56 Nutrient status of water bodies
- pH
- 57 Nutrient status of soil
- Dissolved oxygen

Soil/Sediment Processes
- Sediment supply/availability (inc. type, grain size)
- 59 Soil/sediment carbon/organic matter content
- 60 Soil/sediment biota

Species Composition
- Invasive non-native species
- 61 Naturalness of biological assemblage - no. of trophic levels and community composition in each level
- Plant species diversity

Vegetation
- Extent and condition of linear vegetation features and pockets of semi natural vegetation
- Proportion of peat mass actively forming peat
- Vegetation next to water bodies
- Vegetation structure/structural diversity

Photo: [Pexel] Public Domain Pictures

Water quality

This ecosystem service needs to be a priority everywhere. Although natural capital can play a role in mediating water quality, tackling sources of water pollution is an essential first step.

Who benefits, how and where are they?

Clean water is essential for the health of ecosystems and people. Whether it is the quality of the water we drink, or for its many other uses, high quality ground and surface water is critical for our health and well-being. It is not only marine, coastal, freshwater and wetland habitats that depend on good water quality but terrestrial ones too. Many cultural activities rely on it, especially fishing and other water-based recreation. High quality water also benefits the habitats and people downstream. The quality of drinking water from aquifer and upland reservoirs also benefits people in urban areas further away.

Location: Where do natural capital assets need to be?

Ecosystem assets can contribute to improving water quality if they interrupt the pathway from a source of pollution (including sediment from soil erosion) to surface and groundwater. To locate habitats to disrupt this pathway, you need to know both the location of pollution sources and the waters affected. Not all pollution will reach water bodies; ecosystems and landforms may already be playing a role. Locations to interrupt the pathway from a pollution source to a water receptor may include, for example, adjacent to water courses or tackling soil erosion areas.

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How can you enhance this service: which natural capital maps do you need to look at?

Investment in management and actions which enhance the quantity, quality and location of the following, to improve water quality:

Note: Greyed out aspects are still relevant - we just didn't have suitable national open-source data to map them in the atlases

Quantity

Freshwater
- 10 Blanket bog
- 11 Woodland
- 12 Other semi-natural habitats

Mountains, moors and heaths
- 18 Blanket bog
- 27 Woodland (AML)

Marine
- 46 Reefs
- 47 Sea grass beds

Quality

Hydrology and Geomorphology
- Extent of artificial drainage
- Naturalness of lake hydrological regime
- Naturalness of water level regime

Nutrient and Chemical Status
- 55 Chemical status of water bodies
- 56 Nutrient status of water bodies
- 57 Nutrient status of soil

Soil/Sediment Processes
- 58 Peat depth
- 59 Soil/sediment carbon/organic matter content

Species Composition
- 61 Naturalness of biological assemblage - no. of trophic levels and community composition in each level

Vegetation
- Proportion of peat mass actively forming peat
- Surface/vegetation roughness
- 63 Extent of permanent vegetation cover
- Vegetation next to water bodies

Photo: [Flickr] Iain Merchant (CC BY 2.0)

Climate regulation

This ecosystem service needs to be a priority everywhere.

Who benefits, how and where are they?

The role ecosystems, including soil and sediment, play in storing and capturing carbon is fundamental to tackling climate change globally. Benefits include reduced risk of drought, flood and other extreme weather events, plus lower summer temperatures, affecting our health, well-being & safety. In cities, green and blue space, trees and other vegetation can provide local cooling to combat urban heat island effects.

Location: Where do natural capital assets need to be?

Where peatlands and wetlands can occur will depend on the geology, soil and hydrology. To contribute to tackling climate change, woodland creation needs to avoid peatland areas.

In urban areas, habitats and trees need to be placed to provide cooling to housing and buildings.

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How can you enhance this service: which natural capital maps do you need to look at?

Investment in management and actions which enhance the quantity, quality and location of the following, to improve climate regulation:

Note: Greyed out aspects are still relevant - we just didn't have suitable national open-source data to map them in the atlases

Quantity

Freshwater
- 4 Lowland Fens
- 5 Lowland raised bog
- 8 Reedbeds

Grassland
- 16 Meadows
- 17 Other semi-natural grasslands

Woodland
- 28 Broadleaved, mix & yew woodland
- 29 Coniferous woodland

Mountains, moors and heaths
- 18 Blanket bog
- - Bracken
- 19 Dwarf shrub heath
- 22 Mountain heath and willow scrub
- 24 Semi-natural grassland (AML)
- 25 Upland flushes fens and swamps
- 27 Woodland (AML)

Urban
- 32 Blue space
- 33 Green space - not semi-natural
- 34 Open mosaic habitats
- 35 Semi-natural habitats
- 36 Woodland, scrub and hedge

Coastal
- 37 Beach
- 39 Mudflats
- 40 Salt marsh
- 41 Sand dunes

Marine
- 46 Reefs
- 47 Seagrass beds
- 48 Shallow subtidal sediment
- 49 Shelf subtidal sediment

Quality

Hydrology and Geomorphology
- - Extent of artificial drainage
- - Naturalness of flooding regime
- 52 Naturalness of flow regime
- - Naturalness of water level regime

Nutrient and Chemical Status
- 57 Nutrient status of soil

Soil/Sediment Processes
- 58 Peat depth
- 59 Soil/sediment carbon/organic matter content
- 60 Soil/sediment biota

Species Composition
- - Net productivity by species

Vegetation
- - Proportion of peat mass actively forming peat
- 63 Extent of permanent vegetation cover
- - Plant growth rate

Air quality

Although natural capital can play a role in mediating air quality, tackling sources of air pollution is an essential first step.

Photo: [Flickr] Marco Verch (CC BY 2.0)

Who benefits, how and where are they?

Like water quality, good air quality is critical for the health of people and ecosystems. People in urban areas with poorer air quality may benefit from the presence of green areas and street trees. Health benefits potentially include reductions in cardio vascular, and respiratory illnesses. However the interactions between vegetation and air pollutants are complex and may not always have positive outcomes. While particulate matter in air affects human health, other air pollutants, such as ammonia and nitrogen oxides, impact on sensitive ecosystems through nutrient enrichment and changes in vegetation and soils.

Location: Where do natural capital assets need to be?

To contribute to improvements in air quality, habitats and trees need to be located around sources such as livestock units and roads. In cities, the positioning of trees needs to take account of the morphology of streets, with trees in narrow urban "canyons" potentially trapping air pollution.

How can you enhance this service: which natural capital maps do you need to look at?

Investment in management and actions which enhance the quantity, quality and location of the following, to improve air quality:

Note: Greyed out aspects are still relevant - we just didn't have suitable national open-source data to map them in the atlases

Quantity

Woodland
- 28 Broadleaved, mix & yew woodland
- 29 Coniferous woodland

Urban
- 33 Green space - not semi-natural
- \- Urban/street trees
- 35 Semi-natural habitats
- 36 Woodland, scrub and hedge

Quality

Vegetation
- \- Building integrated vegetation including green roofs & walls

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Flood regulation

Photo: [Flickr] Dunphasizer (CC BY-SA 2.0)

Who benefits, how and where are they?

Natural flood management, contributing to reduced flood risk, has benefits for health and safety, through protection of buildings & infrastructure, including transport routes. Potential health benefits include reduced impacts of inundation, morbidity and mortality, and psychological harm. People in areas of flood risk potentially benefit from coastal or upstream natural flood management. However, whether and where people benefit is very specific to individual river catchments and coasts.

Location: Where do natural capital assets need to be?

Natural flood management must be in the right place to reduce flood risk to infrastructure & settlements and infrastructure. This needs to be carefully assessed for each water catchment, through analysis of flood regimes. Ecosystems can slow flows through increasing infiltration rates and surface roughness, or storing water such as in wetlands or on flood-plains. To reduce flood peaks in downstream areas at risk, where these ecosystems are located is critical. Coastal habitats such as sand dunes and saltmarsh can reduce the wave or tidal energy, and flooding of coastal settlements.

How can you enhance this service: which natural capital maps do you need to look at?

Investment in management and actions which enhance the quantity, quality and location of the following, to improve flood protection:

Note: Greyed out aspects are still relevant - we just didn't have suitable national open-source data to map them in the atlases

Quantity

Freshwater
- 1 Active flood plain
- 2 Coastal and floodplain grazing marsh
- 10 Blanket bog
- 11 Woodland
- 12 Other semi-natural habitats

Mountains, moors and heaths
- 18 Blanket bog
- 19 Dwarf shrub heath
- 27 Woodland (AML)

Coastal
- 37 Beach
- 39 Mudflats
- 40 Salt marsh
- 41 Sand dunes
- 43 Shingle

Quality

Hydrology and Geomorphology
- Extent of artificial drainage
- Naturalness of flooding regime
- 52 Naturalness of flow regime
- Naturalness of lake hydrological regime

Soil/Sediment Processes
- Sediment supply/availability (inc. type, grain size)

Vegetation
- Extent and condition of linear vegetation features and pockets of semi natural vegetation
- Surface/vegetation roughness
- 63 Extent of permanent vegetation cover
- Vegetation next to water bodies

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Note: the guide to the right includes Coastal and Marine indicators, however not all the atlases include these maps

Cultural services

This ecosystem service needs to be a priority everywhere.

Photo: [Flickr] shirokazan (CC BY-NC 2.0)

Who benefits, how and where are they?

Cultural services are essential to our personal and community wellbeing. They are also intrinsically linked to the economically essential concepts of place making, quality of life and aspiration that can help to drive investment. We receive these cultural benefits as we interact with the natural environment through a wide range of activities, including play, recreation, physical exercise, volunteering, active travel etc. This can benefit our sense of identity (e.g. belonging; sense of place; spirituality), provide experiences (e.g. discovery, tranquillity) and enhance our health, skills and capabilities. Although people travel across the world for these cultural benefits, most of our visits to the natural environment are close to home.

Location: Where do natural capital assets need to be?

The majority of visits to the natural environment are close to home. Our 'Monitor of Engagement with the Natural Environment' survey shows that green and blue spaces within two miles of where people live are very important. Ensuring that accessible natural spaces are available to all, is a vital element for addressing inequalities in health and well-being.

Key to Map Guide (right)

Black text = Included in atlas

Grey text = Not included in atlas

Pink text = Map ID in atlas

AML = Above Moorland Line

Note: the guide to the right includes Coastal and Marine indicators, however not all the atlases include these maps

How can you enhance this service: which natural capital maps do you need to look at?

Investment in management and actions which enhance the quantity, quality and location of the following, to improve the provision of cultural ecosystem services:

Note: Greyed out aspects are still relevant - we just didn't have suitable national open-source data to map them in the atlases

Quantity

Freshwater
- 2 Coastal and floodplain grazing marsh
- 3 Lakes and standing waters
- 4 Lowland Fens
- 5 Lowland raised bog
- 6 Rivers
- 7 Modified waters (reservoirs)
- 8 Reedbeds
- 9 Ponds
- 10 Blanket bog
- 11 Woodland

Grassland
- 16 Meadows
- 17 Other semi-natural grasslands

Farmland
- 13 Arable & rotational leys
- 14 Improved grassland
- 15 Orchards & top fruit
- - Permanent pasture

Woodland
- 28 Broadleaved, mix & yew woodland
- 29 Coniferous woodland
- 30 Ancient woodland (individual trees/veteran trees)
- 31 Woodland priority habitats

Mountains, moors and heaths
- 18 Blanket bog
- 19 Dwarf shrub heath
- 20 Inland rock, scree & pavement (AML)
- 21 Lakes & reservoirs (AML)
- 22 Mountain heath and willow scrub
- 23 Rivers (AML)
- 24 Semi-natural grassland (AML)
- 25 Upland flushes fens and swamps
- 26 Wood pasture (AML)
- 27 Woodland (AML)

Urban
- 32 Blue space
- 33 Green space - not semi-natural
- 34 Open mosaic habitats
- - Urban/street trees
- 36 Woodland, scrub and hedge

Coastal
- 37 Beach
- 38 Coastal lagoons
- 39 Mudflats
- 40 Salt marsh
- 41 Sand dunes
- 42 Sea cliff
- 43 Shingle

Marine
- 46 Reefs
- 47 Sea grass beds

Quality

Cultural
- - Visibility of wildlife
- - Presence of flagship species
- - Presence of rare (red list) species
- - Species diversity
- 64 Naturalness of watercourses
- 65 Favourable condition of SSSIs/geosites/MPAs
- - Size of environmental space
- - Boundary features: type, length and condition
- 66 Designated historic environment assets
- 67 Tranquility
- - Perimeter access points
- 68 Public Rights of Way
- - Presence of paths accessible to all
- - No. of organised events
- - Presence of clubs, schools, training centres


FOOTPATH