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Public Estate Value to Society

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This Research Paper examines the approach to valuation of public land assets, such as the public estate, within Northern Ireland. It does not attempt to perform valuation of the public estate. Instead an internationally popular framework to manage these complexities as part of decision and policy making processes – natural capital and ecosystem services approach – is introduced and discussed as a concept. Relevant examples where this approach has been applied are discussed with respect to Northern Ireland and other jurisdictions.

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Key Points

1. Land which is accessible to the public in Northern Ireland encompasses a wide variety of types, areas and locations throughout the country. A wide range of recreational activities are performed by the public on this land.
2. The ways in which different individuals, communities and stakeholders value resources such as the public estate will vary across scales in time, location and social position. There are also multiple ways to value natural resources and public land assets. Decision and policy makers may benefit from consideration of these factors in order to uphold legislative responsibilities or other obligations they may have.
3. A popular concept to support decision and policy makers in this regard is the **natural capital and ecosystems services approach**. In this approach the value of natural assets (including publicly accessible land) is assessed by considering the extent and quality of natural resources (natural capital) and the services that flow from them (ecosystem services). These services are benefits to people, such as environmental regulation (e.g. improved air quality) and cultural services (e.g. providing places to perform recreational activities). By valuing public assets using this framework, decision and policy makers can be informed of a wider range of values and can reflect the interests of multiple communities or stakeholders as part of their appraisal process.
4. The concept can be applied at various scales (national and local) and to a variety of land types not limited to public land assets, including private agricultural land, marine and urban greenspaces.
5. The international System of Economic Ecosystem Accounting provides an internationally accepted framework to support the practice of a natural capital approach, but the concept does allow modifications by individual nations and regions for their specific environmental considerations.

6. The natural capital approach is an ongoing area of research and development and the concept has attracted significant criticisms. However, it remains popular and has been demonstrated as a useful way to assign value to natural assets, agriculture assets and public spaces.
7. In Northern Ireland the **Environmental Improvement Plan** commits to adopting a natural capital approach. Northern Ireland is also included within UK-wide natural capital accounts and studies, and some shared-island ecosystem services initiatives with the Republic of Ireland.

Glossary of Terms

Instrumental values: The value of natural assets and resources that benefit people as a means to an end.

Intrinsic values: Aspects of nature that are valuable in and of themselves, regardless of their benefits to people.

Relational values: The value of people-nature interactions and interactions among people through nature.

Natural capital: All living and non-living, renewable and non-renewable natural resources.

Ecosystem services: Benefits to people derived from the flows of natural capital.

Natural capital accounting: The application of traditional economic accounting frameworks to assess the extent and quality of natural capital assets and ecosystem services.

Natural capital approach: An approach to decision making, policy making and project appraisal that is informed by natural capital and ecosystem services concepts and indicators, such as indicators from a natural capital accounting process.

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1 The public estate

1.1 Definition of the public estate

Land and Property Services (LPS), under the direction of the Department of Finance, is currently undertaking a project to compile a Government Land and Property Register¹ (GLPR). This initiative will result in an interactive map viewer detailing all land assets in the public estate upon completion².

LPS specifies the public estate, in the context of the GLPR project, as an estate which “consists of Government-owned and occupied land and property assets”³.

In light of the ongoing nature of the GLPR project⁴, this briefing paper will instead be limited to a brief review of *land to which the public has access*, rather than the public estate as a whole.

The Committee may wish to confirm the guidelines or definitions within which LPS is compiling the GLPR. The Committee may also wish to ask DAERA officials about the guidelines or definitions they use to identify the public estate.

1.2 Land to which the public has access

1.2.1 Access provisions

Land to which the public has access is currently designated under provisions made by the [Access to the Countryside \(Northern Ireland\) Order 1983](#). The provisions apply to both land and waterways. They grant the public access to⁵:

¹ Currently available dataset (specified as incomplete by LPS): [GLPR Assets Dataset \(OpenDataNI\)](#). Interactive map viewer of current dataset available at [GLPR Asset Viewer \(SpatialNI\)](#).

² See response to Assembly Question [AQW 19662/22-27](#).

³ As specified in footnote 1.

⁴ As specified in footnote 2.

⁵ [A Guide to Public Rights of Way and Access to the Countryside](#).

- Rights of way;
- Areas of designated open country;
- Areas subject to an access order;
- Areas subject to an access agreement.

1.2.2 Greenspace map

For the purposes of this Paper, publicly accessible land was identified using the [Greenspace NI](#) map, which details all publicly accessible land areas and trails in Northern Ireland as set out above (section 1.2.1). The map was developed using datasets provided by a range of public bodies throughout Northern Ireland⁶, including DAERA, Ordnance Survey of Northern Ireland, Northern Ireland Environment Agency, Outdoor Recreation Northern Ireland, National Trust, Forest Service Northern Ireland, Woodland Trust, Ulster Wildlife, Northern Ireland Housing Executive and individual borough councils. It was first published in June 2023⁷.

[Greenspace NI](#) indicates ongoing development of the map in a number of ways. Future work is stated to include the addition of:

- A Northern Ireland “Bluespace” Layer to map publicly accessible waterways and bodies of water;
- Access points for greenspaces between 0.5-2 hectares;
- Access points for trails;
- Accessibility and quality data for assets.

The most up-to-date version of the GIS dataset was requested from [Outscape](#) in the course of developing this Paper. Figure 1 includes the map compiled from the dataset received, highlighting the location and types (total area in hectares of each type is indicated) of publicly accessible land, as identified by Outscape, throughout Northern Ireland.

⁶ Full list of contributors can be found in [Greenspace NI Map Metadata](#).

⁷ [Greenspace NI](#).

Figure 2 shows the relative areas of each land type excluding those under 500 ha (namely ‘Heritage Site’ and ‘Community Garden’ types).

Definitions of most land types identified by Outscape in Figure 1 and Figure 2 are summarized in Table 1, with some definitions unavailable due to ongoing updates to the data.

Table 1: Land types as reported in the Greenspace NI map.

Category	Type	Definition
Woodland	Woodland	An area of land covered by trees with access for the public.
Amenity space	Community garden	N/A
	Heritage site	Sites of important historical value designated and preserved by law with some area of Greenspace and access for the public.
	Playing fields	Grass sports pitches open to the public.
	Public open spaces	Areas of natural open land that can be used for recreation including village greens and natural play areas.
Blue space	Beach	N/A
Nature reserve	Nature reserve	An area of land managed and preserved for special natural value due to important plant, wildlife or landscape.
Open country	Coastline	Coastline with permitted access.
	Mountain	Mountain with permitted access.
Parks and Gardens	Country park	N/A
	Historic parks and gardens	Natural areas with an historic value managed and maintained for recreation. Mainly comprised of National Trust or NIEA managed sites and are often behind a paywall.
	Public park	An area of land open to the public with facilities managed for recreation.

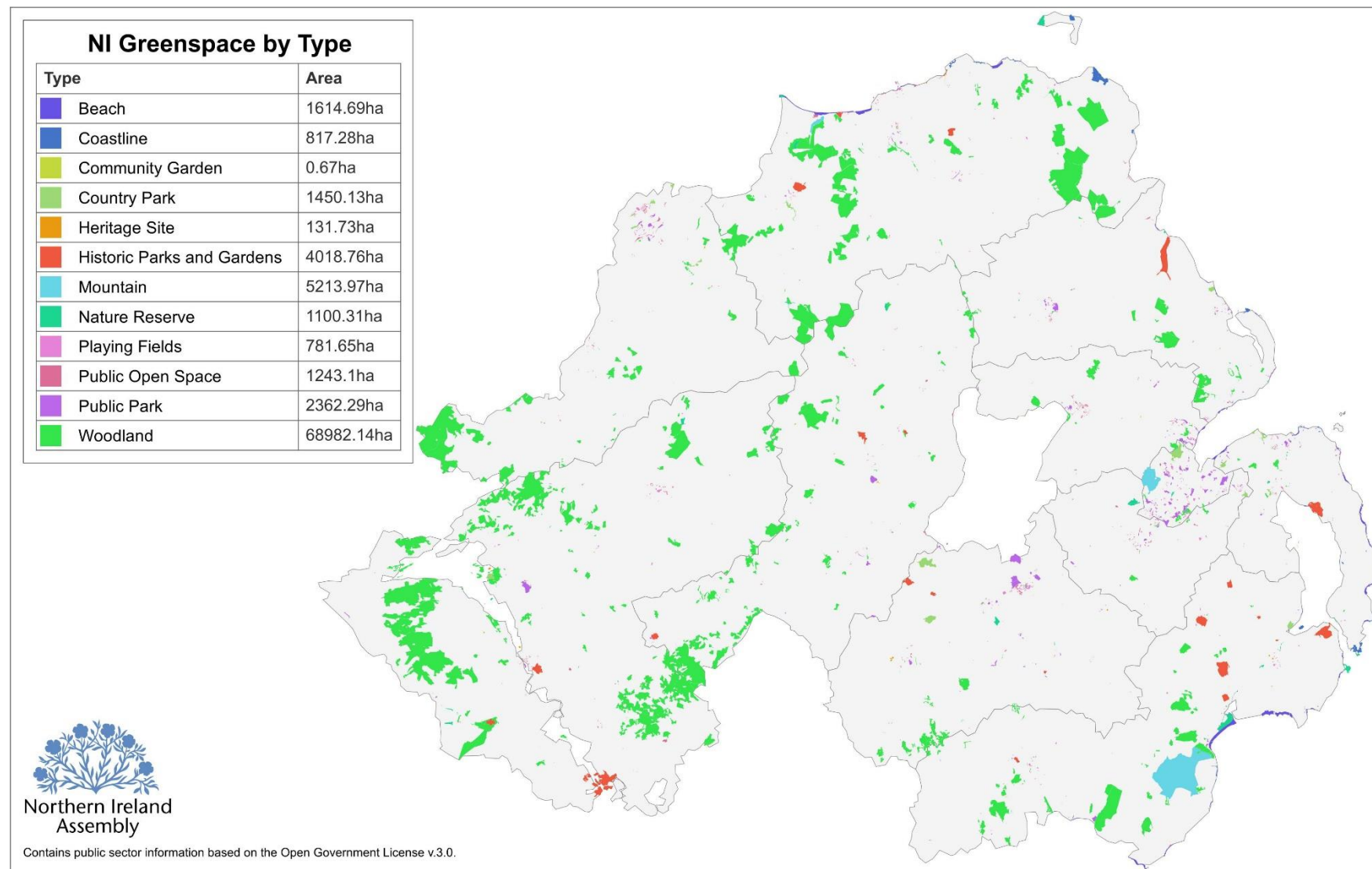


Figure 1: Land to which the public has access to in Northern Ireland, displayed by type (definitions given in Table 1). The total area of each land type is indicated in hectares (ha).



Figure 2: Types of publicly accessible land by area in hectares. Excludes 'Heritage Site' and 'Community Garden' types due to their small size (less than 500 ha).
Note: abbreviation of Nature Reserve to Nat. Res.

1.3 Waterways accessible to the public

Due to the current lack of GIS data relating to publicly accessible waterways in Northern Ireland, no map of these features has been produced for this Paper.

As indicated in section 1.2.2, the [Greenspace NI](#) project is currently being updated to include “Bluespace” data, corresponding to all publicly accessible waterways and bodies of water. At present, no expected release date for this update has been published.

Many of the types and locations of bodies of water that are accessible for public recreational use in Northern Ireland can be identified based on [NI Water Recreation and Access Guidance](#) and NI Direct [Waterways](#) guidance.

- Waterways with public access include rivers, canals, lakes and reservoirs.
- The distribution of publicly accessible waterways varies throughout Northern Ireland, however each county does contain multiple locations with publicly accessible waterways.

If members require comprehensive information on the types and locations of publicly accessible waterways they may wish to approach the Department for existing records and datasets.

1.4 Outdoor recreational activities

The [People in the Outdoors Monitor for Northern Ireland](#) (POMNI) was “an omnibus survey relating to how people in Northern Ireland engage with the natural environment, the benefits they gain from it, and the barriers they face trying to access it.”

The survey was commissioned to Outscape by DAERA and data collection was completed between November 2020 and October 2021. The [POMNI Headline Report](#) was published in March 2022.

This Paper will not cover demographic disparities in accessing outdoor recreation in Northern Ireland. Further information on this topic is available in the [POMNI Headline Report](#).

The Headline Report details a range of recreational activities performed by the public on areas of public land during their visits over a four week period and the percentage of respondents reporting each activity type. These activities are shown in Figure 3.

The Headline Report also details the reasons reported by respondents for visiting publicly accessible land. These reasons are shown in Figure 4.

Information from [NI Water Recreation and Access Guidance](#) and NI Direct [Outdoor Recreation](#) and [Waterways](#) webpages highlights the range of activities taking place on and around publicly accessible waterways. Activities reported include:

- Angling (at both coarse and regular fisheries),
- Bathing and swimming,
- Canoeing,
- Bird Watching,
- Cycling,
- Dog Walking,
- Equestrian,
- Hiking,
- Running,
- Walking.

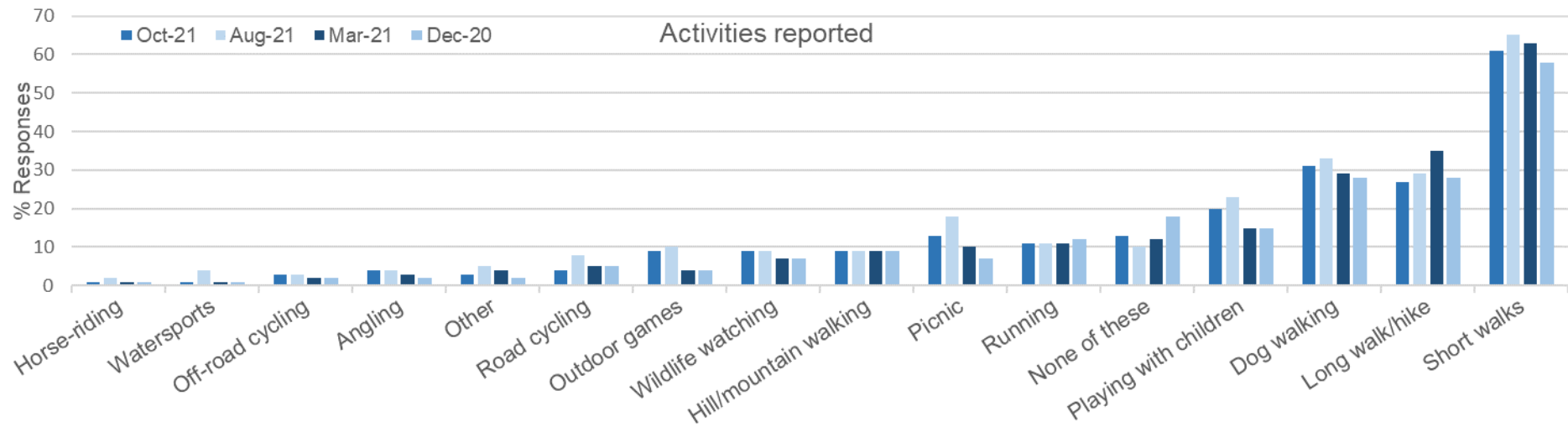


Figure 3: Activities reported in [POMNI Headline Report](#) during visits made by the public to publicly accessible land in Northern Ireland.

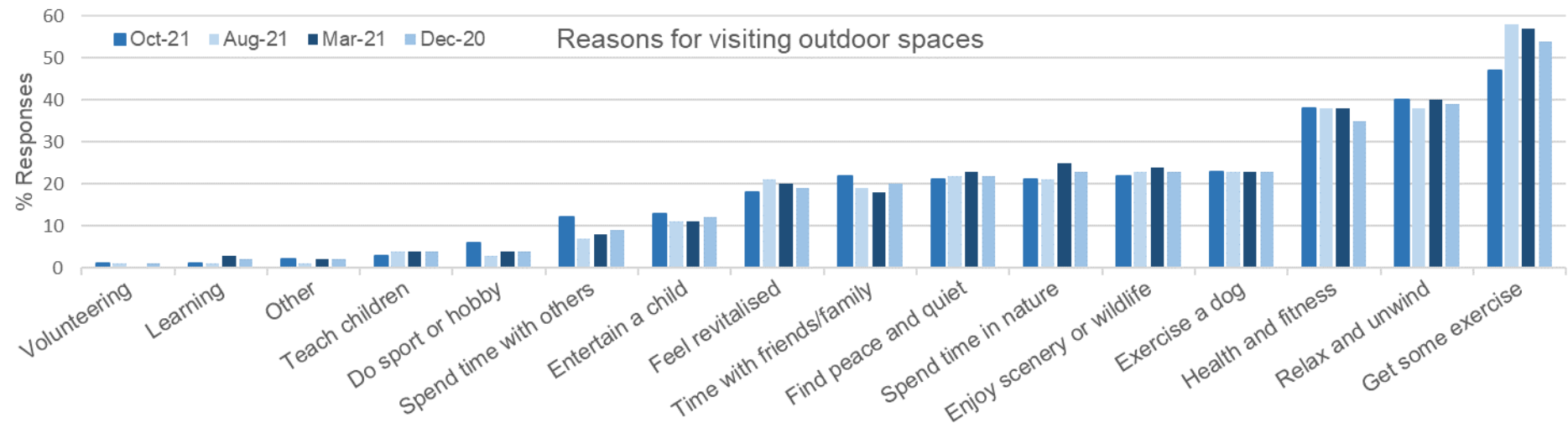


Figure 4: Reasons reported in [POMNI Headline Report](#) for visits to publicly accessible land in Northern Ireland.

1.5 Summary

A full report of land and property within the public estate – the GLPR project – is currently being prepared by LPS. A complete dataset is not yet available.

Land to which the public has access is currently available to view in interactive map form via the [Greenspace NI](#) project. Bluespaces – publicly accessible waterways – are due to be added to the project, however no release date has been given for this update.

Land and waterways to which the public have access:

1. Range greatly in their category, location and habitat type. (A significant majority by area consists of woodlands and mountains.)
2. Have been shown to support a wide range and extent of recreational activities across Northern Ireland.
3. Are visited by the public for a range of reasons.

The above points will interact when discussing methods through which a resource such as the public estate may be valued.

The next section of this Paper introduces such a valuation concept: natural capital and ecosystem services.

2 Key concept: Natural capital and ecosystems services

The word ‘value’ can refer to many things⁸. A value can be a

- Principle,
- Preference,
- Importance,
- Measure.

⁸ IPBES 2016, page 3: [Preliminary guide regarding diverse conceptualization of multiple values of nature and its benefits, including biodiversity and ecosystem functions and services.](#)

Different types of values – including instrumental, intrinsic and relational values – often co-occur in regards to public assets. Additionally, values often vary across scales in location, time and social positions, leading them to be prioritized differently by different communities and stakeholders⁹.

These factors present decision and policy makers with significant challenges, particularly regarding duties they may have with respect to policy goals or legal requirements such as equality or sustainability.

As a result it becomes important for decision makers to adopt the optimal approach to valuation for their given circumstances.

This section will establish the background needed to discuss the approach to valuing publicly accessible land and marine assets most widely applied in other jurisdictions: that of *natural capital* and *ecosystems services*.

2.1 Background

2.1.1 Millennium Assessment

The [Millennium Assessment](#) (MA) was a landmark study initiated in 2001. The aims of the MA were¹⁰:

- “to assess the consequences of ecosystem change for human well-being,”
- “to establish the scientific basis for actions needed to enhance the conservation and sustainable use of ecosystems and their contributions to human well-being”.

The MA was conducted by an international network of scientists and experts (1300 authors from 95 countries). It was completed in 2005.

2.1.2 Natural capital and ecosystem services

⁹ See the Appendix for detailed explanation of how values arise and manifest across society.

¹⁰ [MA synthesis report](#), Preface (page V).

In economics, the term **capital** is used to refer to “a stock of materials or information that exists at a point in time”¹¹.

A capital stock, possibly in combination with other types of capital stock, generates a flow of **services** which may be used to benefit people¹².

The [MA Conceptual Framework](#) identifies **four fundamental types of capital** used to evaluate the total wealth of a nation: **manufactured**, **human**, **social** and **natural** (see Figure 5). Definitions of these capital types are summarised within Figure 5.

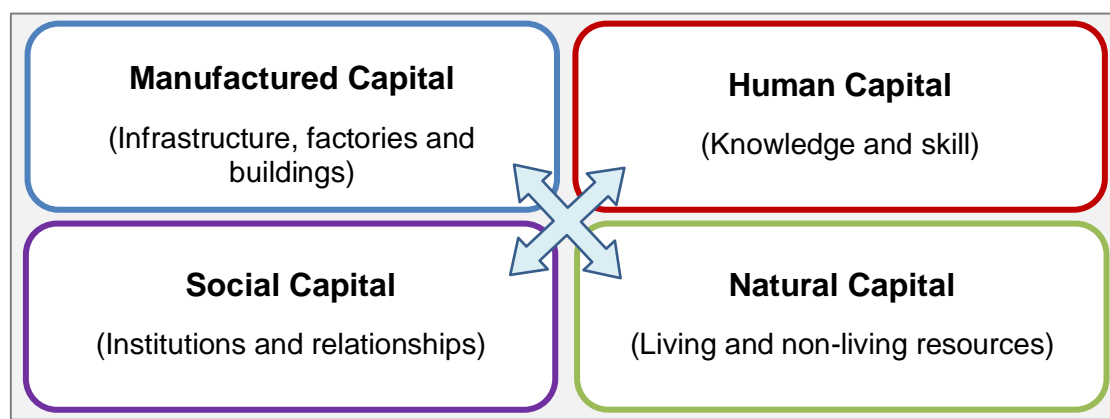


Figure 5: Four types of capital used to evaluate total wealth.

¹¹ R. Costanza, *et al.* [The value of the world's ecosystem services and natural capital](#). *Nature* (1997).

¹² *Ibid.*

How these capitals are arranged varies between different economic models. To illustrate, three economic theories (neo-classical economics, environmental economics and ecological economics) are summarized in Figure 6¹³ with respect to the four capitals identified in Figure 5.

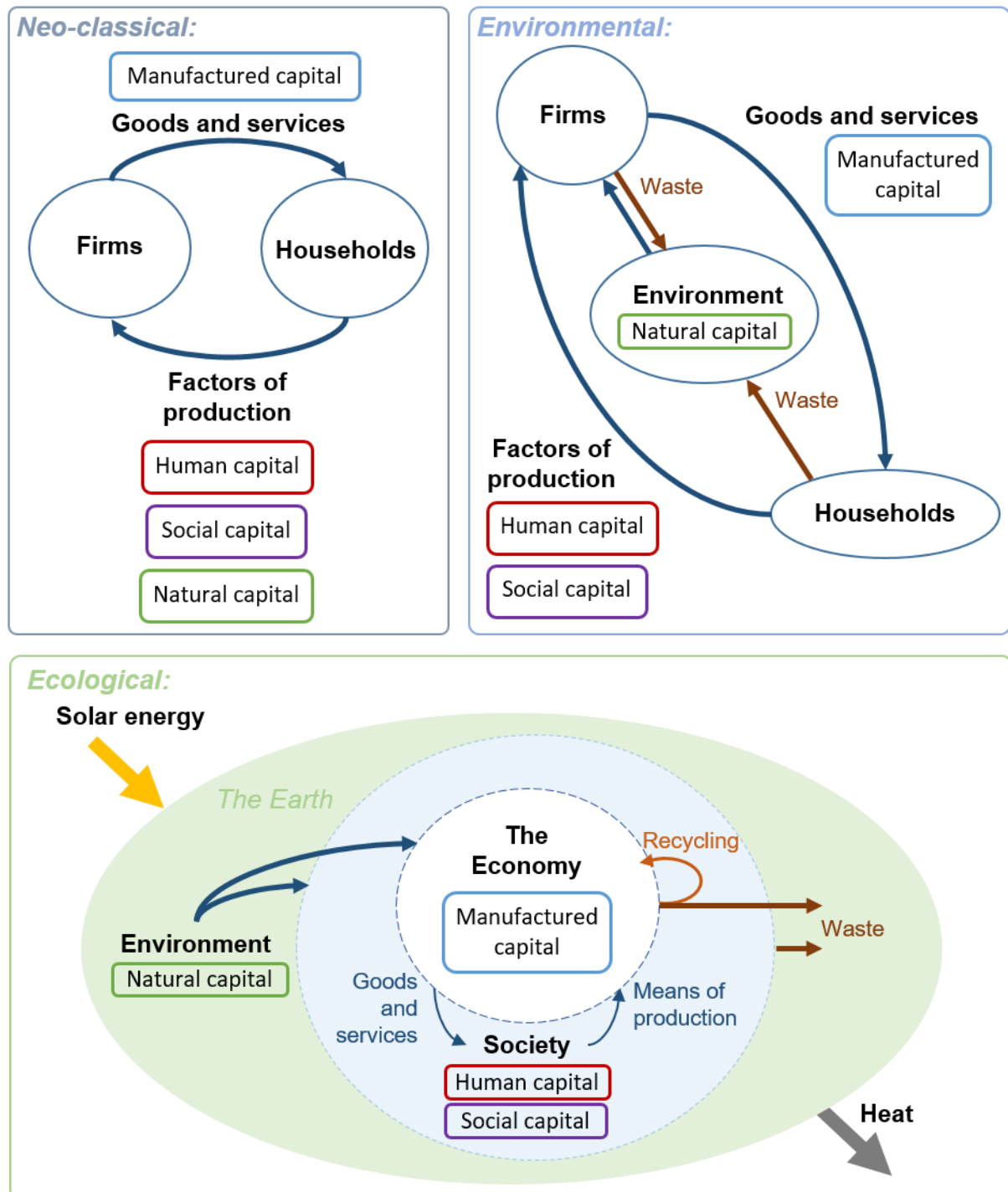


Figure 6: Structures of neo-classical, environmental and ecological economic theories.

¹³ Image: RalSe, using information provided in: [Environmental economics and ecological economics: the contribution of interdisciplinarity to understanding, influence and effectiveness \(2011\)](#).

- Traditional **neo-classical economics** assumes that goods and services and the means of production flow between firms and households. The environment is understood as a resource, with no intrinsic value, to be used as part of this cycle.
- **Environmental economics** places monetary value on natural capital as part of the neo-classical model with the aim to reduce waste and improve sustainability.
- **Ecological economics** reframes human society and the neo-classical economy as open subsystem of the ecosystem on Earth, which is understood to be finite and non-growing.

Based on the ecological economics model, MA popularized the existing term **ecosystem services**, which describes **the flow of services from natural capital stocks**. This concept has since been widely adopted and forms the basis for a number of frameworks intended to include nature and its multiple contributions to people in decision making.

2.1.3 Types of natural capital

Natural capital is comprised of natural or ecosystem assets, described by the MA as “**all living and non-living resources**”¹⁴ and described regularly in modern literature as “**all renewable and non-renewable resources**”¹⁵. Natural capital includes all plants, animals, fungi and microbes and the rock-forms, soils, waters and other physical elements within a region.

Categories of natural or ecosystem assets can be conceptualised in different ways, however generally they are related to habitat or environment types such as woodlands or freshwaters.

Example: The [System of Environmental Economic Accounting](#) (SEEA) recommends the categorisations of ecosystem assets set out by the [International Union for Conservation of Nature](#)

¹⁴ [MA Conceptual Framework](#).

¹⁵ Professor Dieter Helm LSE lecture 2015: [Natural Capital: valuing the planet](#).

[Global Ecosystem Typology](#) (IUCN GET), however it accepts that countries may benefit from adapting these categories to reflect the specific range of natural assets that occur in individual jurisdictions.

For example, [UK natural capital accounting](#) guidance (published by ONS, 2023) notes that, while the IUCN GET allows for beneficial international comparison, the correct identification of UK habitats within the IUCN GET is not yet possible due to data limitations. As a result, the UK categorizes ecosystem assets based on the habitat typology described by the seminal [UK National Ecosystems Assessment](#) (2011).

2.1.4 Types of ecosystem services

MA defines ecosystem services as “the services that people obtain from ecosystems”¹⁶.

Ecosystems services can be conceptualized in different ways. While most conceptualizations focus only on the benefits people derive from ecosystems, the concept of ecosystem *disservices* may be introduced to indicate detriments to people from the environment. Ecosystem disservices are largely not well understood and are an active area of research.

A well-known definition of ecosystem services categories is supplied by the MA:

- **Provisioning services** such as food and water;
- **Regulating services** such as regulation of floods, drought, land degradation, and disease;
- **Supporting services** such as soil formation and nutrient cycling;
- **Cultural services** such as recreational, spiritual, religious and other nonmaterial benefits.

¹⁶ MA 2005, page 3: [Ecosystems and Human Well-being: A Framework for Assessment](#).

Such a definition is intended to reflect that the natural environment has properties pertaining to both human and non-human uses.

2.2 Natural capital approach

According to the UK Department of Environment, Farming and Rural Affairs (DEFRA) [Enabling a Natural Capital Approach \(ENCA\)](#) guidance, a natural capital approach to decision- and policy-making reflects the change in understanding of natural capital and its economic role from a traditional neo-classical view to an ecological one (shown in Figure 6).

A natural capital approach to decision-making may include means for the process of **natural capital accounting** and subsequent project or policy **appraisal frameworks**. The two processes are linked because specific indicators drawn from a well-executed natural capital accounting process can be used to inform decision and policy makers in their appraisals. This is shown in Figure 7.



Figure 7: The role of natural capital accounting in decision making. Adapted from [Frequently Asked Questions | System of Environmental Economic Accounting](#).

Each process is discussed below with reference to an example.

2.2.1 Natural capital accounting

The [System of Environmental Economic Accounting](#) (SEEA) is an internationally accepted framework for producing internationally comparable

statistics on the environment and its relationship to the economy¹⁷. As of 2024, SEEA has been implemented by 94 countries¹⁸, including the UK and Republic of Ireland.

SEEA describes natural capital accounting as any application of traditional accounting frameworks to systematically measure and report natural capital.

Indicators to emerge from natural capital accounting may relate to any of the value indicators listed in Section **Error! Reference source not found.**, but natural capital accounts are commonly represented using monetary and biophysical markers.

Example: In 2014, South Africa used SEEA framework to identify declining river quality¹⁹. The accounts used biophysical data to calculate an 'ecological condition index'²⁰, which highlighted that the ecological condition of South Africa's rivers had declined by 10% between 1999 and 2011.

2.2.2 Policy or project appraisal

Policy and project decisions are increasingly challenging owing to increased complexity along several axes²¹:

- Interconnectedness – improvements in one policy area may lead to detriments in another (trade-offs);

¹⁷ SEEA was adopted in full by the United Nations Statistical Commission in 2021. See SEEA [Frequently Asked Questions](#).

¹⁸ [2024 Global Assessment | System of Environmental Economic Accounting](#).

¹⁹ [National River Ecosystem Accounts for South Africa](#).

²⁰ As in footnote 25: Page xv.

²¹ Page 14: [SEEA: How Natural Capital Accounting Contributes to Integrated Policies for Sustainability](#).

- Multiple stakeholders – multiple stakeholders may feature across many roles, either in creating problems, suffering consequences or providing a solution;
- Various scales – impacts of policy or project decisions may emerge across wide scales in location and time.

Much of the complexity of policy and project appraisal may be addressed by making use of the indicators drawn from natural capital accounts.

Example Continued: South Africa is a water-scarce country, so United Nations Sustainable Development Goal (SDG) 6²² (clean water and sanitation) is relevant. The findings of the National River Ecosystem Accounts (noted in the previous example box) allowed policy makers to develop a [National Water and Sanitation Master Plan](#) in order to work towards accomplishing SDG 6.

Regular reviews of natural capital accounts over time can also be used to monitor the impacts of policy.

2.3 Critiques

A number of critiques have been made surrounding the natural capital and ecosystems services approach concept. Key examples are summarised in Table 2.

Table 2: Critiques, arguments and counter-arguments of natural capital and ecosystems services concept. Adapted from²³.

Critique	Arguments	Counter-arguments
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²² [seea_and_sdgs_one.pdf](#)

²³ Page 520: Schröter, *et al.* (2014), Ecosystem Services as a Contested Concept: a Synthesis of Critique and Counter-Arguments. Conservation Letters, 7: 514-523. [The Society for Conservation Biology](#).

Environmental ethics	Natural capital and ecosystem concepts are exclusively anthropocentric and incompatible with intrinsic valuation of nature.	The concept of cultural ecosystem services includes intrinsic values of nature.
Human-nature relationship	The concept may promote an exploitative approach to nature rather than a holistic one.	The concept may highlight the role of nature in human activity, reconnecting the two.
Commodification	The concept implies commodification of nature, promoting the idea that ecosystem services may be preserved only using payment incentives (see for instance Markets and payments for environmental services) and not out of moral obligation.	Using monetary terms to value natural assets or ecosystem services does not necessarily promote the use of financial instruments to ensure their protection.
Substitutability	The concept implies that there is a high degree of substitutability of natural capital with other capital types (e.g. manufactured or human) and that different natural assets may be seen as economically 'equivalent' and interchangeable as a result.	Substitutability of natural capital has been found to be low ²⁴ , implying it is not replaceable by other capital types. A well-considered natural capital approach does not necessarily promote the economic equivalence of different natural assets.

²⁴ Cohen, Hepburn and Teytelboym (2019), [Is Natural Capital Really Substitutable? | Annual Reviews](#).

Biodiversity ²⁵	The concept may not effectively promote biodiversity as a policy or project goal.	Natural capital includes biodiversity as an asset, many ecosystem services are created as a result and this is evident in indicators for decision making.
Limited valuation plurality	The concept comprises economic framing and consequently prioritises traditional economic values rather than the full range of ways that people value nature.	The economic framing of the concept does not necessarily involve monetization. The concept of ecosystem services is inclusive of a range of value types and does not necessarily exclude additional value types.
Vagueness	The different categorizations of natural assets and ecosystem services make the concept too vague to be useful.	The ability to categorise natural assets and ecosystem services depending on regional or situational variations supports interdisciplinary working and offers insight in specific applications.
Limited knowledge ²⁶	There is currently a limited understanding of the ways in which ecosystem services and biodiversity relate to the	Data availability in many jurisdictions is sufficient to make steps towards implementing effective

²⁵ [The Dasgupta Review](#) (2021) was an independent review of the 'Economics of Biodiversity', conducted by Professor Sir Partha Dasgupta. The Review notes that regions with rich biodiversity must hold a 'non-negotiable high value', ensuring their protection. Summary article, Cambridge Stories: [Dasgupta Review: Nature's value must be included in economics to preserve biodiversity](#).

²⁶ Bateman and Mace (2020): [The natural capital framework for sustainably efficient and equitable decision making | Nature Sustainability](#).

	concept of natural capital, making frameworks high-risk and challenging to implement.	decision and policy frameworks based on the concept.
Optimistic assumptions	The concept often fails to acknowledge ecosystem disservices (where ecosystem services may have a negative impact on humans rather than a positive one).	The concept is constantly evolving and this is reflected in continuing academic and applied interest. Ecosystem disservices are one such current area of active research ²⁷ .

2.4 Key points

- Natural capital is broadly defined as all living and non-living, renewable and non-renewable natural resources or assets within a region.
- Flows of natural capital manifest as ecosystem services, which may benefit people by provisioning them with materials, regulating the environment, supporting natural processes or providing cultural services.
- A natural capital approach to decision making usually includes natural capital accounting to identify the extent and condition of natural capital assets and ecosystem services. Decision and policy appraisal frameworks can then be implemented based on the findings of the natural capital accounts.
- Different conceptualisations of natural assets and ecosystem services exist. The current internationally accepted framework for natural capital accounting is the SEEA.
- Criticisms of the concept usually refer to problems surrounding environmental ethics, commodification of nature, substitutability of natural assets, biodiversity protection, limited valuation plurality,

²⁷ Blanco et al (2019): [Ecosystem disservices matter: Towards their systematic integration within ecosystem service research and policy - ScienceDirect](#).

vagueness and optimistic assumptions. (Arguments and counter-arguments are summarised in Table 2.)

3 Natural capital in Northern Ireland

3.1 Northern Ireland Legislation

Under the [Environment Act 2021](#) the [Environmental Improvement Plan for Northern Ireland](#) was produced in 2024. The Plan includes:

- Commitment to adopt a natural capital approach within Northern Ireland in order to “ensure we value and protect our natural assets to make Northern Ireland more resilient and deliver sustainable economic growth and well-being”²⁸.
- The adoption of natural capital accounting as a supporting tool for other areas of action including “circular economy, climate change, biodiversity, resource efficiency and sustainable production”²⁹.

A Ministerial Statement³⁰ announcing publication of the Plan noted that the Biodiversity Strategy³¹ and [Climate Change Action Plan 2024-25](#) were linked to the need for establishment of a Northern Ireland natural capital framework.

3.2 UK-wide initiatives

Northern Ireland is included under many UK-wide natural capital programmes including the seminal [UK Natural Ecosystem Assessment](#) and current UK natural capital accounts³² (see section 4.1).

²⁸ Page 18: [Environmental Improvement Plan for Northern Ireland](#).

²⁹ Ibid.

³⁰ [Department of Agriculture, Environment and Rural Affairs - Approval and Publication of the Environmental Improvement Plan](#).

³¹ AERA Minister answered question [AQW 17012/22-27](#) indicating that development of a Nature Recovery (Biodiversity) Strategy is underway.

³² [UK natural capital accounts: 2024 – detailed summary tables - Office for National Statistics](#).

3.3 Shared-island collaboration

Pollination has been identified as a key ecosystem service by [National Biodiversity Data Centre Ireland](#), which in turn supports the [All-Ireland Pollinator Plan](#) (AIPP). The [AIPP 2021-2025](#) has demonstrated the effectiveness of the ecosystem services concept as a way to promote conservation by highlighting the value of pollinators across multiple indicators (economic and intrinsic).

3.4 Northern Ireland natural capital case studies

3.4.1 Derry/Londonderry City and Strabane District Council

Derry/Londonderry City and Strabane District Council used natural capital accounting³³ to calculate the benefits of green spaces, greenways and woodland as part of their [Green Infrastructure Plan 2019-2032](#). They conclude that³⁴:

- “Greenspaces will provide £1 billion in benefits over the lifetime of Derry City and Strabane District Council’s Green Infrastructure Plan (GI) (2019-2032).”
- “It only costs £1 to deliver over £22 of benefits [using greenspaces].”
- “Greenspaces provide over £500 of benefit per adult resident per year.”

3.4.2 Urban and rural studies (Northern Ireland Environment Link)

In 2018 two [Natural Capital Pilots](#) were commissioned by Northern Ireland Environment Link.

The first pilot³⁵ considered the application of a natural capital assessment to highlight the value of two urban sites in the Belfast area – Bog Meadows and Minnowburn – and to inform decision-making at the sites.

³³ [Natural Capital Account for Derry City and Strabane District - Carnegie UK](#).

³⁴ Executive summary, page 4: [Natural Capital Account for Derry City and Strabane District - Carnegie UK](#).

³⁵ [Northern Ireland Urban Natural Capital Study](#)

The assessment found that physical health and recreational value (designated under cultural ecosystem services) was more significant than other ecosystem services, such as air quality regulation and carbon sequestration (regulating and supporting services). Additionally³⁶:

- “Bog Meadows was calculated to be providing approximately £840,000 of benefits each year... which was 50 times greater than the costs of maintaining the site.”
- “Minnowburn is providing £2.7M of benefits annually... which is over 80 times greater than maintenance costs. Benefits flowing from this site are higher than for Bog Meadows as the site attracts considerably more visitors and visits each year.”

The report concludes that valuation of natural capital and ecosystem services allows the benefits of greenspaces to be known and compared across a range of indicators, including health. The report also acknowledges limitations surrounding high-quality data availability and advises that results must be interpreted with care.

The second pilot³⁷ examined the value of ecosystem services of three Northern Ireland College of Agriculture, Food and Rural Enterprise (CAFRE) farms. The farms were of different types: beef and sheep with some crops; dairy; and the [Hill Farm Centre](#), which forms part of the CAFRE educational campus.

The assessment found that each farm regulated nitrogen positively and contributed nutrient cycling benefits by managing soil quality effectively³⁸.

Despite intensive farming practices, each site delivered net positive environmental gain owing to the implementation of CAFRE best practices and

³⁶ Page 24: [Northern Ireland Urban Natural Capital Study](#).

³⁷ [Northern Ireland Natural Capital Rural Study](#)

³⁸ Page 38: [Northern Ireland Natural Capital Rural Study](#).

stewardship approaches. The report notes that this may not be true for other farms across Northern Ireland³⁹.

Additionally⁴⁰:

- “The Upper Hill Farm provides natural capital services value (including carbon stock) of £3.1 million per annum (excluding provisioning services, and the educational value of the farm).”
- “The Dairy farm provides ecosystem services to a value of £961k per annum (excluding provisioning services, and the educational value of the farm).”
- “The Beef and Sheep farm provides ecosystem services with a value of £324k per annum (excluding provisioning services and the educational value of the farm).”

3.4.3 Other reports

The [Northern Ireland State of Nature Report 2023](#) does indicate the condition of the environment but should not be confused with natural capital accounting since no accounting frameworks are applied therein.

³⁹ Page 39: [Northern Ireland Natural Capital Rural Study](#).

⁴⁰ Page 4: [Northern Ireland Natural Capital Rural Study](#).

4 Natural capital in other jurisdictions

SEEA reports that at least 94 countries have currently adopted its framework for natural capital accounting to variable degrees (see Figure 8). This section will cover examples where jurisdictions neighbouring Northern Ireland have adopted a natural capital approach and how they have applied it.

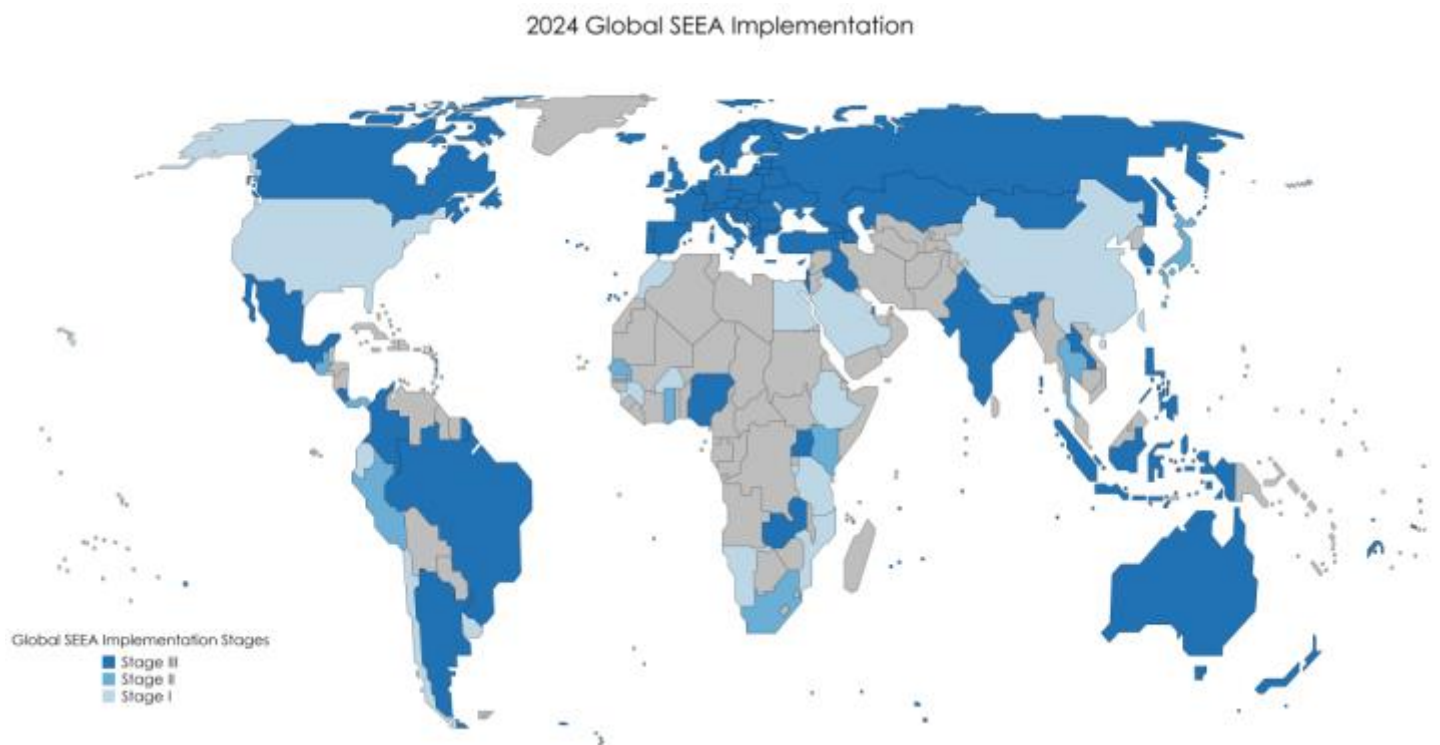


Figure 8: Countries adopting SEEA natural capital accounting framework 2024. Adapted from [SEEA Around the World](#).

4.1 United Kingdom

The United Kingdom has a legacy of engagement in natural capital research and policy. The [UK Natural Ecosystem Assessment](#) (UK NEA) was the first report on natural capital in the UK. The original report was commenced in 2009 and published in 2011. It highlighted the importance of natural capital and benefits from ecosystem services in the UK⁴¹.

Following UK NEA, a 2011 White Paper ([The natural choice: securing the value of nature](#)), included the objective “to be the first generation to leave the

⁴¹ The [UK NEA Follow-on](#) report was produced in 2014 to build on the findings of the first UK NEA.

environment in a better state than it inherited.” In response, the [Natural Capital Committee](#) (NCC) was convened to advise UK Government on natural capital matters.

The NCC ran from 2012 to December 2020, establishing the first annual [State of natural capital report \(England\)](#) in 2013 and concluding with an [end of term report](#) in 2020⁴². The latter details impacts of the NCC’s advice regarding the UK Government’s 2018 [25 Year Environment Plan](#)⁴³ and NCC’s legacy in the development of UK natural capital assessment frameworks and embedding natural capital approaches to decision making.

Currently His Majesty’s (HM) Treasury [Green Book \(2022\)](#) recommends [Enabling a Natural Capital Approach \(ENCA\)](#) guidance which includes extensive information on natural capital accounting and ways to implement natural capital-based decision and project appraisal frameworks.

The Office for National Statistics continues to compile annual [UK natural capital accounts](#) and [UK Environmental Accounts](#), which are produced in line with [System of Environmental Economic Accounting](#) guidance.

Additionally:

- As part of the UK presidency of the G7 for 2021, a policy paper recommending the incorporation of natural capital into national performance measures ([Biodiversity, natural capital and the economy](#)) was requested from the Organization for Economic Co-operation and Development (OECD).
- The [Dasgupta Review](#), commissioned by HM Treasury and published in 2021, recommends natural capital accounting to “protect and promote well-being across the generations”⁴⁴.

⁴² A [full list of NCC documents](#) is available.

⁴³ Made statutory under the [Environment Act 2021](#).

⁴⁴ Page 75: [The Economics of Biodiversity The Dasgupta Review: Abridged Version](#).

- [Nature Positive 2030](#) is a publication by the Joint Nature Conservation Committee, Natural England, Natural Resources Wales, NatureScot and the Northern Ireland Environment Agency. The Report⁴⁵ notes that part of mainstreaming nature recovery involves embedding the value of nature in decision-making in part by:

“Providing regularly updated evidence on the extent and condition of natural capital, enabling impacts to be assessed at the right scale to support decisions by different stakeholders”.

4.2 Scotland

Scotland have adopted a natural capital accounts-based indicator, the [Natural Capital Asset Index](#) (NCAI), as an economic indicator for sustainable development in Scotland’s [National Performance Framework](#). The NCAI is also an economic indicator for Scotland’s [Environment Strategy](#) under the stated outcome “Our thriving, sustainable economy conserves and grows our natural assets”⁴⁶.

The inclusion of marine natural capital in the NCAI is currently being addressed by [Marine Natural Capital Navigators](#) as part of the [Scottish Forum on Natural Capital](#), which was founded in 2013 by the Scottish Wildlife Trust.

Adopting a natural capital approach is also included in the Strategic Delivery Framework of the [Scottish Biodiversity Strategy 2045](#).

Natural capital also features as part of [Scotland's National Strategy for Economic Transformation](#) in response to expected economic shifts in Scotland due to decarbonization expectations.

Recent research commissioned by the Scottish Government ([Natural capital - importance to the Scottish economy](#)) has identified that approximately 14.4% of

⁴⁵ Page 30: [Nature Positive 2030 Summary](#).

⁴⁶ [Environment strategy indicators](#).

Scotland's economy (excluding the non-renewable energy sector) relies on the quality of the country's natural capital assets.

Scotland is included in UK-wide natural capital accounts.

4.3 England

The UK Natural Capital Committee (see Section 4.1) established an annual natural capital report for England. The most recent [State of Natural Capital Report for England 2024](#) was conducted by Natural England.

The Office for National Statistics maintains [England natural capital accounts](#) as part of the UK-wide natural capital accounts and environmental accounts.

In 2022, the [Natural Capital and Ecosystem Assessment Programme \(England\)](#) was published. It is a science and innovation policy with objectives that include the improvement of existing natural capital datasets, the establishment of new data streams and innovation in tools and models associated with natural capital methods.

4.4 Wales

4.4.1 Natural capital accounting in Wales

In Wales, the [Environment and Rural Affairs Monitoring & Modelling Programme](#) (ERAMMP) compiles a range of models, datasets and provisions on behalf of the Welsh Government. These provisions include a number of [reports](#) surrounding natural capital accounting in Wales, including [Welsh National Natural Capital Accounts](#).

Wales is also included in UK-wide natural capital accounts.

4.4.2 Other environmental and well-being approaches

The [Environment \(Wales\) Act 2016](#) legislated for the production of two statutory products as provisions to manage resources in a sustainable way: the [Natural Resources Wales State of Natural Resources Report](#) (SoNARR) and the [Natural Resources Policy](#).

Under the Environment (Wales) Act 2016, the SoNaRR is to be published every five years⁴⁷ and contains environmental, sustainability and well-being indicators which may be used to inform the implementation of the Natural Resources Policy.

The National Resources Policy is to be used within the framework of the [Well-being of Future Generations \(Wales\) Act 2015](#), which contains provisions to promote sustainability for the benefit of future generations.

The SoNaRR does not adopt a natural capital accounting approach, rather it follows the systems approach set out in [UN Environment Programme Global Environment Outlook 6](#) to identify links and dynamic relationships between well-being and natural resources usage. However, the [SoNaRR Interim Report 2024](#) does reference data sourced from UK Natural Capital Accounts as part of its evidence base.

Likewise, the Natural Resources Policy does not explicitly reference natural capital or ecosystems services. But it describes “Benefits derived from Wales’ natural resources”⁴⁸ in a way that closely resembles the definitions of ecosystem services supplied by the MA.

During a consultation on the [Welsh Government Draft Budget 2025-26](#) a response⁴⁹ to the question:

“Are Welsh Government plans to build a greener economy clear and sufficiently ambitious? Do you think there is enough investment being targeted at tackling the climate change and nature emergency? Are there any potential skill gaps that need to be addressed to achieve these plans?”

from [Wales Environment Link](#) noted the following regarding clear language and, in their view, the need for increased spending on the environment:

⁴⁷ [Natural Resources Wales / State of Natural Resources Report \(SoNaRR\) for Wales 2020](#).

⁴⁸ Page 3: [Natural Resources Policy - Full text](#).

⁴⁹ [WGDB25-26659 Wales Environment Link.pdf](#).

“In UK / England-based discussions, ‘natural capital’ is the most used term for the value of nature. In Wales, we might call it preventative spend, or simply tackling the nature crisis fully, but describing nature as a ‘natural capital asset’ can be a helpful way to talk about it in economic circles and to give a sense of its value beyond its intrinsic worth.”

4.5 Republic of Ireland

4.5.1 Natural Capital Ireland

[Natural Capital Ireland](#) (NCI) is a non-profit company and policy working group composed of individuals from public, private, academic, NGO and civil and independent sectors. It is supported by the [National Parks & Wildlife Service](#) under the Government of Ireland’s [Department of Housing, Local Government and Heritage](#) and the [Department of Agriculture, Food and the Marine](#).

The inter-sectoral structure of the NCI has been described by Interreg Europe⁵⁰ as a framework of “good practice” that may be a beneficial template in regions considering adopting natural capital approaches.

Natural Capital Ireland (NCI) was commissioned by the Irish Environmental Network (IEN) to deliver a report on funding nature restoration in Ireland⁵¹. Recommendations of the report include the expansion of natural capital accounting in Ireland and the use of a natural capital approach to highlight the value of natural capital and public green spaces to investors (including incentivizing farmers to provide ecosystem services).

4.5.2 Natural Capital accounts in Ireland

The Environmental Protection Agency (EPA) of Ireland published the [Irish Natural Capital Accounting for Sustainable Environments \(INCASE\)](#) report in 2023 as part of the EPA [Research 2030 Action Plan](#).

⁵⁰ [The 'Natural Capital Ireland' Framework](#).

⁵¹ [Natural Capital Ireland make recommendations for nature restoration funding - An Fóram Uisce](#).

The INCASE report was based on the SEEA accounting framework, which it describes as “a complementary metric to GDP”⁵². Key summary recommendations⁵³ of the report include that:

- Developing and using ecosystem accounting is a national priority and requires investment in expertise and shared nature data infrastructure in Ireland.
- A detailed, high-resolution, regularly updated ecosystem map is required, and ecosystem condition assessment needs further development.
- The relationship between extent and condition of natural capital assets and flows of services and benefits requires more nuanced understanding.
- Ecosystem service assessment needs a standardised approach.
- A centralised data platform is required.

The report also concludes that:

“Not all accounts can or should be monetised – but accounting for the diverse values of nature, including the inspiration it provides, is vital to the wellbeing of our society.”

4.5.3 National Economic and Social Council

[The National Economic and Social Council](#) of Ireland produced the [Natural Capital Accounting: A Guide for Action](#) report for the Government of Ireland to investigate the actions needed to benefit from natural capital accounting in Ireland. The recommendations build on the findings of the INCASE report and include⁵⁴:

- Capacity-building: Identification of actions to enhance Ireland’s work on developing natural capital accounting, building capacity in areas including skills around ecosystem services and spatial mapping, and in

⁵² [EPA-Report-SinglePage-441.pdf](#)

⁵³ [Ibid](#)

⁵⁴ Page ix: [Natural Capital Accounting: A Guide for Action Full Text](#).

using the accounts in national departments, agencies and local authorities.

- Spotlight on Payment for Ecosystems Services (PES) schemes: Examining development of PES schemes aimed at supporting the transition in agriculture and land use and supporting farmers in caring for nature, water, forestry, carbon sequestration and a range of other ecosystem services.
- Support for Integration: Advice on how to integrate natural capital accounting into the wider policy system.

4.5.4 Central Statistics Office

The Central Statistics Office (CSO) of Ireland has adopted the SEEA framework for natural capital accounting⁵⁵ in line with European Union ([Eurostat](#)) legislation on natural capital accounting⁵⁶. It is in the process of compiling natural capital accounts for Ireland. In 2023 the CSO published [Ecosystem Extent Accounts](#) for the period 2000-2018 to track changes across past datasets.

5 Considerations

This Paper has:

- Briefly examined publicly accessible land in Northern Ireland and highlighted its variety in type, area and distribution.
- Identified that the public performs a wide range of recreational activities in these locations with a range of motivations.
- Introduced the popular concept of natural capital and ecosystems services, including key criticisms and resulting arguments and counter-arguments.

⁵⁵ [Information Note on Ecosystem Accounting - Central Statistics Office](#).

⁵⁶ [Regulation - 2024/3024 - EN - EUR-Lex](#).

- Highlighted applications and instances of this concept in Northern Ireland and in other neighbouring jurisdictions (UK-wide, Scotland, England, Wales and Republic of Ireland).

This section provides some potential areas for consideration when approaching valuation of the public estate, in light of the content of this Paper.

1. The Environmental Improvement Plan includes the commitment to adopt a natural capital approach.
 - Members of the committee may wish to clarify what progress has been made and to what extent the approach may be adopted (i.e. Department-wide or for individual decisions).
 - Would the adoption of a natural capital approach by DAERA affect existing policy and statutory requirements in areas such as agriculture practices, for example the Environmental Farming Scheme?
 - Given current well-publicised financial pressures within DAERA around meeting statutory obligations, is a natural capital approach informing decisions and if so how?
 - Are there specific examples DAERA can point to where the approach has led to a specific action or decisions?
2. As noted in the Northern Ireland case studies (section 3.4), natural capital methods can also highlight health, education and wellbeing value of public land assets, in addition to environmental value.
 - Is there inter-Departmental interest in adopting a natural capital approach?
 - Is there a coordinated and consistent approach across Government in relation to natural capital methods?
 - Is there a case for Executive-wide adoption of natural capital methods?
 - Would DAERA be in a position of leadership in this regard? Would the costs of this responsibility be shared?
3. Departments across the Executive are obligated to identify surplus land in the public estate by the [Managing Public Money Northern Ireland \(MPMNI\)](#) policy.

- How would the identification of surplus land be affected if natural capital valuation methods were adopted by DAERA or other Departments?
 - How is this obligation adapted if DAERA adopts natural capital valuation methods and other departments do not?
 - Would Community Asset Transfer policy be impacted by the adoption of natural capital valuation methods?
 - How would the value of public land change (relative to its market value) if it were valued through a natural capital approach?
 - If it increased, would this impact the process of identification of surplus land?
4. The concept of natural capital and ecosystem services can be applied to both public land assets and to private agricultural land assets.
- Do ecosystem services provided by private agricultural land assets imply additional value to the public beyond assumed provisioning services?
 - In this context, to what extent could agricultural land assets be considered 'for the public good'?