Natural Capital Approaches to Decision Making

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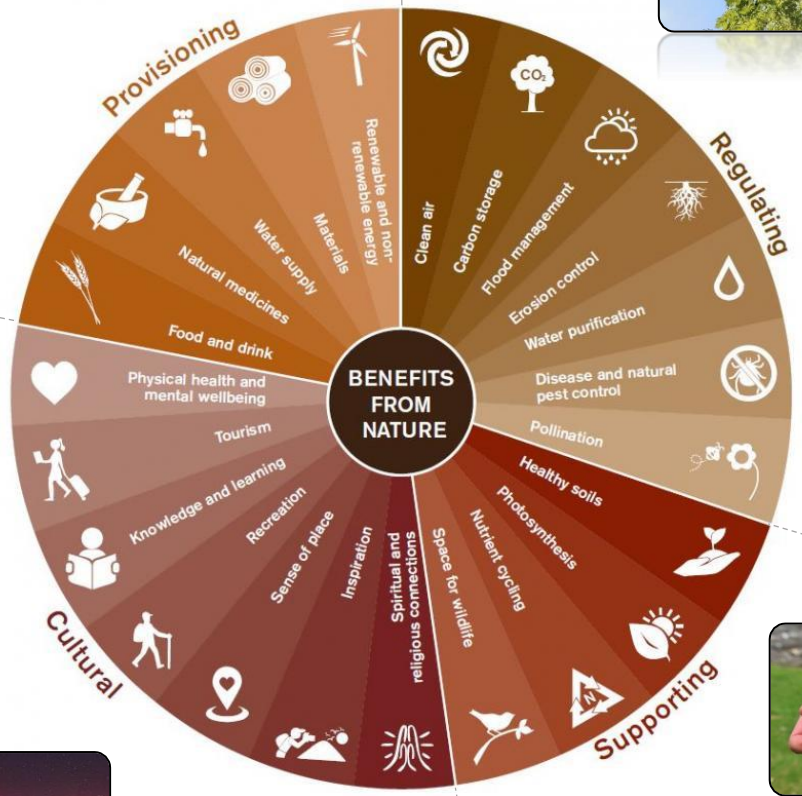
Buidheann Nàdair na h-Alba

A natural capital approach

A **natural capital approach** is when the full range of benefits that we receive from nature are taken into consideration within the decision making process

Making the invisible, visible

Provisioning – these are tangible goods that people can harvest from the environment such as food, timber, water and energy/fuel.



Regulating – these are the benefits obtained from the regulation of ecosystem processes such as temperature regulation, flood management, water purification and insect pollination.

Cultural – these refer to the **non-material benefits** people derive from interacting with nature such as improved mental wellbeing and physical health, aesthetic inspiration, tourism, recreation, sense of home and spirituality.

Supporting – ecosystems could **not function without supporting services**, such as the nutrient cycle, soil formation and habitat provision for biodiversity, forming the basis for the other three types of services.

Natural Capital: some definitions

Our habitats and the ecosystems within these, are our **natural capital assets**

These natural capital assets, when they have healthy and functioning ecosystems, provide benefits to people. These are the **ecosystem services**.

Making decisions based on these full range of benefits that nature provides is what we call taking a **natural capital approach**.

Natural capital asset: Forestry plantation → **Ecosystem service**: materials (timber)

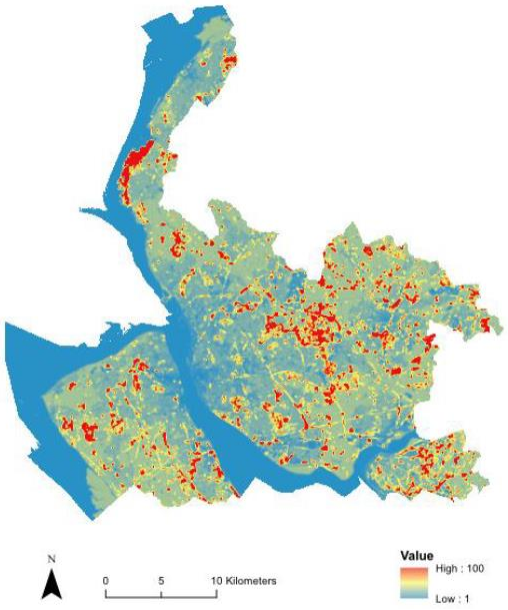
Natural capital asset: Riparian woodland → **Ecosystem service**: flood regulation, water purification

Natural capital asset: Freshwater habitat - River → **Ecosystem service**: water provision, food provision (fishing), health and wellbeing

Taking natural capital approach

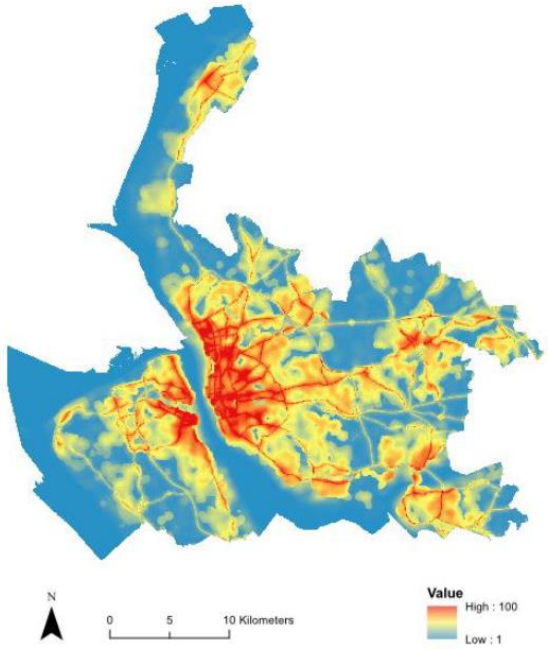
Natural capital tools and methodologies allow you to quantify the benefits from nature so that you can take a natural capital approach to **inform decision making**

Mapping and quantifying natural capital assets (our habitats) to identify where there is **existing provision of benefits**



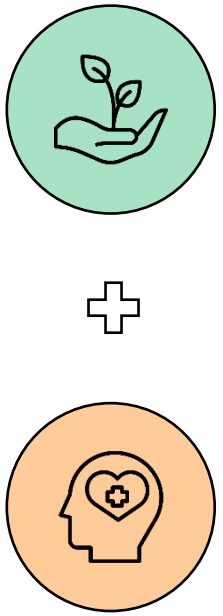
Example: Air purification capacity map

Mapping where there is **'demand' for more benefits** from nature



Example: Air purification demand map

Combining this information to **identify opportunities** which have multiple benefits for both people and nature



Example: Developing a natural capital tool to support decision making

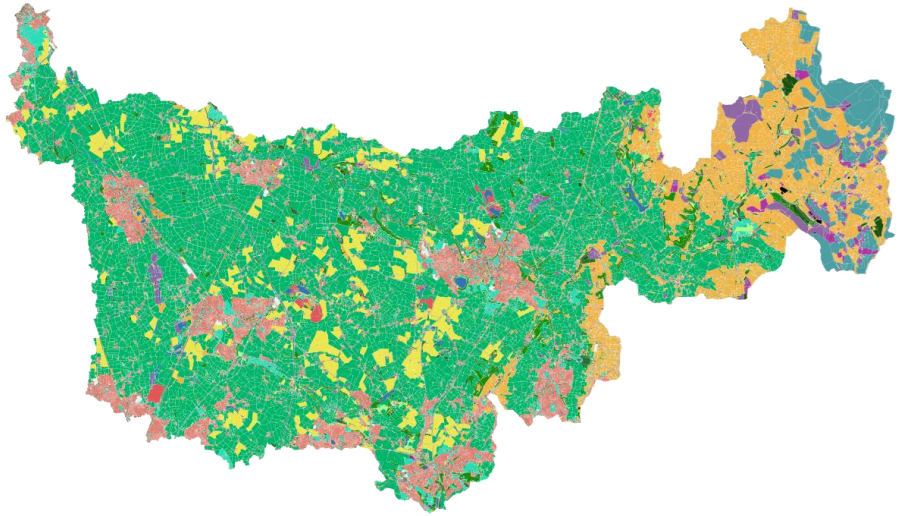
We are developing the tool in **partnership with Liverpool John Moores University**: the authors of **EcoServR** (adapted from EcoServ-GIS)

LIVERPOOL JOHN MOORES UNIVERSITY

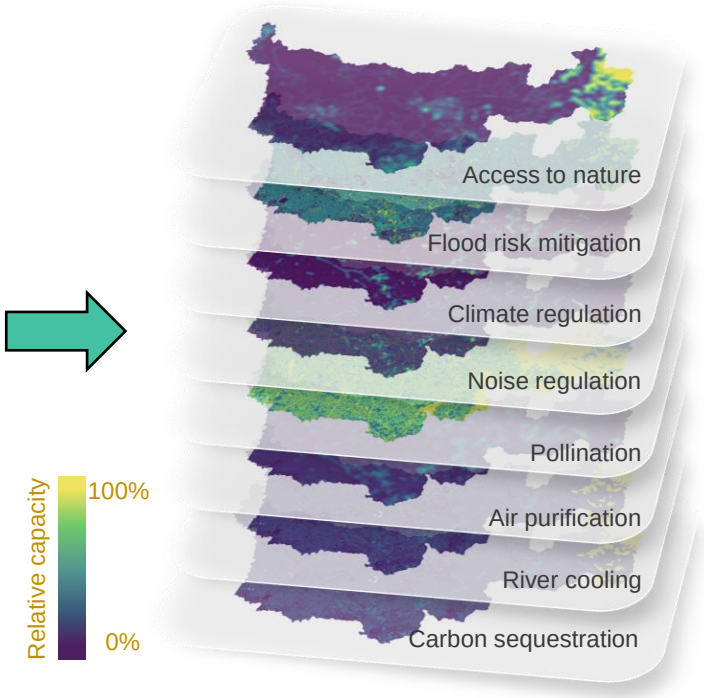
Geospatial data layers :

- OS MasterMap Topography Layer
- OS MasterMap Greenspace Layer
- OS Open Greenspace
- Habitat Map of Scotland (HabMoS)
- Scottish Landcover Map (SLAM)
- CORINE land cover
- Crop Map of Scotland
- National Forest Inventory
- Terrain data (DTM)
- Designated sites

Environmental baseline
shows natural capital assets



Ecosystem service 'capacity' layers
shows where there is provision of ecosystem services

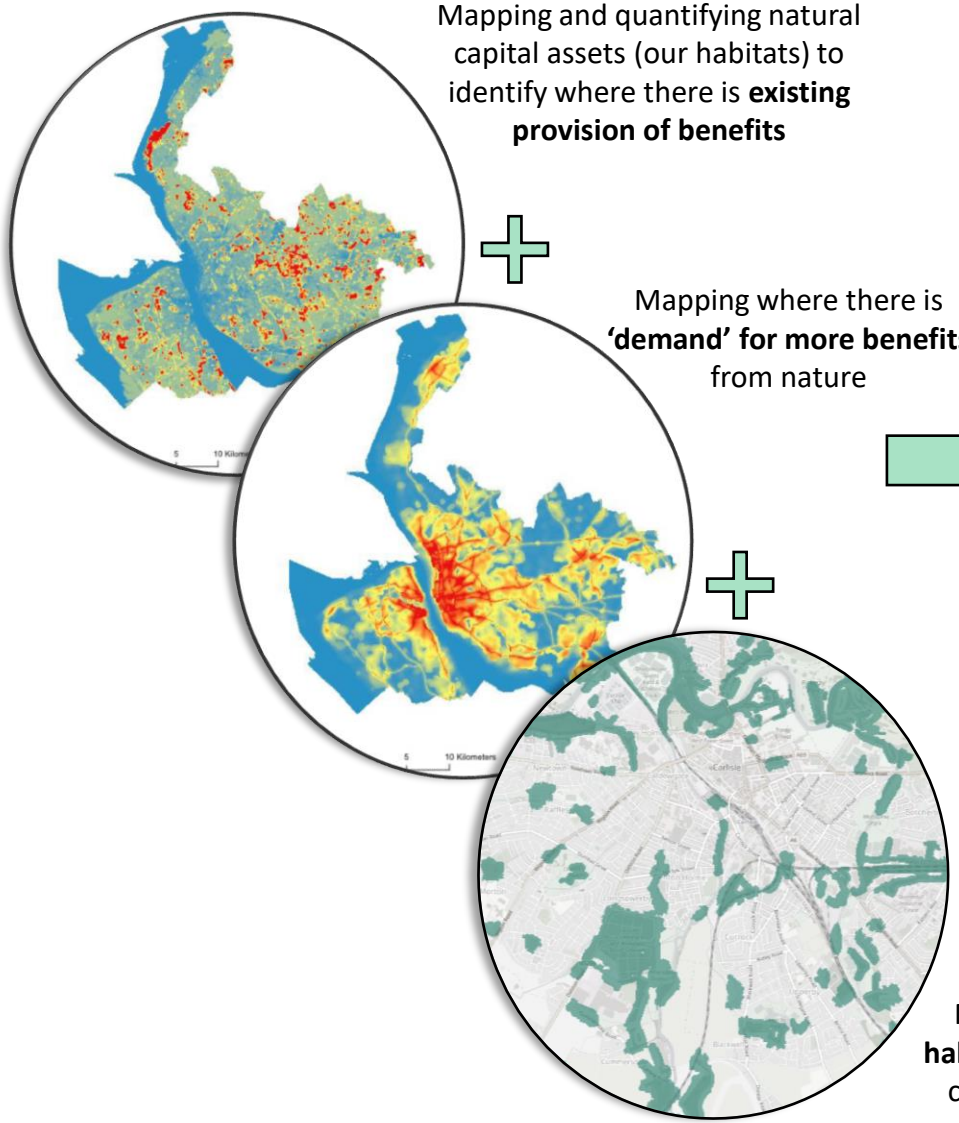


Socio-economic datasets:

- Census data (population density)
- Scottish Index of Multiple Deprivation (health data)

Ecosystem service 'demand' layers
shows where there is need for more ecosystem services

Example: Opportunity Mapping

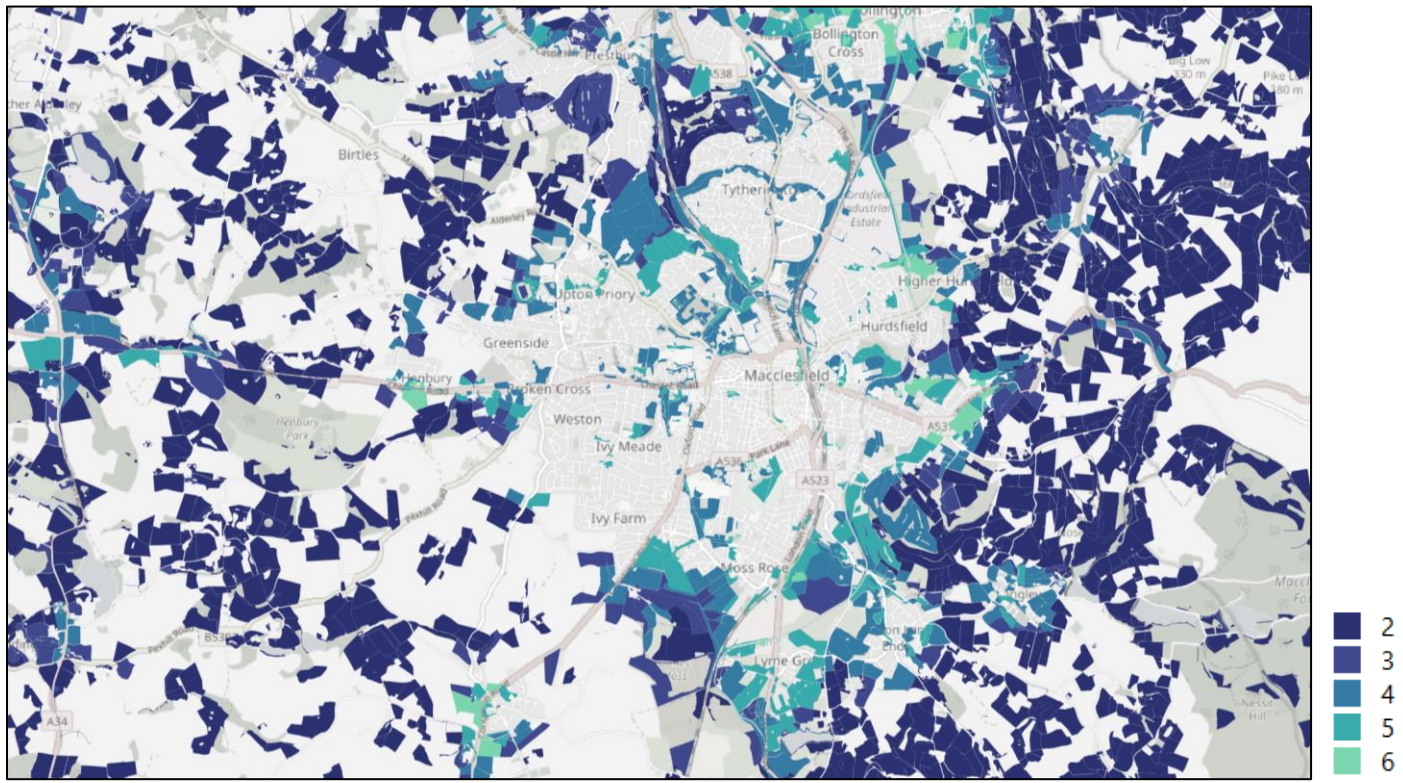


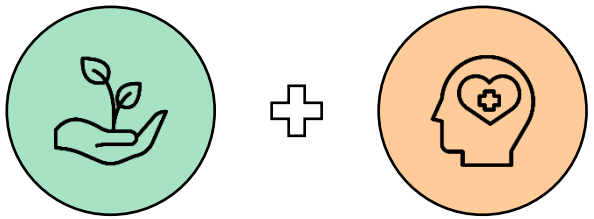
Mapping and quantifying natural capital assets (our habitats) to identify where there is **existing provision of benefits**

Mapping where there is **'demand' for more benefits** from nature

Mapping where **habitat connectivity** can be improved

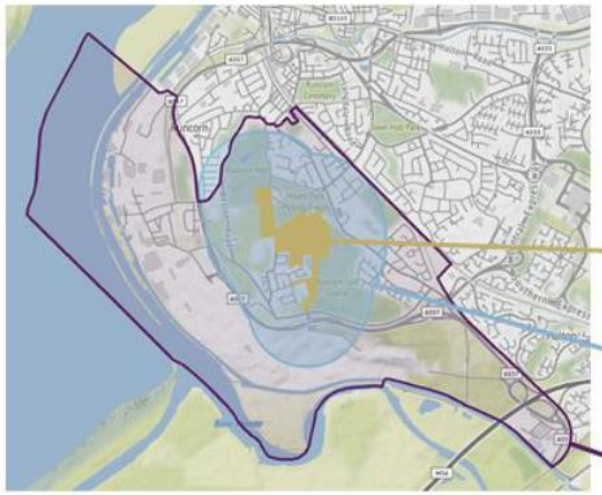
Combining this information to **identify opportunities** which have multiple benefits for both people and nature





Example: Identifying best interventions

Running **scenario analysis and uplift calculations** to look at the potential gains and losses of ecosystem services



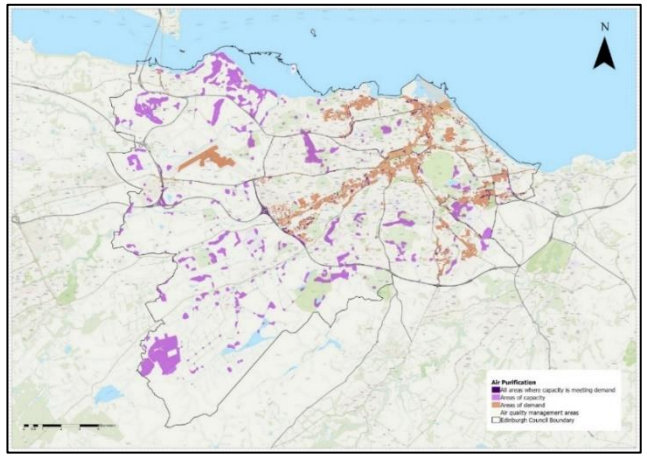
Relative change from baseline (%) (positive values are **gains**, negative values are **losses**)

	Accessible nature experience	Air purification	Carbon storage	Flood risk mitigation	Local climate regulation	Noise regulation	Pollination
Heath Park	4	25.6	21.3	-8.5	132	20.9	6.6
HP + 500m	1.9	3.9	1.6	-0.7	11.1	4.9	0.7
Heath Ward	0.4	1.8	0.5	-0.3	1.9	2.2	0.3

Air purification

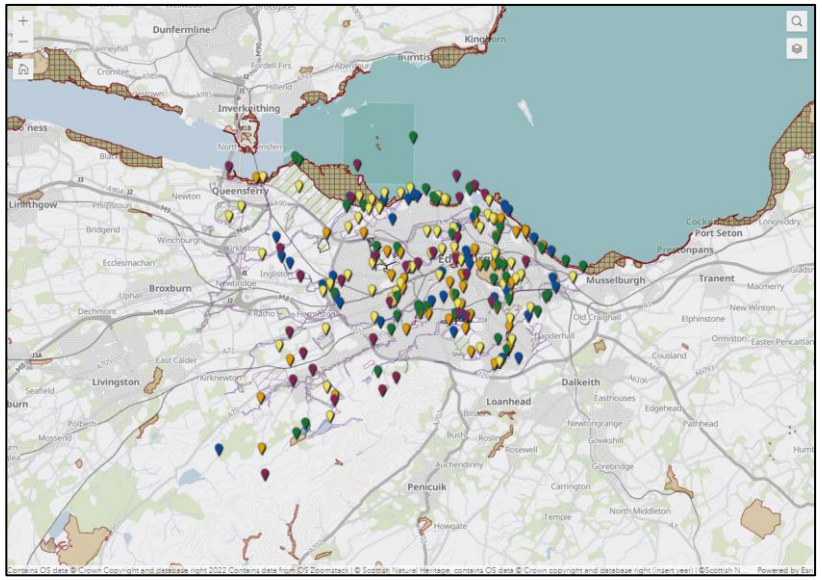
Case Study: Edinburgh Nature Network

A natural capital approach was used for the creation of the **Edinburgh Nature Network** (through an adapted version of the EcoServGIS methodology) - Scottish Wildlife Trust, City of Edinburgh Council and University of Edinburgh



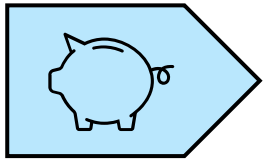
Data from ecosystem service and habitat network models was consolidated with qualitative data (stakeholder comments and feedback) to **identify actions for delivery**

This created >200 city-wide, site specific actions with **multiple benefits for both people and wildlife**

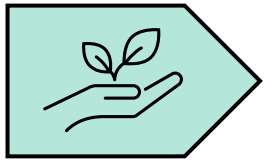


The Edinburgh Nature Network has meant there is a **holistic, strategic plan** supported by a wide-ranging group of stakeholders to connect, restore and enhance the city to bring more benefits to both wildlife and people.

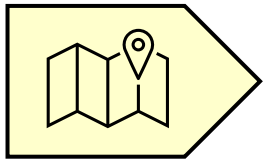
Summary: Benefits of taking a natural capital approach



Save time and money through improved decision making. Can target the areas where you get the most environment ‘bang for your buck’.



Greater benefits for both people and nature, rather than focusing on them individually. Can help **prioritise the areas in the most need**, reducing social inequality.



Allows for a more **strategic approach to decision making**. Can take a holistic view of the entire area of interest (e.g. local authority estate) and **identify ‘hot spots’ and ‘pinch points’** for action.

Thank you for listening