

Putting Nature at the Heart of Northern Ireland Decisions

Protecting, Managing and Enhancing Natural Systems



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Putting Nature at the Heart of Decisions

Protecting, Managing and Enhancing Natural Systems

Executive Summary

Natural Systems and Decision-Making

Every decision we make, from developing national policy to choosing what to have for breakfast, has an impact on the natural world. We seldom consider the impacts those decisions have on nature. Ignoring the impacts of decisions has led us to the current situation where climate change, damage to biodiversity and wholesale pollution of land and sea have reached crisis levels. We need a mechanism to help us make decisions that support rather than damage our environment.

All aspects of our lives are underpinned by a thriving natural environment – air, water, food, shelter, health - all require functioning natural systems. Supporting the natural systems which sustain healthy human life must be a top priority for everyone, all the time; it is essential for our survival, prosperity, and well-being; addressing the climate crisis; having a thriving economy; and ensuring we play our part in fulfilling local and international commitments.

Protecting natural systems needs to be recognised as both an underpinning and overarching aim within which all government strategies and policies, financial decisions and practical actions are delivered. Protecting and restoring the damage done to our natural systems contributes to a more efficient, effective, and sustainable society and economy, and to do this we must understand nature's functions, management, value, and benefits.

This document proposes that the concepts of natural capital and ecosystem services should be used as the basis for protecting and enhancing natural systems in order to deliver widespread and multiple benefits for the environment itself, for people and for the economy.

'Valuing' Natural Systems

Our society bases most decisions on financial costs and benefits, and usually considers these only in the short term, which greatly discounts the long-term benefits of, or costs of damage to, nature. It is vital to bring the value of nature into current decision-making, and this requires reforming this general framework.

Putting an economic value on something that is fundamentally of inestimably high value, and irreplaceable, greatly underestimates, and indeed cannot properly value, the benefits of having functioning natural systems.

This approach is not about putting a 'price' on nature, it is about recognising the value, importance and irreplaceability of nature and ensuring that this is incorporated into all decision-making.

Not all impacts can be assigned a financial value, and the cumulative effects of impacts are often impossible to understand, never mind quantify, but this approach makes it possible to recognise our impacts and halt the rapid degradation of all aspects of nature which we contribute to, often unknowingly, in every decision we make.

We need to recognise the value of nature as a 'public good' and assign a value to the costs and benefits that any decision will have on natural systems.

What Natural Systems Do for People

Natural systems underpin our well-being and economic prosperity, providing multiple benefits to society, yet this is consistently undervalued in decision-making. The environment plays a

significant role in human health and well-being, directly and indirectly. Healthy natural services also help communities to be resilient in the face of natural disasters.

A systems-based approach is crucial.

Natural Capital

Natural Capital includes ecosystems; animals, plants, and microbes; bodies of water, landscapes, soil and minerals; the air, land and oceans; as well as the natural systems, processes and functions which connect all of these. Natural capital provides people with a wide range of services, called Ecosystem Services, that make human life possible. Using a natural capital approach provides a means to integrate protecting the natural environment with economic and political decision-making.

The Natural Capital approach can highlight the value of the natural environment that might otherwise go unnoticed, including the results of not protecting it.

Ecosystem Services

The ecosystem services approach helps to make clear the multitude of ways in which human society is dependent upon fully functional natural systems. This approach helps to clarify why and how nature must flourish if it is to continue to support human society and makes it obvious why damaging the ability of natural systems to function is a direct cost and significant problem for people.

All ecosystem services provide direct and indirect benefits to people, many of which have financial aspects. However, these ecosystem services go far beyond financial benefits provided to people; they are the fundamentals underpinning the complexity of life on the planet.

There are negative impacts of poor environmental quality on human health, but there are many benefits of a good environment: the estimated value of urban green spaces to Northern Ireland is over £1.1 billion per annum, the majority of which is attributed to mental and physical health benefits .

[Outdoor Recreation NI](#)

Natural Capital and Related Concepts

Natural Capital, Ecosystem Services, Green and Blue Infrastructure, Green and Blue Networks, Nature Based Solutions, Natural Climate Solutions, and more, are all terms used to ensure that nature and natural processes - from local biodiversity to impacts on water courses to greenhouse gas (GHG) emissions - can be considered and included when decisions are being made. Economic prosperity depends on natural resources, both for supplying materials and services and for absorbing and treating pollution and waste. The central idea of all of these concepts is that without healthy natural systems people cannot survive, and that this is often not understood or included when making decisions.

Economies and natural ecosystems are closely linked. The resilience of an economy depends on the health and function of its society and the environment. It follows that long-term economic prosperity depends on maintaining the integrity and resilience of the natural ecosystems on which it is founded.

Environment and Human Rights

Environmental degradation affects human rights negatively, so nations are legally obligated to prevent those impacts and to protect those engaged in promoting environmental and human rights. The United Nations General Assembly declared in 2022 that everyone on earth has a right to a healthy environment ([ILO, 2022](#)).



Countries throughout the world are recognising that not only is nature fundamental to human rights, but that nature itself also has rights and needs to be protected.

Economics of Nature

Economic Measures

Traditional measurements of economic progress, such as GDP, usually ignore the damage being done to nature and the costs of exploiting or depleting natural resources. Alternative ways to measure economic prosperity that do not rely on constant economic growth (clearly not an approach that is sustainable), such as Doughnut Economics, need to be used to take into account the full value of protecting natural services and the negative impacts of its damage or exploitation.

Public Goods and the Tragedy of the Commons

Nature and the goods and services it provides are 'public goods'; that is goods and services which are not owned and are therefore open to exploitation by anyone. The 'Tragedy of the Commons', where many people have 'free' access to a resource, is one of the most intractable problems when dealing with public goods. It leads directly to over-exploitation and lack of proper management of the 'resource', as the 'user' has a big incentive to use as much of the resource as rapidly as possible in order to gain the benefits and preclude others from benefiting. Because the resource is available to 'anyone', 'no one' takes care of it.

Using the concept of natural capital provides a way to ensure that the public good provided by nature is given a value when decisions are made around activities that deliver primarily private gain.

Polluter Pays Principle and Payment for Ecosystem Services

There are two relatively simple principles which, if fully and comprehensively implemented, can bring about significant changes in how nature is protected; the **Polluter Pays Principle (PPP)** and **Payment for Ecosystem Services (PES)**. The first ensures that if anyone damages nature they must pay for that damage (including full cost recovery and reparation, plus fines), the second pays people to manage their land in ways that protect, enhance, and rejuvenate nature.

Taken together and fully applied, these two mechanisms can help provide the funding and financial structure that will protect natural systems.

However, for this approach to function properly there needs to be strong legislation and regulation which is robustly enforced, standards both reported on and monitored by politicians and the public, and significant financial and legal penalties for non-compliance. Without this rigorous structure the current failures in protecting the environment will continue.

Threats to Natural Systems

People have both direct and indirect impacts on natural systems. Direct impacts such as harvesting particular species for food or products or destroying natural habitat for development or agriculture are obvious. Indirect impacts, such as climate change and its impacts, can be even more serious. It is very difficult for nature to adapt to changes at both the scale and pace currently challenging all areas of the planet.

The theme of: 'more, bigger, better, connected' summarises the needs of nature for protection. Much work has concentrated on the need for management of high nature value sites. However, action must extend beyond designated sites to the wider countryside.



Policy and Strategic Position

International Targets and Goals

Human activities have significantly altered 75% of the Earth's land surface. Of the so-far identified eight million species of plants and animals on the planet, one million are threatened with extinction. Recently the UN has adopted a global goal of protecting 30% of land and sea by 2030 (30X30). Given the current condition of even designated or protected sites, positive management and regeneration is essential if natural systems are to be able to function sustainably.

Delivery on Commitments

Strategies, commitments, and designations are not sufficient, but are a necessary first step to ensure engagement by government and official recognition of the importance of the issue and the need for action. They must be delivered through action plans, full cross-sectoral commitments, and fully funded delivery programmes.

We must also manage our land and oceans in ways which will actually achieve 'Good Conservation Status'. This requires management of designated sites, but also changes in the way the wider countryside is treated. Good governance, enforcement of regulation and clear mechanisms of accountability, publicly and politically, are essential. The quality of water, air and soil is crucial to all biodiversity; clearly these are not impacted by political boundaries or borders on designation maps. Reducing pollution from all sources and of all types – from GHG to plastics to toxic chemicals – is essential if we are to protect our land and sea.

Biodiversity cannot thrive in isolated designated pockets if the wider countryside and the water and air flowing through a site are toxic. An integrated, holistic approach is required to achieve 'protection'.

Approaches on These Islands

Until Brexit, the EU provided the legislative framework for Northern Ireland's environmental regulation, and protecting the environment in the absence of this underpinning set of legal requirements, environmental standards and enforcement role of EU institutions is a major challenge.

Natural capital is an important element of the UK Government's "[A Green Future: Our 25-year plan to improve the environment](#)" released in 2018. These commitments were further developed in the [Environmental Improvement Plan](#) released on 31 January 2023. This document clearly states that the policy refers to the UK as a whole. Wales and Scotland have adopted the approach as well, in slightly varying ways.

Each of these major policies, plus many other strategies and commitments, will help to deliver protection and enhancement for our natural capital. If looked at individually the challenge is enormous; however, the synergies among these policies and the opportunities for delivery of multiple benefits from a strategic approach to the problems mean that a comprehensive programme has the potential to address all of these issues and many more as well.

Northern Ireland

[DAERA's Draft Environment Strategy](#) clearly recognises how important Natural Capital is and the need for a framework for Northern Ireland. Natural Capital is also a key element of Northern Ireland's [Green Growth Strategy](#), a multi-decade strategy which aims to balance Northern Ireland's climate, environment, and economy. Climate change, pollution, the loss of biodiversity and ecosystem integrity will all need to be addressed if the [Northern Ireland Climate Change Act](#) is to be successfully implemented. Natural capital is also a vital component of [Northern Ireland's Draft Biodiversity Strategy](#).



Protecting nature is integral to the ability to address climate change. These two issues, plus the problems of pollution and the need for a more circular economy, are completely intertwined on a global and local level. Addressing these issues in an integrated fashion is both necessary and highly beneficial, with synergies and mutual benefits to be gained. The UK Climate Change Commission report ["Advice report: The path to a Net Zero Northern Ireland"](#) on 2 March 2023 states that:

‘The Northern Ireland Executive must change its policies to meet the Net Zero legal target and interim targets. Until now, the Committee has not seen evidence of policy ambition at this scale in Northern Ireland. There needs to be a change. To achieve decarbonization at the required pace, policies must drive action and outcomes. Estimates indicate that even with radical actions, there is still a gap to the legislatively mandated Net Zero target. Following this report, the Committee will monitor policy implementation progress.’

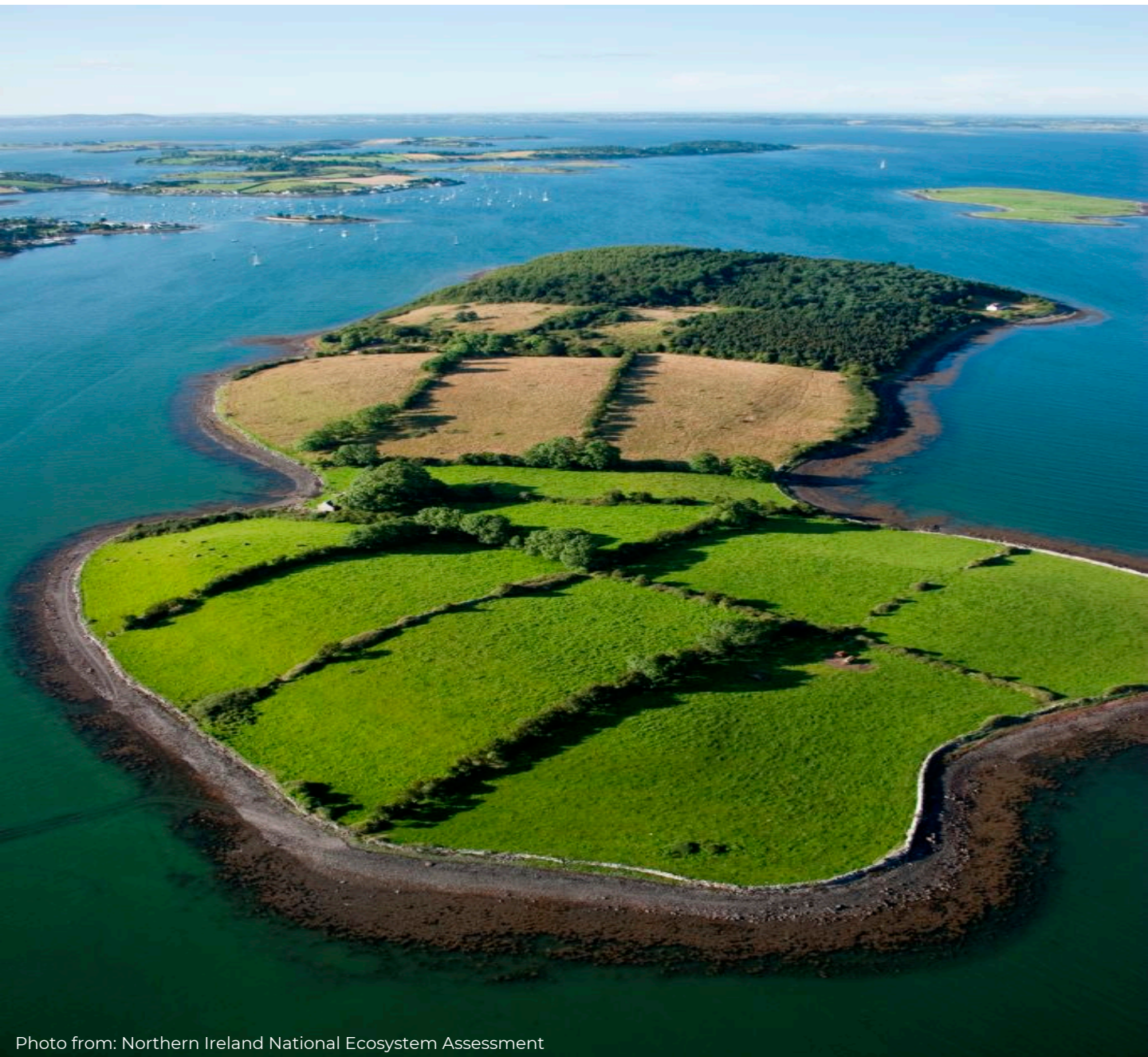


Photo from: Northern Ireland National Ecosystem Assessment

Recommendations for Protecting Northern Ireland's Natural Capital

1. Include protecting Natural Capital as a strategic goal in NI government

NI Government should adopt Protecting Natural Capital as a Strategic Goal in all future legislation and Strategies. The '30 x 30' and 'nature positive' and 'net gain' international and UK goals should be the overarching ambition, but action must go beyond designation to include positive management aimed at maintaining and enhancing both designated sites and the wider countryside (more, bigger, better, connected habitats; Nature Recovery Networks).

2. Framework policy illustrating how Natural Capital links to existing policies and strategies

Devise a new Framework Policy which:

- Recognises the importance of healthy natural systems as a 'public good';
- Strategically guides protection, management and enhancement of the environment across all sectors;
- Supports and contributes to the delivery of relevant existing policies (e.g. Green Growth, Climate Change Act and the Climate Action Plan, Programme for Government) and those in development (Environment Strategy/Environmental Implementation Plan, Biodiversity Strategy, Circular Economy Strategy, etc.);
- Drives improved performance by government in its implementation of its Strategies, Policies, Regulation and Enforcement;
- Includes robust reporting and enforcement mechanisms and
- Ensures a science-driven approach to develop a high-quality common evidence base to underpin all land use decisions.

3. State of Nature Register

Develop and maintain a State of Nature Register (which also underpins the Environmental Improvement Plan 2023); including current state, trends and risks; which must be used across all sectors in all decision-making, policy development and practical action. This would include:

- a baseline data of habitats and ecosystem services, natural assets and their condition (quality and risks);
- designated areas;
- Constraints;
- opportunities and
- beneficiaries.

It must go far beyond designated sites and have wider countryside assessments and actions. It must be frequently updated, monitored and reported on publicly and to the NI Assembly.



4. Multifunctional approach to protecting Natural Capital as a critical public good

Recognise across all Government Policies and Actions that functioning natural systems are a critical public good delivering a range of public benefits. Ensure that protecting, managing and enhancing these systems are:

- A material consideration in all decisions (including planning, infrastructure and agriculture);
- A major goal in all policy, financial support packages and legal/financial enforcement and penalties;
- Recognised as a key contributor to public health, well-being, recreation, culture and heritage;
- Essential to a resilient Northern Ireland;
- Vital for businesses, innovation and industries;
- Fully recognise market and non-market benefits of land uses;
- And that adopting this approach will require new investment, infrastructure and training to enable land managers to deliver on these goals.

5. Action Plan to embed the Natural Capital Approach

Prepare a detailed, '**SMART**' action plan to guide and monitor progress on protecting natural systems across all sectors, for all habitats and including air, water, soil and carbon. This plan must include;

- Detailed targets for meeting the '30 x 30' goal;
- A Nature Positive /Biodiversity Net Gain commitment embedded across sectors and in all public expenditure and procurement practices;
- A Nature Investment Plan;
- Public reporting on progress against these targets annually, monitored by the NI Executive.

6. Capacity building and promotion programme

Implement a programme to improve knowledge and understanding at all levels across all sectors of the importance of natural capital to involve;

- Adopting a partnership approach, including roles in delivering the targets and policies protecting, managing and enhancing natural systems;
- Ensuring that capacity, understanding and skills are developed across government (central and local) including all contractors, and all key sectors (business, community, individuals) to guide evidence-based decision-making as part of green book guidance on biodiversity and natural systems when appraising policy and project proposals.

Delivery Plan – For delivery over the next 6 – 12 months

Main Goal	Actions 2023	Specifically
1. Include Protecting Natural Capital as a Strategic Goal in NI Government	Review existing and developing strategies and policies and identify specific points for including goals to protect natural systems	Green Growth Strategy Programme for Government Climate Action Plan Circular Economy Strategy Environment Strategy Biodiversity Strategy. Identify a mechanism to progress this in the current political situation.
2. Framework Policy Illustrating how Natural Capital Links to Existing Policies and Strategies	Develop a policy framework document which integrates other policies and strategies to deliver an improved approach to protecting natural capital	Short, clear document which establishes the connections and makes apparent why natural systems are essential to delivery of all other government policy commitments (refer to Natural Capital for Gov doc) -a very targeted NI version.
3. State of Nature Register (SoN)	Compile set of indicators and measurements (using currently collected data where possible/useful) that will be the basis for a comprehensive database, map and report which is consulted for all planning decisions. Including maps, condition, habitats, benefits delivered, potential/capacity map, risks, etc.	Draft set of indicators based on what is already available (NIEA, but also NGOs), propose mechanism for updating, reporting, monitoring, etc. Identify any gaps in current reporting and recommend methods to address.
4. Multifunctional Approach to Protecting Natural Capital as a Critical Public Good	Identify and investigate all the areas (above and more) where the approach will help deliver on those programmes and ensure the cross-referencing needed for the multifaceted approach to deliver all of these areas.	Research report, identifying the areas, but also the most evocative arguments to get their engagement. Include the costs of not acting (legislative, financial, public health, damage to natural systems).
5. Action Plan to Embed the Natural Capital Approach	Develop a detailed, SMART Action Plan	Major participative approach involving all sectors to develop an Action Plan. This should integrate with the Biodiversity Strategy Action Plan but should be ready sooner.
6. Capacity Building and Promotion Programme	Change attitudes and behaviour to nature	Review what is already happening and identify what needs to be done to improve delivery and resulting behaviour change from all sectors (landowners, civil servants, school children, consumers, communities, etc.)

Putting Nature at the Heart of Decisions

Protecting, Managing and Enhancing Natural Systems

Natural Systems and Decision-Making

Every decision we make, from developing national policy to choosing what to have for breakfast, has an impact on the natural world. Every person makes hundreds of decisions daily, and over 8 billion people are making those decisions every day.

We seldom consider the impacts of those decisions on nature, and it is important to have a mechanism to help us make decisions that support rather than damage our environment. Ignoring the impacts of decisions has led us to the current situation where climate change, damage to biodiversity and wholesale pollution of land and sea have reached crisis levels. We are facing the 6th great extinction, not because of a comet or geological processes, but because of the actions of just a single species – Humanity.

Every aspect of our lives is underpinned by a thriving natural environment – air, water, food, shelter, health - all require functioning natural systems. Supporting the natural systems which sustain healthy human life must be a top priority for everyone, all of the time. It is essential for our survival, prosperity, and well-being; addressing the climate crisis; having a thriving economy; and ensuring we play our part in fulfilling local and international commitments.

Damage to natural systems locally and globally is continuing to accelerate. Despite international treaties and common recognition of the severity of the crises, economic development continues to harvest, degrade, and destroy natural assets and systems. It is clear that nature conservation and regeneration of damaged habitats are a critical aspect of sustainable development ([Global Sustainable Development Goals, UN 2015](#)); people cannot thrive for long if the nature they depend upon is damaged. Increasing pressures from climate change, biodiversity loss, pollution and resource depletion threaten the ecosystems that support our societies and economies. As a result, nations, communities, economies, and businesses face severe and immediate risks from storms, fires, floods, droughts, and loss of resilience. Recognizing and incorporating the value and services provided by nature and realizing the huge costs resulting from ignoring our impacts on the natural world, are at the heart of international agreements and are changing our world view ([UN Biodiversity Conference](#)).

Protecting natural systems needs to be recognised as both an underpinning and overarching aim within which all government strategies and policies, financial decisions and practical actions are delivered. Unfortunately, to date the needs of nature have been accorded a very low priority among other political, economic, and social issues.

Protecting the natural systems that support us, including considering the impacts on nature of every decision, must be prioritised. The benefits that will result from this approach are many; for nature, for our society and for the economy. Delaying action will only make the damage which must be overcome even greater, and the cost of remedying it much higher. Avoiding damage is always cheaper and easier than cleaning up later. Adopting an integrated and coordinated approach to the multiple challenges facing us all is the solution, and one which will bring multiple benefits and minimise the costs monetarily, for health, and in impacts on nature.

Protecting and restoring the damage done to our natural systems contributes to a more efficient, effective, and sustainable society and economy, but we must understand nature's functions, management, value, and benefits. The natural systems on which our society and economy rely provide us with untold benefits every day. In some cases, they are direct and immediately noticeable; in others, they are indirect and only apparent when they are absent. It is vital to have a way to include these impacts within all decisions, from government policies to consumer choices.

This paper discusses why natural systems are so important, the background to using the natural capital approach to ensure their protection, and how it can deliver multiple benefits and support the implementation of policies and strategies across all levels of government and society. The problems are obvious and systemic; the solutions must adopt a systems-based approach.

Natural capital and ecosystem services provide a way to protect and enhance natural systems to deliver widespread and multiple benefits for the environment, for people and for the economy.

'Valuing' Natural Systems

Our society bases most decisions on financial costs and benefits, and usually considers these only in the short term, which greatly discounts the long-term benefits of, or costs of damage to, nature. It is vital to bring the value of nature into current decision-making, and this requires reforming this general framework.

Putting an economic value on something that is fundamentally of inestimably high value, and irreplaceable, greatly underestimates, and indeed cannot properly value, the benefits of having functioning natural systems.



We cannot exist without nature, but the lack of an ability to quantify how much we depend upon natural systems has generally led to the 'value' of nature being set at zero in standard cost-benefit analyses. Any new development will be assessed on a number of costs and benefits; the value of natural environment lost by undertaking that development is not easily quantified, so is often simply ignored. This leads to a significant underestimate of the actual societal and environmental cost of the development. Introducing the concept of Natural Capital, where a financial cost is put on the loss of the benefits provided by natural systems, helps to partially address this problem.

In order to bring nature into decision-making we need to recognise the value of nature as a 'public good' and assign a financial value to the costs and benefits that any decision will have on natural systems. Not all impacts can be assigned a financial value, and the cumulative effects of impacts are often impossible to understand, never mind quantify, but this approach at least gives us a chance to recognise the impacts of our decisions and halt the rapid degradation of all aspects of nature which we contribute to, often unknowingly, in every decision we make.

This approach is not about putting a 'price' on nature, it is about recognising the value, importance and irreplaceability of nature and ensuring that this is incorporated into all decision-making.

By putting a realistic economic value on protecting nature we can better understand **WHY** we need to incorporate environmental impacts into all decisions, and will enable us to make relevant arguments to politicians, businesses, and communities for why we should, indeed must, invest in protecting nature. The natural environment is not 'out there' and 'someplace nice to visit', it's about our very survival - air, water, food, health, and wellbeing. The benefits of nature are often ignored simply because the environment is a 'public good' (see below).

There has been a recent significant evolution in the law in recognition of nature's inherent rights to exist, thrive, and evolve. As a result of this changing legal approach, countries throughout the world are recognising that traditional environmental regulatory systems usually see nature as property to be used for human benefit, rather than a partner with rights with which humanity has co-evolved ([United Nations Harmony with Nature](#)). The below provides some information from G7 countries, and a comprehensive list of countries and policies is available [on the UN website](#).

"By recognizing our shared existence on this planet, Rights of Nature creates guidance for actions that respect our fundamental, non-anthropocentric relationship with Nature".

([United Nations Harmony with Nature](#))



The NGO [Pender Ocean Defenders](#), in partnership with Earth Law Center, proposed a declaration on the Rights of the Southern Killer Whale (SRKW), calling upon Pender Island Trustees to enact a resolution supporting the inherent rights of the SRKW.



The University of Toulon, in support and partnership with the [UN Harmony with Nature Programme](#), launched the International Proclamation of the "Charter on the Law of the Living". The objective of the Charter is to inspire reforms and incorporate the legal personhood of animals into legal systems worldwide.



The [Conference Kairos for Creation](#) - Confessing Hope for the Earth - The Wuppertal Call, ahead of the forthcoming 11th Assembly of the WCC in 2021, among the recommendations adopted is to declare a "Decade for the Healing of Creation" and among the goals is "To promote UN processes to create a legal framework for a binding "Universal Charter of the Rights of Mother Earth", an Earth International Jurisprudence System, to explore the possibilities of a UN Council for the Rights of Nature as well as the recognition of ecocide as a criminal offence in the International Court of Justice.



After having been the first Italian city to officially declare a "Climate Emergency" earlier that same year, the [city of Acri](#) issued a deliberation to morally support the city of Toledo (Ohio, USA) in their effort to adopt the "Lake Erie Bill of Rights". The same act also acknowledged the need for an "environmental revolution" which entails the conscious participation of every single citizen.

The Town Council of Civita Castellana became the first in Europe to declare their municipality a [Nature's Rights Zone](#).



The town council of [Frome](#) has drafted a by-law for the Rights of River Frome, to protect the river, its tributaries and Rodden Meadow for the benefit of present and future generations. In 2019, having secured final council approvals, Frome is awaiting central government response.

The Green Party of England and Wales adopted a Rights of Nature policy platform. See [Responsibilities and Rights](#) 406 and 1000-1006.



The Democratic National Committee Council on [Environment and Climate Crisis](#), in its Environmental and Climate Policy Recommendations for the 2020 Democratic Party Platform, regarding Biodiversity and Nature, calls to "Establish a commission similar to the President's Council on Sustainable Development, to explore incorporating Rights of Nature principles into U.S. law".

Various counties try to advance a ballot vote on river rights during the November 2020 presidential election. A committee in Orange County aims at granting rights to the [Wekiva River and Econlockhatchee River](#). Petitioners in Alachua County attempt to pass the Santa Fe Bill of Rights. Citizens of Lee County strive to adopt the Caloosahatchee Bill of Rights. All drafts include the "rights to naturally exist, flourish, regenerate, evolve, rehydrate and restoration".

The [Florida Democratic Party](#) adopted rights of nature into its platform.

Natural Systems

Natural systems underpin our well-being and economic prosperity, providing multiple benefits to society, yet this is consistently undervalued in decision-making. The environment plays a significant role in human health and well-being, directly and indirectly. Healthy natural services can also help communities cope with natural disasters like fire, floods, and storms. Failure to ensure that ecosystem service flows are safeguarded, and regenerated where they have been negatively impacted, will damage the well-being of communities. Ecological sustainability and social fairness need to be considered along with traditional economic aspects in valuing natural capital and ecological services. Throughout history, economic development has been prioritised over the health of our natural environment, resulting in degraded natural assets, and negatively impacting on society now and in the future. As a society, we have an inescapable responsibility to preserve and protect our natural capital for future generations unimpaired by unsustainable economic growth by some while the results of that impact negatively on others. This was one of the major aspects of discussion at recent COP summits ([COP15](#)), and ties directly into environmental justice and equity across countries and society.

Natural systems are vital to provide resilience in the face of change or challenge. This is particularly important for the climate crisis, with a variety of impacts on everyone, everywhere. Natural systems can provide a buffer to ameliorate the impacts and can help shield people and their infrastructure from extremes and unpredictability of weather (floods, fire, drought, storms, etc.) and other adversities. Woodlands, peatlands, and healthy soils can hold back water to ease flooding, store water to alleviate droughts, act as a buffer to ameliorate storm damage, and help to purify air.

The importance of a *systems*-based approach is widely recognised, and the World Resources Institute has set up the 'Systems Change Lab' which monitors, learns from, and mobilizes actions to work towards the transformational shifts needed to protect both people and the planet. It has identified over 70 shifts needed, and proposed mechanisms for measurement with targets, and identified enablers and barriers ([Systems Change Lab](#)).

Looking at natural capital helps to make clear the degree to which people depend on natural systems for their prosperity, and indeed their existence. Using a natural capital approach integrates natural resource analysis with economic analysis, providing a more comprehensive view of development than standard measures such as Gross Domestic Product (GDP). It allows natural assets to be integrated into economic and political decision-making, thereby improving natural resource governance and serving as a complement to GDP ([McGrath and Hynes, 2020](#)). Data on natural resources and their impact on the economy are included in natural capital accounts, and reporting on natural capital 'accounts' should be a part of economic analysis at company and country levels.

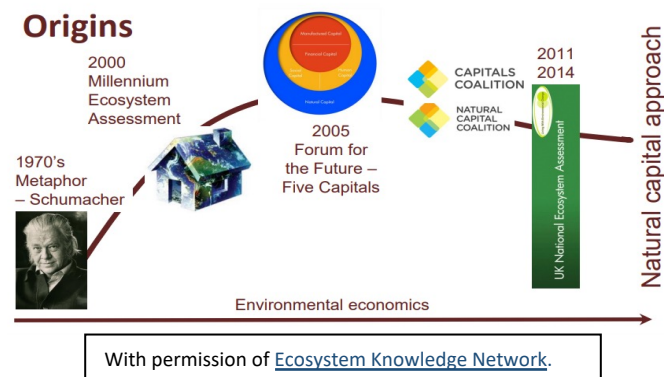
Natural Capital has become increasingly recognised as a key concept and mechanism for protecting natural systems (see below, ***Approaches on these Islands*** section). It refers to the elements of nature that directly or indirectly produce value or benefits to people. It includes ecosystems; animals, plants, and microbes; bodies of water; landscapes; soil and minerals; the air; land and oceans; as well as the natural systems, processes and functions which connect all of these. Natural capital provides people with a wide range of services, called Ecosystem Services, that make human life possible. It has a long history (figure 2) but has also been criticized for not recognising the inherent value of nature in and of itself, and for putting an artificial (and inadequate) monetary value on the environment.

Development of the Concept

The concept of natural capital was first introduced by E. F. Schumacher in *Small Is Beautiful* in 1973. In recent years the concept has gained popularity in business circles as a means of thinking about environmental governance. As the concept evolved over the past four decades, there has been a gradual acceptance in all sectors. The UK government has adopted the concept; when UK Environment Minister Caroline Spelman released the report [The Natural Choice: Securing the Value of Nature](#) in 2011, she stated:

"...if we withdraw something from Mother Nature's Bank, we've got to put something back to ensure that the environment has a healthy balance and a secure future" (2011)."

Figure 1. Origins and Use of the term Natural Capital



A Millennium Ecosystem Assessment (MA) was called for by Kofi Annan, UN Secretary General, in 2000. It was initiated in 2001 with the objective of assessing the consequences of ecosystem change for human well-being and developing the scientific basis for actions to protect and sustain these systems ([Millennium Assessment](#)). In 2012, the UK established a Natural Capital Committee, and economists began formulating a value for 'natural capital' in Britain's GDP calculations ([Boenhert, 2013](#)).

In Northern Ireland, pioneering work on natural capital began as part of the work on the UK National Ecosystem Assessment which NIEL began in 2007 and was published in 2011 (UK National Ecosystem Assessment, Technical Report, Chapter 18 Northern Ireland) which had Natural Capital and Ecosystem Services as central concepts.

Natural capital has been used internationally (COP15) and incorporated in UK, English, Scottish, Northern Irish and Irish policies and strategies (see below section on **Approaches on These Islands**). Natural capital is now generally recognised as a useful approach globally, including across the UK and Ireland, in the public, voluntary and private sectors.

Human well-being and sustainable economic growth are threatened as natural capital is lost. A nation must account for its natural capital as a measure of wealth. Without measurement it is impossible to properly manage any resource, and better decisions are made when we measure and value the environment. Natural capital accounting has existed for more than 30 years and was solidified by the [UN Statistical Commission of the System for Environmental and Economic Accounts \(SEEA\)](#) in 2012.

Accounting for natural capital helps to reveal the value of the natural environment that might otherwise go unnoticed. A new and holistic view of a country's comprehensive national wealth is proposed by the World Bank, which can determine whether GDP growth is sustainable. According to the World Bank, development involves managing various assets, including manufactured, human, and natural capital and recognises that investment in preserving and maintaining natural capital is necessary to ensure its

regeneration. Supporting such regeneration will achieve economic, social, and environmental benefits. Investments in restoring and preserving natural capital have proven to yield significant improvements at the national level ([McGrath and Hynes, 2020](#)).

Valuing Natural Capital

Natural capital refers to the 'stock' of nature, while Ecosystem Services refers to the 'flow' of materials and energy. A key distinction in accounting systems is the difference between stocks and flows, which reflects the distinction between assets and services in the natural capital framework. Stocks refer to the extent, condition, and wealth of an asset at a specific point in time or at the end of an accounting period. The flow is the supply of services provided by an asset and used or experienced within an accounting period, usually a year. Both are vital if natural systems are to thrive and deliver benefits for people. Both structures and functions need to be maintained, managed, and in many (probably most) cases, also repaired, regenerated, or revitalized.

The natural environment provides us with essential services and products that are often taken for granted, but many people question whether an actual value can be placed on this. [According to World Economic Forum](#), natural resources contribute to more than half of the global GDP. Natural capital is vital for global economies, and the [Worldwide Fund for Nature](#), estimates the price tag for ignoring global natural capital at a staggering \$10 trillion annually by 2050. It is estimated that the UK, including overseas territories, will lose \$21 billion a year as a result of increased flooding and erosion caused by decreased coral reefs and mangroves that protect the coasts, including widespread and untargeted land-use change, continued increase in emissions of greenhouse gases, and further loss of natural habitats. Risks arise when nations fail to understand how economies are woven into the fabric of nature. Taking natural capital into account enables nations to account for the role natural systems play in the economy and human well-being.

A feature of natural capital is that it is non-substitutable, meaning that it contributes to human welfare in a way that cannot be replaced by other types of capital (or only at great cost; pollination of food crops is carried out by insects, but if they are not present the cost of using people to perform this function is immense). A physically and mentally healthy population is critical to a flourishing human capital, and a healthy environment is essential for human health. Therefore, protecting and valuing natural capital is vital to supporting human capital.

Aspects of natural capital may be costed or monetized by reference to the effects resulting if it is not protected. Water is a clear example. Water is naturally purified in upland peatlands and woodlands before being collected in

reservoirs for final treatment and distribution to homes and businesses. If the water is polluted or dirty, the costs of treatment escalate greatly; if the water is not stored in the natural habitats it can lead to floods or droughts; water standards are mandated, and failure to meet them results in fines and reparation costs; and damage to the natural habitat has huge impacts on amenity, recreation, and tourism. A recent report, [Troubled Waters](#), prepared by a coalition of NGOs in the UK, provides a strong statement of the extent, importance, and threats to our water resources, and makes important recommendations to improve their quality. According to the report, we are at risk of losing our freshwater habitats, including rivers, lakes, ponds, streams, and wetlands, as well as the wildlife that depends on them. A key objective of the study is to highlight how UK citizens value and perceive water, as well as to examine the systemic threats that threaten it and how poor water quality can be improved.

An approach that considers the importance of the natural environment to people and the economy should play a central role in making decisions and shaping policies. In natural capital accounting, information on natural capital and its services is recorded in a systematic, standardized, and repeatable way, regardless of whether those services are marketable. As a result, accounts can provide a coherent body of physical and monetary information about natural assets within a given region, as well as information about the services the assets provide. It can be done nationally, regionally, locally, or organisationally.

In 2016, with 40% of its wealth purely identified as natural resources, Zambia made environmental sustainability one of its top priorities, recognizing Natural Capital Accounting as an essential tool for success (World Bank). Gabon has become a global example when they proposed to protect 30% of their terrestrial, freshwater and marine habitats, stating that: "We are convinced that investment in biodiversity conservation and natural capital is critical for human wellbeing" – Lee White, Gabon's Minister of Water, Forests, the Sea and Environment (Nature.org). The success of the approach is still to be determined.

Using the concepts of 'natural' and 'social' capital are helpful in making natural systems and human welfare visible and incorporated in economic decision making. Of course, it is vital that there is good policy, governance, monitoring and reporting, and honesty. If not done with care, attention and in consultation with unbiased experts, poor decisions can result in damage to the resource that needs to be protected, or unintended consequences on other important resources or services.

Figure 2. Benefits of Natural Capital Approach according to United Nations.

Benefits of Natural Capital Approach:



Practical Benefits:

- ✓ New Jobs and Livelihood
- ✓ Poverty Reduction
- ✓ Improving People's Well-being
- ✓ Reduced Pressure on Public Health Systems
- ✓ Better Information to Manage Competing Economic Demands
- ✓ Delivering Multiple National and Global Policy Goals
- ✓ Increased Ecological Resilience
- ✓ More Resilient Business and Financial Markets
- ✓ Innovation and Investment

Source: [Natural Capital for Governments: Why, What and How?](#)

Ecosystem Services

The ecosystem services approach helps to make clear the multitude of ways in which human society is dependent upon fully functional natural systems. This approach helps to clarify why and how nature must flourish if it is to continue to support human society and makes it obvious why damaging the ability of natural systems to function is a direct cost and significant problem for people.

Ecosystem services fall into four main categories:

Provisioning: the products obtained from ecosystems such as food, fibre, and fresh water.

Regulating: the benefits obtained from ecosystem processes such as pollination and control of the climate and purification of water.

Cultural: the non-material benefits obtained from ecosystems; for example, through spiritual or religious enrichment, cultural heritage, recreation and tourism or other aesthetic experience.

Supporting: ecosystem functions that are necessary for the production of all other ecosystem services, including biodiversity, soil formation and the cycling of nutrients and water.

The most obvious and easily quantified ecosystem services include the food we eat, the water we drink, the fresh air we breathe, and the plant materials we use for fuel, building materials and medicines. There are also many less visible ecosystem services such as the climate regulation and natural flood defences provided by forests; flood management and water purification delivered by wetlands; carbon sequestration and storage in peatlands, plants, and soils; and the pollination of crops by insects and other animals. Less tangible benefits include the leisure, recreational, tourism, cultural, aesthetic and health and wellbeing benefits of nature. But all of this is only possible in the presence of the Supporting Services – thriving biodiversity; healthy and non-polluted soils, water, and air; nutrient and water cycling; and production of oxygen.



Figure 3. Examples of ecosystem services provided by a small region in Northern Ireland.

All ecosystem services provide direct and indirect benefits to people, many of which have financial aspects. However, these ecosystem services go far beyond financial benefits provided to people; they are the fundamentals underpinning the complexity of life on the planet. Policy makers are only now fully realizing the negative impacts that climate change and biodiversity loss are having on the ability of the natural environment to support our way of life.

Food production is one major aspect of Provisioning Services which has a huge impact on all other ecosystem services. Agriculture is essential to feed and clothe people, but it has major impacts, direct and indirect, on almost all other habitats. The intensification of agricultural practices in recent decades has resulted in damage to soil and landscape; pollution caused to air, water, and soil; loss of biodiversity; use of fossil fuels for energy and depletion of other non-renewable resources. This is especially obvious in Northern Ireland where such a large proportion of both land and the economy is devoted to agriculture and food processing. A

new approach to agriculture is needed, where what we grow, how we grow it and how we can modify land management to support rather than damage nature all work together to enhance rather than damage natural systems (see section below on Realising Benefits).

Environment and Human Health

According to [World Health Organisation](#), health is already being negatively affected by climate change in a variety of ways, including through the occurrence of extreme weather events; heatwaves, storms, droughts and floods; disruption of food systems; an increase in communicable diseases; foodborne diseases; and mental health issues.

In 2013, Ella Adoo-Kissi-Debrah passed away in Lewisham, south-east of London. Air pollution was listed as the cause of death on Ella's death certificate for the first time in the UK.

A study published by the World Health Organization found that air pollution causes between 28,000 and 36,000 thousand premature deaths each year in the U.K alone, and 7 million worldwide.

WHO guidelines state that PM2.5 concentrations should be kept below 10 micrograms per cubic meter (g/m3) in order to prevent increased mortality. According to European Union (EU) recommendations, the UK limit is 25 grams per square meter on average every year. As part of the Environment Bill, which is currently being debated in Parliament, a new target for air pollution must be set before 2022 ([BBC](#)).

Humanity is facing the great threats to health due to the impacts of climate change. It is very likely that the climate crisis will undo the progress that has been made in the areas of development, global health, and poverty reduction over the past 50 years, and will further widen existing health disparities among and within countries and populations. By exacerbating barriers to accessing health services and by compounding the existing burden of disease, it severely jeopardizes achieving universal health coverage. It is expected that climate change will cause approximately 250,000 additional deaths from malnutrition, malaria, diarrhoea, and heat stress between 2030 and 2050. According to World Health Organisation, the direct costs to health by 2030 will be between US\$ 2-4 billion, and this excludes costs in health-determining sectors such as agriculture and water. The cost of these health issues is borne by society but is an indirect and often unintended result of individual actions and choices, a classic example of the Tragedy of the Commons and a clear case where human health and well-being are directly related to the quality of natural systems ([World Health Organisation](#)).

In contrast to the negative impacts of poor environmental quality on human health are the many and varied benefits to human health and well-being of a thriving natural environment. There is a wealth of robust academic and popular literature on the recreational, social and health benefits of engaging with nature from around the world. Recent research (not yet published) by ORNI and the National Trust NI has quantified the benefits to health and finances of the ecosystem services delivered on Divis and Black Mountain in Belfast. NIEL, in partnership with Ulster Wildlife and National Trust, has carried out two studies supported by DAERA to examine the benefits of natural capital in Northern Ireland. The NIEL and Ulster Wildlife Urban Study Report states that the benefits are approximately 50-80 times the maintenance costs for two sites assessed (Minnowburn and Bog Meadows). The natural capital approach is useful to highlight these values which may otherwise remain hidden. For the natural environment to be able to contribute to public health, well-being, tourism and recreation it must be adequately protected and managed.

There is much recent work investigating the health benefits of nature, some of which are listed below.

Work continues on the development of the UK recreation natural capital ecosystem service accounts, including specific methods used to estimate the health benefits gained from nature-based recreational activities. [Health benefits from recreation for UK Natural Capital assessment, Office of National Statistics, 2022](#)

“Evidence shows that living in a greener environment can promote and protect good health, and aid in recovery from illness and help with managing poor health. People who have greater exposure to greenspace have a range of more favourable physiological outcomes. Greener environments are also associated with better mental health and wellbeing outcomes including reduced levels of depression, anxiety, and fatigue, and enhanced quality of life for both children and adults. Greenspace can help to bind communities together, reduce loneliness, and mitigate the negative effects of air pollution, excessive noise, heat and flooding.” [Improving access to greenspace: A new review for 2020, Public Health England.](#)

The Space to Thrive is report was conducted by researchers from Sheffield Hallam University and The University of Sheffield and was produced by The National Lottery Community Fund. The study is based on review of 385 papers published within the last ten years. Each has been through a process of academic peer review. The study focused on issues such as health, well-being and social integration of Natural Capital. [Space to thrive](#)

“If the value generated by outdoor sport was better understood, this could stimulate investment in delivering

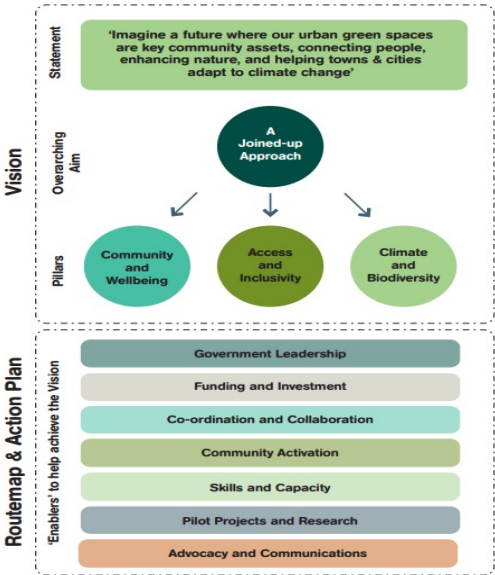
preventative Health Enhancing Physical Activity (HEPA) in nature, rather than adopting traditional method focusing investment on curative approach”. [Benefits of Outdoor Sports for Society, Erasmus and Programme of the European Union, 2017](#)

“Green spaces can play a vital role in the health of the nation. Access to a park or green space can have wide-ranging benefits for our health and wellbeing. A safe, natural environment can be a break from our busy lives – a place to get some fresh air, to exercise or play – a place to go and relax”. [Great Outdoors: How Our Natural Health Service Uses Green Space to Improve Wellbeing: Briefing Statement, Faculty of Public Health and Natural England, 2010](#)

A preliminary study presented at the American Academy of Neurology’s 75th Annual Meeting suggested people living within half a mile of “green” or “blue” spaces had a 17% lower risk of experiencing serious psychological distress compared with those living further away. [AOL: Living Close to Parks or Water sources ‘may reduce risk of mental health issues’.](#)

Supported by the National Lottery Heritage Fund and Future Parks Accelerator Team, NI Environment Link and National Trust are currently collaborating on a project to understand the multiple public benefits of urban green spaces in Northern Ireland and how to maximize those benefits in the future. The project is overseen by NIEL with a wide stakeholder group. Early and still developing figures estimate a baseline of the value of urban green spaces to NI of over £1.1 billion per annum, the majority of which is attributed to mental and physical health benefits. Each of the sites studied also showed a significant contribution in terms of other services, from flood alleviation to recreation and tourism.

Figure 4. Urban Green Spaces Action Plan



Source: [Health benefits from recreation for UK Natural Capital assessment, Office of National Statistics, 2022](#)

Natural Capital and Related Concepts

Natural Capital, Ecosystem Services, Green and Blue Infrastructure, Green and Blue Networks, Nature Based Solutions, Natural Climate Solutions, and more, are all terms used to ensure that nature and natural processes - from local biodiversity to impacts on water courses to greenhouse gas (GHG) emissions - can be considered and included when decisions are being made. Fully quantifying the impacts is difficult, and likely impossible due to incomplete knowledge, but knowing that there IS an impact, and an estimate of the relative level of that impact, must be included in any assessment, and efforts to mitigate that impact are required.

Definitions for these concepts vary, but all refer, explicitly or implicitly, to the value that is provided by nature and natural processes to people. This approach has been

criticised for being ‘human centric’. Clearly this is true, but as long as we recognise that nature has intrinsic value far beyond what it does for people, and that this intrinsic value is incalculable and large, the idea of looking at human benefits as indicative of this larger value is useful.

The central idea of all of these concepts is that without healthy natural systems people cannot survive, and that this is often not understood or included when making decisions. Too often, people feel they are ‘above’ nature and can ‘do what they want’ without consequences. It is becoming increasingly apparent that this is not the case; we have ignored our impacts for far too long, and the problems have been building to crisis proportions all over the world. We are beyond just protecting nature, we must also make strenuous efforts to restore and rehabilitate to help nature recover.

Figure 5. A selection of terms used relating to nature’s goods and services. There is much overlap, and different terms are used for specific circumstances, purposes or audiences. All demonstrate the value of natural systems and the services they deliver.

Concept	Definition
Natural Capital	refers to the stock of renewable and non-renewable resources (e.g. plants, animals, air, water, soils, minerals) that combine to yield a flow of benefits to people. (UN SEEA)
Natural Assets	Assets of the natural environment. These consists of biological assets (produced or wild), land and water; with their ecosystems, subsoil assets and air. (UN SEEA)
Natural Capital Accounting	is a tool to measure the changes in the stock of natural capital at a variety of scales and to integrate the value of ecosystem services into accounting and reporting systems at international and national level. (European Commission)
Ecosystem Services	are the contributions of ecosystems to benefits used in economic and other human activity.” (UN SEEA)
Green Networks	offer ways to enjoy the outdoors close to home and provide safe and quiet off-road access to all sorts of urban greenspace – and to other local amenities and the wider countryside. (Nature Scot)
Green and Blue Infrastructure	is a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services such as water purification, air quality, space for recreation and climate mitigation and adaptation. This network of green (land) and blue (water) spaces can improve environmental conditions and therefore citizens' health and quality of life. It also supports a green economy, creates job opportunities and enhances biodiversity. (European Commission)
Nature-based Solutions	are an ecological approach to climate change action that are also designed to enhance the resilience of natural and managed ecosystems and human settlements. (UN)
Natural Climate Solutions	(NCS) are actions that avoid greenhouse gas emissions and increase carbon storage in forests, grassland and wetlands. Well-known examples include forest conservation, restoration and management. Restoration not only returns forests to a healthy state, but also increases the amount of carbon sequestered, improves biodiversity and the quality of soil and water in the ecosystem, and provides economic benefits for communities that depend on that forest. (World Economic Forum)

There is a very big difference between ‘valuing nature’ and ‘putting a price on nature’. Estimating the financial worth of something is only one aspect of ‘valuing’ it, which also includes its importance, worth, merit, usefulness (n) or esteem, appreciate, cherish, treasure, precious, etc. (v). These two aspects of ‘value’ (fiscal and worth) are often confused or simply ignored in arguments about ‘valuing nature’. It is not putting a ‘tradable value’ on a natural site, although at times this may be necessary and where it is, great care must be taken to assign a full price (e.g. in planning gain). In addition, there are technical differences in the concepts of valuing nature and natural capital, although they are often confused or conflated ([Anglia Ruskin University](#)), yet another aspect of the confusion around terminology for an essentially simple concept.

The challenges of creating jobs, economic prosperity, and innovation while protecting the environment have long been considered insurmountable and have led to the false ‘jobs vs nature’ argument, an argument where nature almost always loses out. It is clear that sustainable resource use is essential for long-term economic prosperity and security ([Maes and Jacobs, 2017](#)). Economies and ecosystems are closely linked. The resilience of an economy depends on the health and function of its society and environment.

Globally, there are increasing demands on land to feed and house a growing and increasingly wealthy population, sequester carbon to mitigate climate change, restore biodiversity, and improve resilience in the face of extreme weather and global shocks such as pandemics and war. Successfully navigating these intersecting challenges will require science and innovation to increase the sustainable productivity of land for the multiple outputs society wants and needs, including those that have market value (such as agricultural produce) and those with no or partial market value (such as biodiversity).

Land is a finite resource and we need to research new ways to use it more efficiently, as well as to apply existing knowledge more effectively. The demands we place on the land are many, complex and interacting and policymakers need the best scientific evidence and analytical tools to help them navigate the difficult decisions they face.

Source: [Royal Society](#)

Economic prosperity depends on natural resources, both for supplying materials and services and for absorbing pollution and waste. It follows that long-term economic prosperity depends on maintaining the integrity and resilience of the natural ecosystems on which it is founded. According to [Gomez-Baggethun and De Groot \(2010\)](#), the neglect of this aspect of economic theory has led to the current environmental problems and ecological crises. The influential [Dasgupta Review \(2021\)](#) provides an excellent summary of the many aspects of the economics of biodiversity. The review states that:

[Dasgupta Review \(2021\)](#)

Biodiversity is the diversity of life. We will find that the economics of biodiversity is the economics of the entire biosphere. So, when developing the subject, we will keep in mind that we are embedded in Nature.

Nature has two properties that make the economics of biodiversity markedly different from the economics that informs our intuitions about the character of produced capital. Many of the processes that shape our natural world are silent and invisible. The soils are a seat of a bewildering number of processes with all three attributes. Taken together the attributes are the reason it is not possible to trace very many of the harms inflicted on Nature (and by extension, on humanity too) to those who are responsible.

Environment and Human Rights

The environment and the ecosystem services it provides are directly related to human rights. Environmental degradation affects human rights negatively, so nations are legally obligated to prevent those impacts and to protect those striving to promote environmental and human rights. In addition, businesses must respect human rights, do no harm, and exercise due diligence in carrying out their activities.

States and businesses have an obligation to ensure that effective remedies are available in cases of environmental and human rights harm ([UN SDG, 2017](#)). In March 2012, the Human Rights and the Environment Mandate was created and extended in 2018. It examines human rights obligations in relation to a safe, clean, healthy, and sustainable environment. Also, it promotes human rights-related best practices in environmental policymaking ([UN Commission on Human Rights](#)). Although not legally binding, it provides a strong argument to fight destructive policies and projects. It warned that if those problems were left unaddressed, they could have devastating consequences for women, girls, and the poor around the world. In many countries, human rights legislation clearly defines the right to a healthy environment, which allows people to challenge environmentally destructive policies under human rights legislation ([UNEP, 2022](#)).

Figure 6. Some international examples of legislation and judgements recognising the human right to a healthy environment.

	In 2017, the Irish High Court judgement environmental rights was described as 'historic' as it established that the Irish Constitution protects an un-enumerated personal constitutional right to an environment that is compatible with the human dignity and well-being of citizens.
	The state of New York passed a constitutional amendment guaranteeing citizens a right to a healthy environment
	In a ruling, the Dutch Supreme Court said that climate change directly threatens human rights.
	A Brazilian court declared the Paris climate change agreement a human rights treaty, overriding national laws.
	A wide range of issues including pollution, man-made disasters, and access to environmental information have been addressed by the European Court of Human Rights in over 300 cases involving the environment.
	In 2021, countries drafted a resolution recognizing for the first time that it is a basic human right to enjoy a healthy, sustainable environment.

The approach to climate action from a human rights perspective is equally important, since human rights obligations, standards, and principles can help inform and strengthen policymaking on climate change at the international, regional, and national levels, enhancing policy coherence, legitimacy, and sustainability. Human rights are already being negatively affected by it in countless ways, and it is only getting worse. ([UN Commission on Human Rights](#)). The UN Environment Programme ([UNEP](#)) states that by recognizing the right to a healthy environment globally, efforts will be coordinated, effective, and non-discriminatory to address environmental crises. In order to achieve the Sustainable Development Goals, it is vital to strengthen the protection of human rights and those defending the environment, as well as create a world where humans and nature can live in harmony.

Economics of Nature

Economic Measures

Traditional measurements of economic progress, such as GDP, usually completely ignore the damage being done to nature as well as the costs of exploiting or depleting natural resources. GDP does not include natural capital, which is the biggest asset at the national level, nor does it measure human well-being or the sustainability of the ecosystem that supports it. GDP even counts as 'positive' some aspects of damage (for example, the cost of repairing damage following storms or car accidents).

Alternative ways to measure economic prosperity that do not rely on constant economic growth (clearly not an approach that is sustainable) need to be used to take into account the full value of protecting natural services and the negative impacts of its damage or exploitation. The traditional approach places 'zero value' on nature, so adopting an approach which places a value on it, albeit a partial one, is a positive step. Work has been done on several models, especially over the past decade.

Doughnut Economics is a current approach ([Oxfam report](#) by Kate Raworth, 2012,) to identify ways of thinking which will allow humanity to thrive in the 21st century which has gained widespread support. It has the goal of meeting the needs of all people within the means of the living planet, i.e. within the ecological ceiling.

Concepts relating to this 'ecological ceiling' are planetary limits, environmental tipping points and the issue of causing irreversible damage to a region or even the planet as a whole. Extinction of species is obviously one example of the latter. Recently the concept of 'ecologically extinct' has also come to prominence as it is determined that some species have so few representatives remaining in the wild that they are no longer fulfilling the functions of that species within their habitat. Examples such as this make it clear why it is so difficult to put a financial value on what a decision will mean in terms of its impact on the environment. Impacts are cumulative, but the ultimate outcome is of infinite cost.



The Doughnut of social and planetary boundaries.

The Doughnut consists of two concentric rings: a social foundation, to ensure that no one is left falling short on life's essentials, and an ecological ceiling, to ensure that humanity does not collectively overshoot the [planetary boundaries](#) that protect Earth's life-supporting systems. Between these two sets of boundaries lies a doughnut-shaped space that is both ecologically safe and socially just: a space in which humanity can thrive.

Doughnut Economics proposes an economic mindset that's fit for our times. It's not a set of policies and institutions, but rather a way of thinking to bring about the regenerative and distributive dynamics that this century calls for. Drawing on insights from diverse schools of economic thought - including ecological, feminist, institutional, behavioural and complexity economics - it sets out seven ways to think like a 21st century economist in order to transform economies, local to global.

The starting point of Doughnut Economics is to change the goal from endless GDP growth to thriving in the Doughnut. At the same time, it sees the big picture by recognising that the economy is embedded within, and dependent upon, society and the living world. Doughnut Economics recognises that human behaviour can be nurtured to be cooperative and caring, just as it can be competitive and individualistic.

It also recognises that economies, societies, and the rest of the living world, are complex, interdependent systems that are best understood through the lens of systems thinking. And it calls for turning today's degenerative economies into regenerative ones, and divisive economies into far more distributive ones. Lastly, Doughnut Economics recognises that growth may be a healthy phase of life, but nothing grows forever: things that succeed do so by growing until it is time to grow up and thrive instead.

The doughnut is the result of establishing minimum thresholds for intervention in ecosystems in order to meet the demands of the people who depend on them internally, and externally, defining maximum thresholds that each ecosystem can provide while remaining sustainable.

The concept of co-benefits, which the IPCC formulates based on the perspective of climate change to refer to the benefits created by the fight against climate change in other areas such as the economic and social spheres, does not fully reflect the extent of the opportunities in the integration of an approach that designs, measures and evaluates the management of the natural and industrial heritage in its entirety.

Each of the system's nine areas of risk is linked to one or more natural assets, forming a network of interactions that is complex but understandable. Any project aimed at the sustainability of natural assets will create a benefit for society by improving the provision of ecosystem services in the long term. Any project for social responsibility, or the enhancement or improvement of the production model, will lead to an appreciation in value of natural capital through the sustainability of natural assets and an improvement in the provision of ecosystem services.

Public Goods and the Tragedy of the Commons

Nature and the goods and services it provides are 'public goods', that is goods and services which are not owned (often *cannot* be owned, for example clean air or the fish in the sea) and are therefore open to exploitation by anyone. The traditional way to cost a public good is simply to use the cost of 'extracting and processing' while assigning no cost or value to the resource being extracted or the damage being done by that extraction, and includes no cost for collateral damage (e.g. GHG emissions, loss of carbon sequestration, loss of resilience). This is particularly clear with regard to fossil fuel extraction and the damage their use is doing to the atmosphere and climate, but it applies equally to any operation that damages the soil, water, air or natural processes; produces GHG emissions; depletes the stock of limited resources; or produces waste or causes environmental damage while or after the product is used. This is known as the '[Tragedy of the Commons](#)' ([Garret Hardin, 1968](#)) and is one of the most intractable problems when dealing with public goods. It leads directly to over-exploitation and lack of proper management of the 'resource', as the 'user' has a big incentive to use as much of the resource as rapidly as possible in order to gain the benefits and preclude others from benefiting. Because the resource is available to 'anyone', 'no one' takes care of it.

Using the concept of natural capital provides a way to ensure that the public good provided by nature is given a value when decisions are made around activities that deliver primarily private gain. It can thus be an extremely valuable contribution to decision making where economic arguments are being propounded.

Payment for public environmental goods, through retargeting subsidies and other payments ([Payment for Ecosystem Services](#)) coupled with penalties/denial of subsidies for doing damage, is an important way forward. The concept of using the financial system to encourage, facilitate and support action which is beneficial, and to discourage damaging behaviour, is gaining traction; widespread implementation across all sectors that cause damage to or exploit natural systems (agriculture, development, infrastructure, power generation, personal consumption, packaging, waste management, etc.), could be very beneficial. However, some mechanism of linking those causing the damage to the impacts of that damage is required for this to be effective and accepted. The Polluter Pays Principle (PPP) has been accepted policy (globally, UK and NI) for decades and is enshrined in numerous policies and legislation, but is still not fully implemented, largely because of the difficulty of assigning causation to specific instances of damage.

Polluter Pays Principle and Payment for Ecosystem Services

The benefit of having a financial estimate of the value of natural systems is that people can recognise the value of protecting them and will be more understanding of the investment needed to ensure that they are healthy and productive.

There are two relatively simple principles which, if fully implemented, can bring about significant changes in how nature is protected; **Polluter Pays Principle** and **Payment for Ecosystem Services**. The first makes sure that if anyone

damages nature they must pay for that damage (including full cost recovery and reparation, plus fines); the second pays people to manage their land in ways that protect, enhance, and rejuvenate nature.

Taken together and fully applied, these two mechanisms can help provide the funding and financial structure that will protect natural systems. That is not to say that it is simple; there is always disagreement about who caused pollution and getting them to pay, and whether it was willful, neglect or 'someone else's fault'. Paying landowners to deliver positive management for their land often runs up against current land management practices and there will be disagreement about the amount to be paid, and what exact operations will be funded. However, with a good register of natural assets, recognition that delivering public goods must be funded, understanding of the potential for improving the condition of those assets and the benefits they deliver, agreed management plans and good will by all involved, this offers a very clear policy way forward.

Investment is essential to realise the potential benefits of this approach. Education, information and training are needed for people (individuals, business, industry) to understand why they should act, what they need to do and how to do it. A coordinated and significant education/information campaign is required to change minds, hearts and behaviour. Training and shifting subsidies away from current priorities are needed to move towards regenerative farming methods. We need a general recognition that doing things 'right' in the first place is far less expensive than cleaning up environmental damage, and that rejuvenation takes specialist skills, extensive time and is unlikely to ever be as good as a site was before damage occurred.

But there are also huge opportunities in developing new techniques and products; training in skills for young people; new opportunities for businesses to 'do things right' and thereby save energy, resources, and money; environmental repair, whether it be clean-up or removing alien species, will offer job opportunities; there will be an increased need for communications and education professionals and practical

deliverers. There is a big opportunity to address many problems, from the cost of living to unemployment to skills shortages to health and well-being through environmental work. A sense of community can also increase as people work on environmental improvements together and improve local areas.

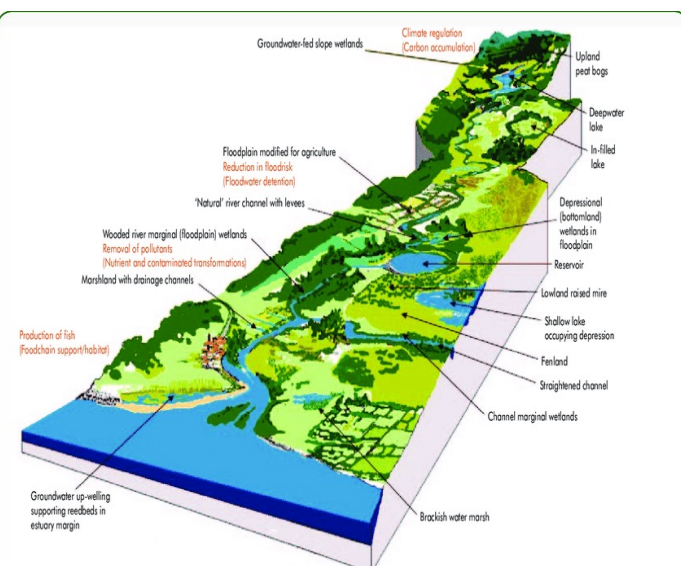
However, for this approach to function properly there needs to be strong legislation and regulation, which is robustly enforced, with standards reported on and monitored by politicians and the public, and significant penalties (which include full reparation costs) for non-compliance. Without this rigorous structure the current failures in protecting the environment will continue.

Threats to Natural Systems

People have both direct and indirect impacts on natural systems. Direct impacts such as harvesting particular species for food or products or destroying natural habitat for development or agriculture are obvious. Indirect impacts, such as climate change and its impacts, can be equally serious. It is very difficult for nature to adapt to changes at both the scale and pace currently challenging all areas of the planet.

Any system, be it an individual organism or an ecosystem, can be healthy or not. A healthy system has a complex web of interactions which inter-relate and form a strong and resilient whole able to deliver a wide range of outputs and services. If that system is stressed, has lost elements, or is subjected to physical changes it becomes less stable and less able to deliver outputs. In general the more complex a system is the more stable it is and the more resilient to change; a virgin rainforest is more stable and resilient than a field of wheat.

Figure 7. Examples of threats to ecosystem services.



Source: [Freshwaters: open waters, wetlands and floodplains \(chapter 9\)](#)
In: [UK National Ecosystem Assessment: Understanding Nature's Value to Society](#)

People have impacted on almost all parts of the planet, truly natural ecosystems are rare. Human activities have significantly altered 75% of the Earth's land surface, including 85% of wetlands. Of the so-far identified eight million species of plants and animals on the planet, one million are threatened with extinction. About 90% of the world's marine fish stocks have been overexploited, depleted, or exploited to the point of extinction. The biggest single cause of biodiversity loss is our global food system, with agriculture alone threatening 24,000 of the 28,000 species at risk. Currently only 17% of land and 8% of marine areas are protected ([UNEP](#)), but even designation does not ensure positive management and environmental improvements. Globally we would require 1.6 Earths to sustain current rates of consumption, obviously not sustainable. For the world to meet its climate change, biodiversity, and land degradation targets by 2030, investments in protecting nature will need to treble ([UNEP](#)),

There is plastic in the Antarctic Ocean, logging in most 'natural' forests, killing or capturing of target species in almost every habitat, and air and water pollution are nearly ubiquitous; and climate change is impacting every part of the planet. The impact of agriculture on soils and the invertebrates living there is huge, and the effects of chemicals on invertebrates is now termed the 'insect apocalypse'. Biodiversity is under threat everywhere, with the major impacts being caused by climate change, habitat destruction for agriculture or development, harvesting of individual species, impacts of invasive alien species and the direct and indirect impacts of pollution of air, water, and soil.

While natural systems are very good at regenerating themselves after disruption, this takes time as well as removal of any pressures. Nature reserves, marine 'no take' zones and other designations are mechanisms to allow self-regeneration.

With the scale of the challenges of climate change, and the ever-increasing demands of people, nature often needs a helping hand; pollutants need cleaned up, nutrients need to be managed, access by people curtailed, invasive species need to be removed and native species may need to be guarded or reintroduced. Given the current condition of even designated or protected sites, positive management is often essential if the natural system is to be able to function and deliver outputs for people. Action is varied and requires investment and labour. Depending on the habitats this can involve blocking drains, increasing stream flow, planting trees, removing alien species, reintroducing native species, collecting litter, improving awareness and engaging communities, or providing or blocking access. All of this work requires skills and expertise, and the opportunities to carry out such work provides a major area for training and employment. This 'green growth' provides a huge opportunity to contribute to solving social and economic problems.

One of the biggest problems for natural systems is the size of protected areas. Often they are simply not large enough for many species to carry out their life cycles, either because of range or the need for a variety and/or abundance of different species upon which they depend for food, mutualisms, or reproduction. One way to partially address this is to have networks of connected sites.

A good summary of what natural systems require to function well is: 'more, bigger, better, connected'. Published in 2011, the [Lawton Review](#) is an independent assessment of England's wildlife sites and their connections. The report includes recommendations for achieving a healthy natural environment that allows natural systems to thrive. To establish a strong and connected natural environment, the report highlights that we must better protect and manage our designated wildlife sites; that we establish new Ecological Restoration Zones; and that we better protect our non-designated wildlife sites. While this document is over a decade old, its recommendations are still relevant and need to be widely implemented immediately.

Much work has concentrated on the need for management of high nature value sites. However, action must extend beyond designated sites to the wider countryside; small 'pockets' of good habitats are both unable to deliver a full range of services and are highly vulnerable to damage and destruction, especially in a changing climate. The management activities needed on designated sites and for the wider countryside are often targeted differently, but all areas require coordinated action aimed at achieving the same goals; poor air quality will not improve by passing over a nature reserve boundary. Establishment of an integrated network of high nature value sites is an important part of management for protected species, and offers an important way to deliver the 'more, bigger, better, connected' agenda to deliver a nature recovery network. Interconnectedness is key to providing the diversity which is needed for delivery of ecosystem services; waterways offer a key opportunity.

Different ecosystems deliver different benefits, with highly man-modified habitats tending to deliver only a small number of goods and/or services (e.g. farmland delivering primarily food). Ideally natural systems can deliver multiple benefits and almost all can be managed to deliver a greater range than is currently achieved. Resilience relies on the biodiversity inherent in various ecosystems, and this varies. Generally, systems with a high degree of biodiversity are more stable and deliver more benefits than simpler systems. The capacity for different habitats varies both in type and number of benefits; peatlands are not good at delivering crops, but are very good at carbon storage, flood control, water purification, etc. This variability is vital; we require areas to deliver food, of many kinds, but we also need areas delivering a wider variety of natural services. Matching the 'output' to the capability of the land (soil, climate, weather, altitude, water, etc.) is important, especially in managing for resilience and adapting to the changing climate.

Policy and Strategic Position

International Targets and Goals

UN Biodiversity Target

At the UN Biodiversity Conference ([Fifteenth meeting of the Conference of the Parties \(COP15\)](#)) held in December 2022, the global community agreed to protect 30% of the planet's land and 30% of its ocean by 2030 (30X30). In addition to conserving at least 30% of the world's lands, inland waters, coastal areas and oceans, the summit concluded with:

- Adoption of an equitable and comprehensive framework matched by the resources needed for implementation.
- Clear targets to address overexploitation, pollution, fragmentation and unsustainable agricultural practices.
- A plan that safeguards the rights of indigenous peoples and recognizes their contributions as stewards of nature.
- Finance for biodiversity and alignment of financial flows with nature to drive finances toward sustainable investments and away from environmentally harmful ones ([UNEP](#)).

23 environmental targets are to be delivered by 2030 and four less-specific goals are to be met by 2050. [Given that only about 17%](#) of the planet's land and 10% of its ocean is currently protected, this is a landmark agreement. However, it is important to recognise that the agreement is neither legally binding nor fully funded. Also, none of the 20 objectives for protecting biodiversity at the global level were fully achieved under the previous 10-year biodiversity agreement, known as the Aichi targets, ([UN report 2020](#)). The new agreement includes provisions to make the targets measurable and to track countries' progress. Governments will have to show progress towards meeting the targets via national biodiversity plans, akin to the Nationally Determined Contributions (NDCs) for carbon emissions which countries use to demonstrate progress towards meeting the Paris Climate Change Agreement. This agreement sets the context for action locally as well as globally. The targets are challenging, but achievable, and should set the framework for local action on integrating biodiversity protection into existing Northern Ireland policy commitments and strategies including the Climate Change Act, Green Growth Strategy and Programme for Government commitments. The Environment Strategy (drafted and awaiting Executive approval, and forming the Environmental Improvement Plan for NI which will be monitored by the Office of Environmental Protection) and the revised Biodiversity Strategy, are key avenues for delivering on this goal, as also will be the Circular Economy Strategy. All of these are anticipated for 2023.

High Seas Treaty

The Intergovernmental Conference on Marine Biodiversity of Areas Beyond National Jurisdiction ([BBNJ March 2023](#)) is the culmination of UN-facilitated discussions that began in 2004. The agreement builds on the legacy of the UN Convention on the Law of the Sea (UNCLOS). According to the 'High Seas Treaty,' the new legal framework would increase spending on marine conservation and provide access to and use of marine genetic resources. Climate change, biodiversity loss and pollution are three planetary crises that must be addressed through the treaty. It is also vital for achieving ocean-related goals and targets of the 2030 Agenda for Sustainable Development, the Kunming-Montreal Global Biodiversity Framework, and the '30X30' pledge to protect 30% of the planet's lands and inland waters, as well as of marine and coastal areas, by 2030 made by a historic UN COP15 conference in Montreal in December 2022 ([UN News](#)).

Policy Forum on Natural Capital

The international Policy Forum on Natural Capital produced a document on [Natural Capital for Governments, why, what and how](#) it should be delivered. This was drafted in 2018 and finalised the same year. The report states that:

All stakeholders – government, businesses, finance institutions, communities - depend on natural capital and many are starting to take action. Government intervention is essential for speeding and scaling up the transition. Seven levers for change can be distinguished (Figure 9). Some levers are focusing on information and planning, others on levelling the playing fields and getting action on the ground. Every country is unique, and change will require a different combination of actions in each context.

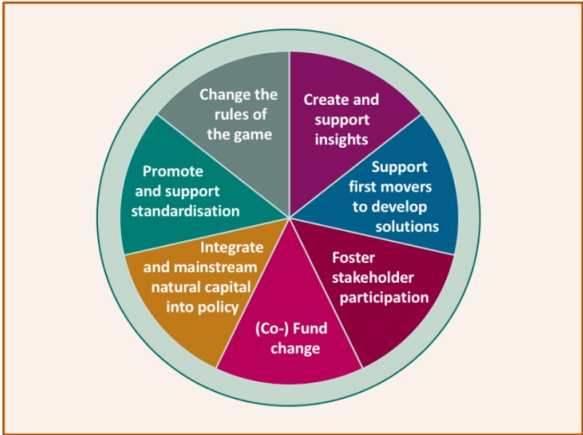


Figure 8. Actions needed to deliver a Natural Capital Approach that can be used by government and private sector to successfully deliver a Natural Capital Approach.

Source: [Natural Capital for Governments: Why, What and How?](#)

Delivery on Commitments

Strategies and commitments are not sufficient, but are a necessary first step to ensure engagement by government and official recognition of the importance of the issue and the need for action. They must be delivered through action plans, full cross-sectoral commitments, and fully funded delivery programmes. This is a serious challenge in the current political and fiscal environment, and there is a danger that this vitally important work will be sidelined. A strong commitment by government, backed by a fully engaged co-design and collaborative approach working with NGOs, businesses, communities and all other stakeholders is required. Taking a strategic and long-term view of all existing and proposed strategies will allow for integrated delivery of all targets across sectors and policy areas is a vital first step.

Designation of sites is not sufficient to ensure protection and halt biodiversity loss. It is a first and vital step, but the current state of the environment in Northern Ireland demonstrates its inadequacies. We must also manage our land and oceans in ways which will actually achieve 'Good Conservation Status'. This requires management of designated sites, but also changes in the way the wider countryside is treated. Good governance, enforcement of regulation and clear mechanisms of accountability, publicly and politically, are essential. The quality of water, air and soil is critical to all biodiversity, and of course knows no boundaries so impact on quality whether or not a site is designated. Reducing pollution from all sources and of all types – from GHG to plastics to toxic chemicals – is essential if we are to protect our land and sea.

Biodiversity faces many threats – climate change, pollution, invasive species, diseases, overexploitation, development – and all of these must be tackled in an integrated fashion which addresses both designated sites and the wider countryside. Biodiversity cannot thrive in isolated designated pockets if the wider countryside and the water and air flowing through a site are toxic. An integrated, holistic approach is required to achieve 'protection'. Approaches to management are likely to vary depending on habitat, flows through the site (air, water), level of access required, and many more. Different approaches will be required to managing protected sites and the wider countryside.

Further to international commitments, the UK Government has set a target to ensure effective protection and management of at least 30% of land and seas for biodiversity by 2030. This means that land and sea areas have to be managed for biodiversity, which excludes landscape designations such as AONBs and National Parks ([The Guardia, 2022](#)). This target was endorsed by the AERA Minister in the NI Assembly on 25th May 2021, but must now be set in legislation in NI and appropriate finance allocated to ensure it is achieved. We cannot afford to concentrate only on the highest levels of designated sites; all sites must be managed, assessed and reported on to deliver improvements. It will need to be determined which of these Northern Ireland designations constitute 'designated' to count towards the 30X30 target.

Approaches on These Islands

The Republic of Ireland

Until Brexit, the EU provided the legislative framework for Northern Ireland's environmental regulation, and protecting the environment in the absence of this underpinning set of legal requirements, environmental standards and enforcement role of EU institutions is a major challenge.

The aim of the '[Linking the Irish Environment](#)' project is to examine how to enable the environment sector across the island of Ireland to cooperate and engage on an all-island and cross-border basis to deal with shared environmental challenges, risks, and opportunities. It looks at the cross-border issues and how they can be addressed by coordinated, cooperative action. Clearly the two jurisdictions on this island experience common problems and a common approach to addressing these issues, many of which cross the border (designated sites, air and water flow, as well as trading of goods and transport), is highly desirable.

The Republic of Ireland is delivering the natural capital approach through Natural Capital Ireland, a body comprised of a 5-member Board of Directors, a 15-member Steering Committee and over 900 registered members made up of engaged individuals from across the public, private, NGO and independent sectors. It has fully adopted the natural capital and ecosystem services approach in its legislation and practice through [Irish Natural Capital Accounting for Sustainable Environment](#). This is the first Irish project to develop natural capital accounts for different sites in Ireland, and aims to prepare accounts for four catchments across Ireland using the SEEA Experimental Ecosystem

Accounts guidelines and the UN System of Environmental-Economic Accounts Central Framework. Maps and graphs of ecosystem and geosystem service stocks and flows will be produced for the four catchments, highlighting knowledge and data gaps, and recommending a framework for Natural Capital Accounting. ([Natural Capital Ireland](#))

The [Shared Island initiative](#) has been conducted by the National Economic and Social Council involved academic research and multiple stakeholder meetings throughout 2021 and 2022. It culminated in a report which makes three overarching conclusions:

- First, there is very significant support, in practice, for an all-island approach to key economic, social, environmental, and wellbeing challenges.
- Second, climate change and biodiversity loss provide a clear and urgent platform for ambitious all-island action and collaboration.
- Third, the factors which are shaping current and future collaboration are a shared agenda, resources, political certainty and support, legislative and regulatory coherence, and collaborative projects.

The report makes specific recommendations across five key areas in relation to the economy and investment, social policy, climate and biodiversity, wellbeing measurement and data co-ordination. This has high level support from the government and was launched by the Taoiseach in April 2022 ([NESC](#)).

UK and Devolved Administrations

A better understanding of the value and benefits of natural capital can contribute to a more efficient and sustainable use of our environment. Natural capital accounting should underpin and enable long term plans and actions in areas such as the circular economy, climate change, biodiversity, resource efficiency, sustainable production, and resilience. There are guidelines available from the UK Government on natural capital accounting '[Enabling a Natural Capital Approach](#)' ([ENCA](#)). This forms part of a suite of DEFRA resources and could easily be adapted and adopted for Northern Ireland. Similar information is available in the other countries on these islands.

Natural capital is an important element of the UK Government's [A Green Future: Our 25-year plan to improve the environment](#) released in 2018. Aside from legally binding long-term environmental goals, the 25-year plan aims to integrate 'environmental net gains' into development. The 25 Year Environment Plan aims to boost productivity by enhancing our natural capital, including air, water, soil and ecosystems. These are essential for long term economic growth and productivity.

These commitments were further developed in the [Environmental Improvement Plan](#) released on 31 January 2023. While this is only a statutory commitment for DEFRA for England, this document and its predecessor clearly state that the policy refers to the UK as a whole.

Extracts from the Environmental Improvement Plan (DEFRA, 2023) which should inform the development of policy in Northern Ireland include:

The natural environment is a valuable asset and a major source of national wealth. It is essential for securing our basic needs, maintaining our biodiversity and sustaining our economy; and, in 2020, the value of the UK's natural capital was estimated to be £1.8 trillion. Protecting and enhancing our natural capital will help deliver benefits, including long-term flood risk reduction, boosts to wildlife, improvements to water and air quality, and opportunities for biodiversity net gain.

Strategic planning can help deliver environmental improvements by protecting natural capital whilst contributing to its enhancement. We have committed to publishing a Land Use Framework in 2023 to set out our approach to making the most out of our land and to ensure we reflect all our objectives for agriculture, the environment and net zero.

Growing numbers of businesses and investors are recognising the need to take full account of nature in financial and business decisions and incorporate natural capital within investment portfolios as an emerging asset class. The government has already set a goal to raise at least £500 million in private finance to support nature's recovery every year by 2027 in England, rising to more than £1 billion by 2030.

The Outcome Indicator Framework comprises a suite of custom indicators designed to collectively describe environmental change as it relates to the ten goals of the EIP23. It was developed after extensive consultation and will be reviewed alongside the EIP23. The framework contains 66 indicators. These indicators are extensive; they cover natural capital assets (for example land, freshwater, air and seas) and together they show the condition of these assets, the pressures acting upon them and the provision of services or benefits they provide.

Progress will also be supported by our Natural Capital and Ecosystem Assessment (NCEA), a science innovation and transformation programme spanning across land and water environments. It has been set up to collect data on the extent, condition and change over time of England's ecosystems and natural capital. The data gathered through the NCEA will ensure we invest in environmental reforms that achieve maximum benefits for nature and society.

Launch the Local Investment in Natural Capital (LINC) programme to build the capacity of leading local authorities to attract private investment at scale, and direct it towards their environmental priorities

Continue to invest in the multi-year Marine Natural Capital and Ecosystem Assessment Programme (mNCEA). This will build a robust evidence base which brings together ecological, societal, and economic information. This is already being put to use in considering how best to use our forage fish, including sand eels and Norway pout, to support the wider ecosystem.

Establish comprehensive baseline data to improve and protect soil health.

We monitor soil health as part of the Natural Capital and Ecosystem Assessment (NCEA), but on top of this Defra will:

- Establish a soil health indicator under the 25 Year Environment Plan Outcome Indicator Framework.
- Publish a baseline map of soil health for England by 2028.
- Support farmers and land managers to establish their own soil health baseline, so they can best manage the health of their soil.
- Provide a methodology and tools to collect consistent information about the health of the soil under all land uses.
- Share current guidance and best practice with farmers and land managers to improve their knowledge and work with them on how to improve soil health.

"There is good work underway – but we need to scale up quickly to protect and enhance our natural capital for every generation to come."

The [Natural Capital Committee \(NCC\)](#) suggests 12 specific outcomes that would represent success in 25 years' time, for example: *wild species and habitats are thriving, and populations are ... sustainable into the future despite the challenges from climate change and increasing pressures from built infrastructure*. The NCC's advice goes on to suggest what sorts of measures would be needed to achieve each outcome, such as restoring all peatland systems to favourable condition.

The [Committee on Climate Change](#) wrote to the Natural Capital Committee in August 2017 to inform its work. They focused on four key areas for improvement given the risks from climate change, as set out in their latest [report to Parliament](#):

- **Resilience of habitats and biodiversity.** Species will only be able to keep pace with climate change if their habitats are in good condition, of sufficient size, and joined up. The condition and extent of most habitats is not improving at a rate that is in line with current government targets, and species' populations continue to decline in many cases.
- **Soil health.** Peat soils are one of our most precious resources for carbon storage and water regulation, but their condition is degrading. The percentage of blanket bog (upland peat) Sites of Special Scientific Interest in good condition has declined from 19% to 10% between 2003 and 2016. There is no plan in place to achieve the ambition for all soils to be managed sustainably by 2030.
- **Flood hazard protection.** Risks from surface water, river and coastal floods are increasing. Meeting this challenge requires a strategic approach that combines catchment management, flood alleviation schemes, development control, and property-level flood resilience.
- **Marine environment and fisheries.** Exposure to climate risks within the marine food chain is increasing due to causes such as rising sea temperatures, deoxygenation and ocean acidification. There are no current government policies that aim to increase the resilience of marine fisheries and aquaculture to climate change.

[Natural England Green Infrastructure – Principles and Standards](#) was published January 2023 and takes forward the concept into practical guidance. Standards and policies and detailed guidance for planning in urban and rural areas to increase the access to and quality of green spaces. This document is detailed and clear and should be integrated into the Action Plan developed for Northern Ireland.

[The Scottish Forum on Natural Capital](#) is an initiative which brings together public, private and voluntary sector organisations in order to protect and rebuild Scotland's natural capital. The Scottish Forum was founded in 2013 by the Scottish Wildlife Trust, Scotland's 2020 Climate Group, the University of Edinburgh, the Institute of Chartered Accountants in Scotland, and the Institute of Directors Scotland as part of the inaugural World Forum on Natural Capital. The goal of their work is to enable businesses and policymakers to better understand how we depend on - and affect - our natural capital. Scotland's natural wealth can be protected and enhanced by making these connections visible to decision makers, which can benefit the entire community. In addition, [Nature Scot's](#) Natural Capital Index for Scotland states that *Ecosystem services provided by Scotland's habitats have improved over the past 20 years and are now at their highest level since 2000, following a low in 2012*.

Wales has decided to use the term Natural Resources rather than Natural Capital. [Natural Resources Wales](#) and other organisations/programmes are responsible for evidence and reporting for various natural assets (i.e. designated land; large freshwater bodies and marine (WFD); air quality; GHG). The [Glastris Monitoring and Evaluation Programme \(GMEP\)](#) developed practical metrics, maps, and tools to support the Welsh Government (WG), Natural Resources Wales (NRW) and partners in developing new policies and initiatives to improve our natural resource management.

[The Royal Society](#) has published a major position paper on Multifunctional Landscapes in January 2023 which provides a series of high level recommendations on how to achieve the many benefits which the land is capable of delivering if properly managed.

1. Land use decision-making needs to embrace a multifunctional approach that considers multiple market and non-market land-based output.
2. Research and innovation is needed to improve the sustainable productivity of all land-based outputs.
3. New infrastructure will be needed to provide skills, training and advice for land managers to enable them to adapt their businesses and thrive on delivering multiple outputs from their land.
4. A novel data science-driven approach is needed to develop a high-quality common evidence base to underpin land use decisions.
5. The UK countries should develop and coordinate spatially explicit national land use frameworks to ensure coherence across different areas of land use policy and between national and local scales.

The [Food Farming and Countryside Commission](#) is another UK initiative, founded in 2017, that is exploring practical solutions to the climate, environmental, health, and economic crises of our time. With evidence, research, telling stories of change, and much more, FFCC strives to engage citizens and communicate with them, as well as advocate for new ideas. [FFCC works in Northern Ireland](#) and has identified priority areas, such as:

- Building trust across systems by convening leadership.
- Growing a Farmer-to-Farmer Learning Network.
- Supporting better food procurement across the public sector.
- Building consensus on Land-Use Framework for Northern Ireland.

This work is highly relevant and should be incorporated into the Action Plan to be developed for Northern Ireland.

[FFCC](#) call for a Budget for Nature, March 2023

We need widespread systemic change AND we can all do our bit," says FFCC Chief Executive Sue Pritchard.

Governments must accelerate big business reporting on their impacts on nature. Their 'climate and nature impacts' balance sheets must be as important - and as scrutinized by shareholders - as their financial balance sheets.

Farmers manage over 70% of our beautiful landscape and must be paid fairly, via ELMS & private finance, for their work to recover nature, act on the climate crisis, restore soil & water health, plant trees, improve & connect habitats, reduce or eliminate synthetic chemicals.

Governments can boost the economy, investing in good green jobs for nature with a National Nature Service, supporting volunteering opportunities and access to nature, as well as skills training and jobs in the future green economy we need.

Northern Ireland

[DAERA's Draft Environment Strategy](#) clearly recognises how important natural capital is and the need for a framework for Northern Ireland. The Draft Strategy is based on the principle that valuing our natural capital is central to our environmental and economic sustainability. Furthermore, it connects all the Strategic Environmental Outcomes. This Strategy, while not yet fully adopted, will be the Environmental Implementation Plan for Northern Ireland and monitored by the Office of Environmental Protection.

Natural capital is also a key element of Northern Ireland's [Green Growth Strategy](#), a multi-decade strategy that balances Northern Ireland's climate, environment, and economy. The strategy sets out the long-term vision and framework for addressing the climate crisis along with creating green jobs. One of the high level principles of the Strategy is to: *Respect our planet - by restoring and protecting our natural capital. Future human wellbeing depends on a healthy and resilient environment.*

Climate change, pollution, the loss of biodiversity and ecosystem integrity will all need to be addressed if [Northern Ireland Climate Change Act](#) is to be successfully implemented. Work is currently ongoing in delivering an implementation plan for the Act. However, the loss of biodiversity and ecosystem integrity, coupled with climate change and pollution, could undermine the successful delivery of the Act.

Natural capital is also a vital component of [Northern Ireland's Draft Biodiversity Strategy](#) to be produced in 2023. The strategy aims to help Northern Ireland comply with its international obligations and meet its local targets to protect biodiversity and ensure that our economy and people continue to benefit from the environment. The targets it will include are a key opportunity to solidify and further embed the approach to protecting natural systems.

Planning policies are key to delivering environmental improvements through protecting natural capital while contributing to its enhancement. Ecosystems, natural capital, and ecosystem services underpin conservation policy in Northern Ireland and are incorporated into planning policies for sustainable development. However, the degree to which this works in practice is open to debate.

Integrating natural capital approaches into decision-making will be challenging unless they can be demonstrated in practice. Limited studies have been conducted on natural capital in Northern Ireland. More work needs to be done to ensure that recognition is carried into investments and decision-making.

Each of these strategies, plus many other policies and commitments, will help to deliver protection and enhancement for our natural capital. However, if looked at individually the challenge is enormous; luckily the synergies among these policies and the opportunities for delivery of multiple benefits from a strategic approach to the problems mean that a comprehensive programme can address all of these issues and many more as well. The cost of living is clearly related to the natural environment through energy, food and health aspects. Northern Ireland is a relatively small place, which presents challenges when determining how our land can deliver energy, food, flood defences, biodiversity, carbon sequestration, resilience, etc. However, it also offers opportunities to try innovative solutions which

will ensure the improvement of our natural environment while delivering multiple benefits to the population.

Securing the Benefits of Natural Systems

The Current Situation in Northern Ireland

By leveraging the international aspirations of COP 15, Northern Ireland can bolster domestic ambitions, adopting and implementing 30x30. The legal underpinnings of 30x30 must be backed up by the subsequent Biodiversity Strategy's commitment to delivering on these promises ([NIEL 30 x 30 What does it Mean for Northern Ireland](#))

Approximately 4.64% of land and 38% of the sea and coast is currently designated as protected in Northern Ireland. To

reach the 30 x 30 commitment, a total of 3,934.96KM2 of land needs to be protected in Northern Ireland. The designations vary greatly in the protection they afford, and none fully addresses the impacts of the wider climate, water, air and soil ([NI Environmental Statistics Report](#)). Water quality is unsatisfactory for all types of water body except some groundwater sites following the inclusion of uPBT (ubiquitous, persistent, bioaccumulative and toxic) substances in monitoring. Air quality varies, but ammonia is such a serious and ubiquitous problem for natural habitats and human health that a new strategy is being developed to address it. Soil biota and insect numbers are plummeting. Maintaining the status quo is clearly not good enough, major efforts must be made to regenerate and restore our biodiversity and sites. We are still going the wrong direction in our biodiversity efforts – a new approach is required.

Biodiversity Protected Areas

According to [JNCC](#), 139,000 ha in NI is designated as ASSI, MCZ, NNR, Ramsar site, SAC and SPA which is 9.8% of NI's land area. According to JNCC, 243,000 ha or 35.6% of NI's sea area is designated.

In 2017/18 the proportion of land area under favourable management was 0.2%, similar to the proportion reported in 2016/17. The proportion of marine area under favourable management in 2017/18 was 4.5%, the same as the proportion reported in 2016/17. These data demonstrate that designation does not equate to achieving favourable status ([DAERA, 2019](#)).

Northern Ireland Water Body Status

Overall River Water Body Status

In 2015, 147 (33 %) of the 450 river water bodies were classified as good or high overall status. In 2018, 141 (31 %) attained that status. In 2021, when the presence of uPBT substances was included as part of the chemical assessment, **no** river water bodies achieved good or high overall status.

Overall Lake Status

In 2015 and 2018, 5 of the 21 (24 %) lake water bodies were classified as good overall status. In 2021, when the presence of uPBT substances were included as part of the chemical assessment, **no** lakes achieved good overall status.

Overall Transitional & Coastal Water Body Status

In 2015, 8 of the 25 (32 %) transitional & coastal water bodies achieved good overall status and 1 (4 %) achieved high overall status. In 2018, 10 (40 %) water bodies achieved good overall status. In 2021, when the presence of uPBT substances was included as part of the chemical assessment, **no** water bodies achieved good overall status.

Overall Groundwater Body Status

In 2015, 49 of the 75 (65 %) groundwater bodies achieved good overall status. In 2021, 51 (68 %) achieved good overall status.

Nitrogen and Amonia Emissions

- 98% of Special Areas of Conservation (SACs) and 83.3% of Special Protection Areas (SPA) had **nitrogen deposition** rates exceeding their Critical Load. These are NI's most important habitats.
- 95.7% of Areas of Special Scientific Interest (ASSI) which are nationally important sites had **nitrogen deposition** rates exceeding their Critical Load for at least one feature.
- 100% of SACs, 100% of SPAs and 99.7% of ASSIs in NI had **ammonia concentrations** greater than 1 µg/m³ (the long term annual average Critical Level for lichens and mosses and for ecosystems in which they are important).
- 27.8% of SACs, 21.4% of SPAs and 24.6% of ASSIs in NI had **ammonia concentrations** greater than 3µg/m³ (the long term annual average Critical Level for higher plants including heathland, semi-natural grassland, and forest ground flora).

Going Forward

The [NI Environmental Statistics Report](#) states that the level of public concern about environmental issues was high in 2020/21, with 82% very or fairly concerned about the environment. Clearly there is both the need and public understanding necessary to act to protect our highly vulnerable habitats. The question remains whether there is the political will and finance available to actually deliver the changes required to address these issues.

This document proposes that the concepts of **natural capital and ecosystem services** should be used as the basis for a new approach to protecting natural systems to deliver widespread multiple benefits for the environment itself, for people and for the economy. A systems approach is required, looking at all of Northern Ireland within a global perspective and aiming to engage the entire population in understanding and valuing biodiversity. Endangered species do not exist in isolation – they are part of systems interacting with other animals and plants and the physical environment within which they live. All animals need food, protection from the weather or predators, pure water, and clean air. Plants need sun, water, space and a variety of symbionts (pollinators, seed dispersers, etc.); fungi and microbes need food and places to live. The network of these needs forms a system, and in order to address biodiversity conservation, we must work at protecting systems.

The situation globally is now generally acknowledged as critical ([COP15](#)), and nature plays a key role in meeting the Sustainable Development Goals and attempting to limit global warming to 1.5 degrees. While many may find this frightening and depressing, it may also be the stimulus people, societies, businesses and governments need to finally act and invest significantly in protecting nature. Combined with the climate catastrophe, the impacts on biodiversity, from globally recognised species to the abundance of insects, are apparent to everyone at some level, and if the significance of this to people is made clear, along with the actions they can take to help stop this decline, then recovery is still possible.

It is imperative that designated sites and the wider countryside only move in one direction, towards 'good condition'. For all designated sites we must ensure, through having a comprehensive audit of the current state of our natural services, that no sites deteriorate; most designated sites are not in good condition so that means most must improve. Once attained, good status must be maintained and there must be no 'slippage'; all sites must improve in their biodiversity, air, water, soil and resilience status. For the majority of sites which are not yet of good conservation status management programmes must be implemented to get them to that status.

The multiple and crucial links between biodiversity and climate change mean that neither of these can be effectively tackled on its own. On 2 March 2023, UK Climate Change Commission report "[Advice report: The path to a Net Zero Northern Ireland](#)" stated that:

The Northern Ireland Executive must change its policies to meet the Net Zero legal target and interim targets. Until now, the Committee has not seen evidence of policy ambition at this scale in Northern Ireland. There needs to be a change. To achieve decarbonization at the required pace, policies must drive action and outcomes. Estimates indicate that even with radical actions, there is still a gap to the legislatively mandated Net Zero target. Following this report, the Committee will monitor policy implementation progress.

One of the most important aspects of what nature does for people is to provide resilience in the face of change - from alleviating local flooding to buffering the impacts of storms and other major climate effects. The importance of resilience is widely accepted. Among the goals of Belfast's first [Climate Plan](#) was its [resilience goal](#)¹, focusing on climate adaptation, mitigation, and green economics. To help build resilient societies, the United Nations released its guideline [UN Common Guidance on Helping Build Resilient Society](#) in 2020 to help societies navigate disasters and the impacts of climate and ecological, but the role of nature in providing that resilience is less well understood. Supporting resilience is a major public benefit of natural systems. A healthy biodiversity will also assist in managing risk by providing resilience.

Work has been done by [Northern Ireland Environment Link](#) and the National Trust, including recommendations from its previous Economics of Nature Working Group and Land Matters Task Force to enhance and protect NI's natural capital. With the concept of natural capital being widely recognized globally, and highlighted in existing strategies and legislations in Northern Ireland, DAERA has commissioned NIEL to put Natural Capital at the forefront of preserving nature for the benefit of society now and for the future.

NIEL, in partnership with Ulster Wildlife and the National Trust, has carried out two studies supporting DAERA to examine the benefits of natural capital in Northern Ireland ([NIEL and Ulster Wildlife Urban Study Report](#) and [NIEL, National Trust and Ulster Wildlife Rural Study Report](#)). While more studies are imperative, embedding the knowledge gained from these two studies in planning, policy and investment decisions can help achieve sustainable development outcomes for Belfast and beyond.

NIEL in collaboration with its members have produced a number of [recommendations](#) and documents, such as [30 x 30 Land and Sea for Nature's Recovery](#), [Achieving Harmony with Nature](#), [Farming for the Future, A Vision of Sustainable Land Management](#), and [many more](#).

Doing Things Better

There are a number of mechanisms (see below list) that have been proposed and widely adopted to bring about improved natural systems. These are now both well understood and widely accepted, and do not need to be explained further here. Suffice to say that, taken together, and based on management around protecting, improving, and managing natural systems, use of these techniques in appropriate ways and carefully selected types of sites will benefit the environment, society and the economy. Using the PPS and PES approaches to provide funding, and ensuring monitoring and reporting, these approaches are important ways to move forward. For more information on these approaches see documents from [Food Farming and Countryside Commission](#) and [FCC Northern Ireland](#) work and the recent briefing on Northern Ireland by a coalition of Northern Ireland NGOs ([Nature Recovery Networks for Northern Ireland](#); More, bigger, better and more joined-up habitats for a resilient future. The Northern Ireland Landscape Partnership, November 2021).

Nature-based Solutions involve protecting, managing, and restoring natural ecosystems, which address societal challenges such as climate change, human health, food security, and disaster risk reduction in an effective and adaptive way while simultaneously benefiting biodiversity and human well-being. ([World Bank](#))

Regenerative agriculture focusing on **soil health**. Soils that are healthy produce more food and nutrition, store more carbon, and increase biodiversity ([World Economic Forum](#)). Healthy soil supports other water, land and air and ecosystems through natural processes including water drainage and pollination – the fertilization of plants. ([World Economic Forum](#)). Also [Food Farming and Countryside Commission](#).

Agroecology (also known as **ecological agriculture**) is a powerful tool for building a sustainable and healthier food system. It challenges the 'business as usual' model of agriculture by relying on natural processes such as biological nitrogen fixation, biodiversity and recycling. ([UNEP](#))

Rewilding is a progressive conservation method. The goal is to let nature take care of itself, to allow natural processes to shape land and sea, to restore damaged ecosystems, and to restore degraded landscapes. Rewilding encourages wildlife's natural rhythms to create more wild and diverse habitats. ([Rewilding Europe](#)). Natural habitat regeneration is allowed to take place and wildlife is allowed to flourish. Examples of rewilding include reintroducing missing species and allowing nature to grow in large areas. ([World Economic Forum](#)).

Nature Finance looks at finance and investment for environmental restoration across the UK. It is the new open-access format for the Natural Capital Finance & Investment Forum that [Ecosystems Knowledge Network](#) has coordinated since 2018.

Recommendations and Delivery Plan

Natural systems are under increasing threat locally and globally from the society and economy they support. The challenges of creating jobs, economic growth, and technological innovation have long been seen as incompatible with protecting the environment. Clearly, sustainable resource use is essential for long-term economic prosperity and security, but there has been a lack of willingness to understand the finite nature of resources (coupled with the Tragedy of the Commons problem explained above).

Economies and ecosystems are inextricably linked. The resilience and long-term strength of a society depends on the health and function of its supporting environment. Economic development depends on natural resources, both for supplying materials and services and for absorbing pollution and waste. Recognising nature's benefits within our economic systems and ensuring that nature continues to sustain us are only possible when we understand and incorporate the economic value of nature's benefits. Long-term economic prosperity depends on maintaining the integrity and resilience of natural services.

Much damage to natural systems is an unintended consequence of poorly thought-out policy, inappropriately targeted subsidies, carelessness, and not assigning an appropriate value to public natural goods and services compared to the potential for private economic gain. Realignment policy, fiscal incentives and valuation and payment for delivery of public goods are vital, and adopting an approach that assigns a financial value to natural systems is a positive way to bring about this switch in attitudes and policy.

If we are to deliver the 30X30 target we need to know what natural assets we currently have and what their condition is. Much of this information exists and has been collected by Government, NGOs and others. We also need to know the capacity of the land and sea to deliver different benefits – clearly not all land is capable of delivering all the different services – and targeting interventions to deliver the best outputs from appropriate areas.

NIEL would like to see the below recommendations adopted, so that the value of the natural environment to people and the economy is fully considered in policy and decision making.

By aligning efforts, we will be able to increase the resources available, protect and restore existing natural resources, and reduce the risk of adverse social, economic, and environmental impacts.

The final part of this document consists of Recommendations plus a Delivery Plan which calls for specific and immediate actions to take those recommendations forward over the next year. One of the key recommendations is the development of a detailed implementation plan which must be done through a co-design and collaborative process.



Photo from: Northern Ireland National Ecosystem Assessment

Recommendations for Protecting Northern Ireland's Natural Capital

1. Include protecting Natural Capital as a strategic goal in NI government

NI Government should adopt Protecting Natural Capital as a Strategic Goal in all future legislation and Strategies. The '30 x 30' and 'nature positive' and 'net gain' international and UK goals should be the overarching ambition, but action must go beyond designation to include positive management aimed at maintaining and enhancing both designated sites and the wider countryside (more, bigger, better, connected habitats; Nature Recovery Networks).

2. Framework policy illustrating how Natural Capital links to existing policies and strategies

Devise a new Framework Policy which:

- Recognises the importance of healthy natural systems as a 'public good';
- Strategically guides protection, management and enhancement of the environment across all sectors;
- Supports and contributes to the delivery of relevant existing policies (e.g. Green Growth, Climate Change Act and the Climate Action Plan, Programme for Government) and those in development (Environment Strategy/Environmental Implementation Plan, Biodiversity Strategy, Circular Economy Strategy, etc.);
- Drives improved performance by government in its implementation of its Strategies, Policies, Regulation and Enforcement;
- Includes robust reporting and enforcement mechanisms and
- Ensures a science-driven approach to develop a high-quality common evidence base to underpin all land use decisions.

3. State of Nature Register

Develop and maintain a State of Nature Register (which also underpins the Environmental Improvement Plan 2023); including current state, trends and risks; which must be used across all sectors in all decision-making, policy development and practical action. This would include:

- a baseline data of habitats and ecosystem services, natural assets and their condition (quality and risks);
- designated areas;
- Constraints;
- opportunities and
- beneficiaries.

It must go far beyond designated sites and have wider countryside assessments and actions. It must be frequently updated, monitored and reported on publicly and to the NI Assembly.

4. Multifunctional approach to protecting Natural Capital as a critical public good

Recognise across all Government Policies and Actions that functioning natural systems are a critical public good delivering a range of public benefits. Ensure that protecting, managing and enhancing these systems are:

- A material consideration in all decisions (including planning, infrastructure and agriculture);
- A major goal in all policy, financial support packages and legal/financial enforcement and penalties;
- Recognised as a key contributor to public health, well-being, recreation, culture and heritage;
- Essential to a resilient Northern Ireland;
- Vital for businesses, innovation and industries;
- Fully recognise market and non-market benefits of land uses;
- And that adopting this approach will require new investment, infrastructure and training to enable land managers to deliver on these goals.

5. Action Plan to embed the Natural Capital Approach

Prepare a detailed, '**SMART**' action plan to guide and monitor progress on protecting natural systems across all sectors, for all habitats and including air, water, soil and carbon. This plan must include;

- Detailed targets for meeting the '30 x 30' goal;
- A Nature Positive /Biodiversity Net Gain commitment embedded across sectors and in all public expenditure and procurement practices;
- A Nature Investment Plan;
- Public reporting on progress against these targets annually, monitored by the NI Executive.

6. Capacity building and promotion programme

Implement a programme to improve knowledge and understanding at all levels across all sectors of the importance of natural capital to involve;

- Adopting a partnership approach, including roles in delivering the targets and policies protecting, managing and enhancing natural systems;
- Ensuring that capacity, understanding and skills are developed across government (central and local) including all contractors, and all key sectors (business, community, individuals) to guide evidence-based decision-making as part of green book guidance on biodiversity and natural systems when appraising policy and project proposals.

Delivery Plan – For delivery over the next 6 – 12 months

Main Goal	Actions 2023	Specifically
1. Include Protecting Natural Capital as a Strategic Goal in NI Government	Review existing and developing strategies and policies and identify specific points for including goals to protect natural systems	Green Growth Programme for Government Climate Action Plan Circular Economy Strategy Environment Strategy Biodiversity Strategy. Identify a mechanism to progress this in the current political situation.
2. Framework Policy Illustrating how Natural Capital Links to Existing Policies and Strategies	Develop a policy framework document which integrates other policies and strategies to deliver an improved approach to protecting natural capital	Short, clear doc which establishes the connections and makes apparent why natural systems are essential to delivery of all other government policy commitments (refer to Nat Cap for Gov doc) -a very targeted NI version.
3. State of Nature Register	Compile set of indicators and measurements (using currently collected data where possible/useful) that will be the basis for a comprehensive database, map and report which is consulted for all planning decisions. Including maps, condition, habitats, benefits delivered, potential/capacity map, risks, etc.	Draft set of indicators based on what is already available (NIEA, but also NGOs), propose mechanism for updating, reporting, monitoring, etc. Identify any gaps in current reporting and recommend methods to address.
4. Multifunctional Approach to Protecting Natural Capital as a Critical Public Good	Identify and investigate all the areas (above and more) where the approach will help deliver on those programmes and ensure the cross-referencing needed for the multifaceted approach to deliver all of these areas.	Research report, identifying the areas, but also the most evocative arguments to get their engagement. Include the costs of not acting (legislative, financial, public health, damage to natural systems).
5. Action Plan to Embed the Natural Capital Approach	Develop a detailed, SMART, Action Plan	Major participative approach involving all sectors to develop an Action Plan. This should integrate with the Biodiversity Strategy Action Plan but should be ready sooner.
6. Capacity Building and Promotion Programme	Change attitudes and behaviour to nature	Review what is already happening and identify what needs to be done to improve delivery and resulting behaviour change from all sectors (landowners, civil servants, school children, consumers, communities, etc.)

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