



Department of the
Environment

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Valuing Nature

A Biodiversity Strategy for Northern Ireland to 2020



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FOREWORD

The title of this document, *Valuing Nature*, is appropriate at a time when severe budget pressures require us to consider the financial and wider value of everything we want to achieve. However, the message from this Biodiversity Strategy is clear. The natural world is beyond value – it is priceless.

Nature more than pays its way in providing us with the key elements of life. Clean air, water, flora and fauna all provide us with the essentials that we need and without which we could not survive. Indeed, without these things we could not prosper in the various endeavours that we pursue to generate wealth and earn a living for ourselves and for society. The Executive recognised this in its Programme for Government 2011-2015, which included a commitment to publish a revised Biodiversity Strategy.

Much of our natural heritage has been heavily influenced by previous generations. We are entrusted with protecting it and handing it on safely to future generations. We have not always managed to keep it safe as the Strategy acknowledges, but there have been many successes, and it is on these that we want to build, while seeking to address areas where we have fallen short.

This corner of the planet is particularly well provided for in terms of its biodiversity, so what we do with it matters. The new Strategy aims to complement what our neighbours are doing, so that we are effectively working together to achieve the overarching aim of halting biodiversity loss. Halting such loss will allow us to continue to benefit from all that nature has to offer, particularly at a time when the planet's climate is changing, with all the challenges that such change brings. But Government cannot do this alone. That is why the Strategy also highlights some of the work that business, local government and the voluntary sector plan to do.

I am therefore very pleased to publish this document, and I commend it to you. Its goals are vital; its goals are challenging; but its goals are achievable. And my Department, for its part, will do its utmost to ensure that those goals are delivered.

Mark H Durkan MLA
Minister of the Environment

CHAPTER 1 – INTRODUCTION

Biodiversity and why it is important

Biodiversity is the variety of all living things, including every species of plant and animal and the genetic variety both within and between species and within the communities that they form.

The benefits that we derive from biodiversity are critical to our survival and cannot be overstated. We depend on biodiversity for the very basics of life – clean air, water, shelter and food, which together support our health and well-being. A healthy natural environment with a wide range of biodiversity is the source of a vast array of products we use on a daily basis and provides employment to those involved in their development and production. People are part of that system, benefiting from it as well as influencing how it functions.

Reductions in biodiversity impact on the availability of complex natural systems to function and to deliver the goods and services we depend upon. Higher levels of biodiversity tend to lead to greater system stability and resistance in the face of changes, such as climate variability and plant and animal diseases. Loss of some individual species can have large and unexpected impacts on entire systems – for example, the loss of a pollinator or seed disperser. Protecting biodiversity helps ensure continued enjoyment of the benefits of the environment.

Northern Ireland's biodiversity

Northern Ireland's biodiversity is internationally important with some 20,000 species found on the land, in the soil, in the air and in the waters. This important biodiversity is a reflection of Northern Ireland's remarkable geological diversity. For its size, it is one of the most geologically diverse areas of the planet and this is an important factor in understanding our rich biodiversity. Our biological systems are maintained by and intrinsically linked to the earth, the rocks and soils on which vegetation grows, through which water percolates and in which a myriad of chemical processes take place. Conserving diversity – both biological and geological – is important in its own right, for the goods and services it provides and for the pleasure and fulfilment that can be derived from close engagement with nature.

Northern Ireland has been settled by people for thousands of years and there is no place in either landscape or biodiversity where the impact of humans is not evident. The natural environment has sustained us throughout that time, but too often we have taken it for granted and ignored the need to use and manage it in a sustainable way. Both the pace and scale of change has increased in recent decades and biodiversity is under increasing pressure. For many years we have been eroding nature's capital, depleting the basic stocks of animals and plants that enable nature to function effectively. This is clearly not sustainable. We need to refocus our efforts to live on the interest, maintaining our natural

capital in a fit state to produce goods (food, timber and energy) sustainably and still be able to deliver the services, such as clean air and water, which we all depend on for survival.

Ecosystems are inter-dependent systems of living things (plants, micro-organisms and animals, including people) in their physical environment. They overlap and interact and are impacted upon by a wide variety of human and natural factors. When determining how well the environment is functioning, we need to look at systems and their complex inter-relationships rather than individual organisms or species. This is termed the ecosystem approach and forms the basis of modern biodiversity protection legislation and practice. The Strategy adopts that approach as well as the corollary of ecosystem services that looks at the many goods and services ecosystems provide to people.

The Challenge

The Strategy sets out how Northern Ireland plans to meet its international obligations and local targets to protect biodiversity and ensure that the environment can continue to support our people and economy. It builds upon the first Biodiversity Strategy published in 2002 but adopts the modern and internationally agreed approach that emphasises the management of biological systems to deliver the materials and services upon which people depend – the ecosystem services approach. While protection of individual species and habitats is essential, the thrust of the Strategy is to manage natural and man-modified systems to deliver a multitude of outputs which support society and the economy. Protection of individual species and habitats is both a tool for delivery and a result of this approach. However, recognition of and a focus upon ensuring the interconnectedness and complexity of biological systems enables a more coherent approach, producing an intelligible and evocative Strategy that makes it clear that biodiversity protection is absolutely fundamental to society and the economy.

The first Northern Ireland Biodiversity Strategy¹ contained 76 recommendations that were accepted by the Executive as Northern Ireland's framework for action to halt biodiversity loss. This was Northern Ireland's contribution to international and European commitments to halt such loss. Much has been achieved, with many of the 76 recommendations addressed fully and others partially delivered. However, here in Northern Ireland, consistent with the global trend, we have fallen short of halting biodiversity loss.

¹ http://www.doeni.gov.uk/nibs_2002.pdf

Some Key Milestones Achieved

- New environmental legislation to provide greater protection to a wider range of plants and animals and the introduction of a statutory biodiversity duty on public bodies.
- Marine legislation to introduce marine planning, new licensing provisions and a mechanism to provide protection to nationally important marine habitats and species.
- Introduction of the Countryside Management Scheme and other measures under the Common Agricultural Policy to benefit biodiversity.
- Substantially completing the range of designation processes relating to the Habitats and Birds Directives, as well as internationally important Areas of Special Scientific Interest (ASSIs).

Work in Progress

- Actions across Government to tackle the threats posed by invasive alien species.
- Another Rural Development Programme established.
- Management measures for protected sites to be developed further to include an ecosystem approach.

At international, EU, UK and Northern Ireland levels we now need to consider how best to meet the challenge of halting biodiversity loss. From a Northern Ireland perspective, a number of high-level challenges have been identified which will require particular attention:

- valuing the environment in the broadest context;
- reducing the impact of climate change;
- obtaining adequate resources for biodiversity projects from a wide range of sources;
- encouraging ecosystem scale protection measures;
- enhancing data gathering and management;
- tackling invasive species; and
- engaging society more fully to halt biodiversity loss.

International and European context

Biodiversity, the threats to it and its importance to human life and prosperity are internationally recognised and have come to increasing prominence in recent years. There are a number of international targets which Northern Ireland is required to meet, many as part of the UK.

Aichi Targets

A key decision at the Convention on Biological Diversity (CBD)² in Nagoya, Japan, in October 2010 was the adoption of a new ten-year strategic plan to guide international and national effort to save biodiversity. The strategic plan, or the Aichi Target³, adopted by the meeting is the overarching, internationally agreed, framework on biodiversity. The 20 Aichi Targets form the basis for the Implementation Plan for this Strategy and are set out in **Appendix 2**. The CBD fully adopted the ecosystem services approach that stresses the need to look at maintaining the functionality of ecosystems as key to protecting biodiversity and delivering benefits for humanity.

EU Biodiversity Strategy

In May 2011, the European Union adopted a new strategy to halt biodiversity loss, restore ecosystems where possible, and step up efforts to avert global biodiversity loss. The EU Strategy⁴, *Our life insurance, our natural capital: an EU biodiversity strategy to 2020*, focuses on six major targets which address the main drivers of biodiversity loss. It aims to reduce key pressures on nature and ecosystem services in the EU through better implementation of existing nature conservation legislation, anchoring biodiversity objectives into key policies and closing important policy gaps. All funding from the EU will be proofed to ensure that biodiversity will not be harmed and that actions to be funded comply with the Prioritised Action Framework (PAF).

The six targets covered by the EU Strategy focus on –

- the full implementation of EU legislation;
- better protection and restoration of ecosystems and the services they provide, and greater use of green infrastructure;
- more sustainable agriculture and forestry;
- better management of EU fish stocks and more sustainable fisheries;
- tighter controls on invasive alien species; and
- a greater EU contribution to averting global biodiversity loss.

Northern Ireland must play its part in delivering these challenging international and European commitments. The new Northern Ireland Biodiversity Strategy will provide the focus for action to meet these commitments while delivering many local benefits for Northern Ireland's people and economy. Each goal in the Implementation Plan in **Appendix 4** is accompanied by a set of focused, time-bound actions to help these ambitions to be fully realised.

² <http://www.cbd.int/doc/legal/cbd-en.pdf>

³ <http://www.cbd.int/sp/targets/>

⁴ http://ec.europa.eu/news/environment/110503_en.htm

It may not be possible to achieve all of these goals in the period covered by the Strategy, particularly if resources are not always fully, or immediately, available. However, we can work towards them by pursuing the actions identified in the Implementation Plan. Delivering the Biodiversity Strategy and working towards the vision below will set Northern Ireland on track to addressing many social and economic issues as well as protecting the environment from further degradation.

A vision for Northern Ireland

The inclusion of the long-term objective of halting the loss of biodiversity in the Programme for Government for 2011-2015⁵ demonstrates the importance the Executive places on this. In working towards achieving this objective, we will be guided by an overall vision that –

“By 2050, our life support system, nature, is protected and restored for its own sake, its essential contribution to our well-being and prosperity, and to avert catastrophic changes likely to arise from its loss.”

For the purpose of the Northern Ireland Biodiversity Strategy our mission will be:

“To make progress towards halting overall biodiversity loss, establish an ecosystem approach and help business and society in general have a greater understanding of the benefits that nature can bring to everyday life in Northern Ireland.”

⁵ <http://www.northernireland.gov.uk/pfg-2011-2015-final-report.pdf>

CHAPTER 2 – HEALTHY ECOSYSTEMS

What is an ecosystem?

Ecosystems are composed of all living things in an area, plus the physical features – for example, geology, soil and water – which support them. In essence, they are an inter-dependent system of living things (plants, micro-organisms and animals, including people) in their physical environment. Ecosystems can be terrestrial or marine, inland or coastal, rural or urban and can vary in size and over time. A change in just one component can impact on the entire ecosystem. Healthy ecosystems function efficiently to deliver a range of outputs and are resilient in the face of change. Damaged systems are often unable to recover if additional factors challenge them and enter a spiral of ever decreasing ability to function. Conversely, healthy ecosystems are capable of producing more beneficial services. The challenge is to move from the downward to the upward spiral of ecosystem service delivery.

Ecosystem services

The benefits which people derive from ecosystems are known as ecosystem services. These benefits fall into four 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 climate and water, both quality and quantity;
- **cultural** – the non-material benefits obtained from ecosystems such as spiritual or religious enrichment, cultural heritage, recreation and tourism, or other aesthetic experiences; and
- **supporting** – ecosystem functions that are necessary for the production of all other ecosystem services including soil formation and the cycling of nutrients and water.

Ecosystem services provided by mountains, moorlands and heaths

Provisioning

Food
Fibre
Fuel
Fresh water

Regulating

Climate regulation
Flood regulation
Water quality regulation
Erosion control

Cultural

Recreation
Tourism
Aesthetic values
Cultural heritage
Spiritual values
Education
Sense of place
Health benefits

The ecosystem approach

One of the main ways we have worked to support biodiversity is through designating sites to protect habitats and species. This has a major role to play by providing refuges where threatened species can survive, but it will not by itself stop biodiversity loss. Designated sites are often highly vulnerable and populations within them are often too small to be viable. A more integrated approach is required which recognises the need for sustaining ecosystems that are resilient to change. The CBD defines the ecosystem approach as –

“A strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way”.

In essence, an ecosystem-based approach is a framework for action that considers the entire ecosystem, including humans, with the goal of maintaining it in a healthy, productive and resilient condition, so that it can provide the services that are both wanted and needed. It is a method for working towards sustainable development so that nature can indefinitely support essential services and provide benefits for all without deterioration. This approach was endorsed in the UK’s National Ecosystem Assessment⁶ (NEA) which gave an independent view of the services provided by the main ecosystems.

A vital element of introducing the ecosystem approach will be the development of appropriate guidance to assist policy development across Government. The Wildlife and Natural Environment (Northern Ireland) Act 2011⁷ introduced a statutory biodiversity duty for all Government Departments and public sector bodies. To complement this, and to assist public bodies implement this duty, the Department will develop a biodiversity screening tool to help with the proofing of Government policy for its effects on biodiversity. This tool should also assist Government departments with the development of the biodiversity implementation plans which they all need to have to demonstrate how they are meeting the biodiversity duty. Without realising it, most departments already do a number of things that benefit biodiversity. Sharing best practice across the public and private sectors will benefit biodiversity and provide additional benefits, such as improved health through outdoor exercise, enhanced attractiveness to international businesses, improved attractiveness to tourists, and better educational opportunities in the natural environment.

A key feature of the ecosystem approach is involving people, businesses and communities in the nature that surrounds them and encouraging them to realise how dependent they are upon its health. The adoption of a partnership approach is key to this. Government can set and monitor targets and provide policy and infrastructural support, but it cannot deliver these targets without the help and support of its citizens. That is why the strategy emphasises the engagement of people at a range of levels in its delivery.

⁶ <http://uknea.unep-wcmc.org/>
<http://uknea.unep-wcmc.org/LinkClick.aspx?fileticket=mYewbZ5ifj0%3d&tabid=82>

⁷ <http://www.legislation.gov.uk/niu/2011/15/data.pdf>

The Department wants to reinforce changes to the way that business and industry sees, uses and values nature, and the ecosystem approach will provide a mechanism to help achieve this. The Northern Ireland Environment Agency (NIEA) will continue its approach of developing individual Prosperity Agreements to secure partnership working with clear environmental outcomes with those businesses and trade bodies whose operations have the potential for a significant environmental impact.

Designated sites and priority habitats and species

ASSIs form a network of sites that provide protection for Northern Ireland's remarkable bio- and geo-diversity and aim to safeguard these special places for present and future generations. The ASSI programme has now reached the phase where a greater emphasis will be placed on managing existing sites while maintaining progress towards completion of the site network. Making scientific data available will facilitate the targeting of measures at sites and features where active intervention is required and thereby help achieve enhancement of habitat, species and earth science features on these sites. By 2020, the Department aims to appropriately manage its existing suite of designated sites in line with the 12 principles of the ecosystem approach⁸ (**Appendix 3**) and take account of the operational guidance provided by the CBD.

Protection measures, in the form of various types of designation, have been put in place for approximately 7% of Northern Ireland's land and 10% of marine environments through a range of EU and national initiatives. After 2015/16, ASSI designations will continue to progress on the basis of scientific evidence as required by the Environment (Northern Ireland) Order 2002. A more integrated approach will be adopted with stakeholders engaged in the management of designated sites or lands containing priority habitats and species. For example, this will include closer working with the Department of Agriculture and Rural Development (DARD) on the new agri-environment scheme – the Environmental Farming Scheme (EFS) – to ensure better integration of the Single Farm Payment Directive and the Birds and Habitats Directives so that EU funds can be identified and targeted more effectively.

While the Department places an emphasis on implementing an ecosystem approach, it will continue the long-standing approach across the UK to deliver agreed actions for priority habitats and species within the wider ecosystems. Monitoring the evidence collected over time has helped identify those priority habitats and species that are under pressure and in decline. By targeting these for data collection and action there are positive impacts on the entire ecosystem of which they are a part. Based on this, lists of priority habitats and species have been compiled and action plans put in place for those requiring most attention and include, where appropriate, joint action plans with the rest of the UK and with Ireland.

⁸ <http://www.cbd.int/ecosystem/principles.shtml>

NIEA will review current habitat and species action plans, taking account of the ecosystem management approach, in the ongoing work to protect and enhance local biodiversity.

Key to halting biodiversity loss is appropriate habitat management that requires making the best use of scientific data and information. Recent reports under the Habitats and Birds Directives on the condition of many designated sites highlighted that better management measures need to be incorporated in many instances. A crucial tool to assist with improving management measures is the development of habitat maps. These will be used to inform the management plans required to progress to favourable conservation status on individual sites. An important element of this work will be the establishment of coherent ecological networks which go beyond a single designated area. Important components of an ecological network include:

- core areas of high nature value conservation which contain rare or important habitats or species;
- coherent areas capable of delivering ecosystem services;
- corridors and stepping stones; and
- buffer zones.

There is a substantial cost associated with achieving this, and the Department will seek to secure EU funding to take this important work forward.

Northern Ireland's Ecosystems

The NEA assigned UK ecosystems to eight categories, and Northern Ireland has exceptional examples of all of these. There are many gradations among ecosystems, and a variety of habitats contained in each, but it is helpful when using the ecosystem approach to management to recognise these major ecosystem categories and to understand some of the services each delivers.

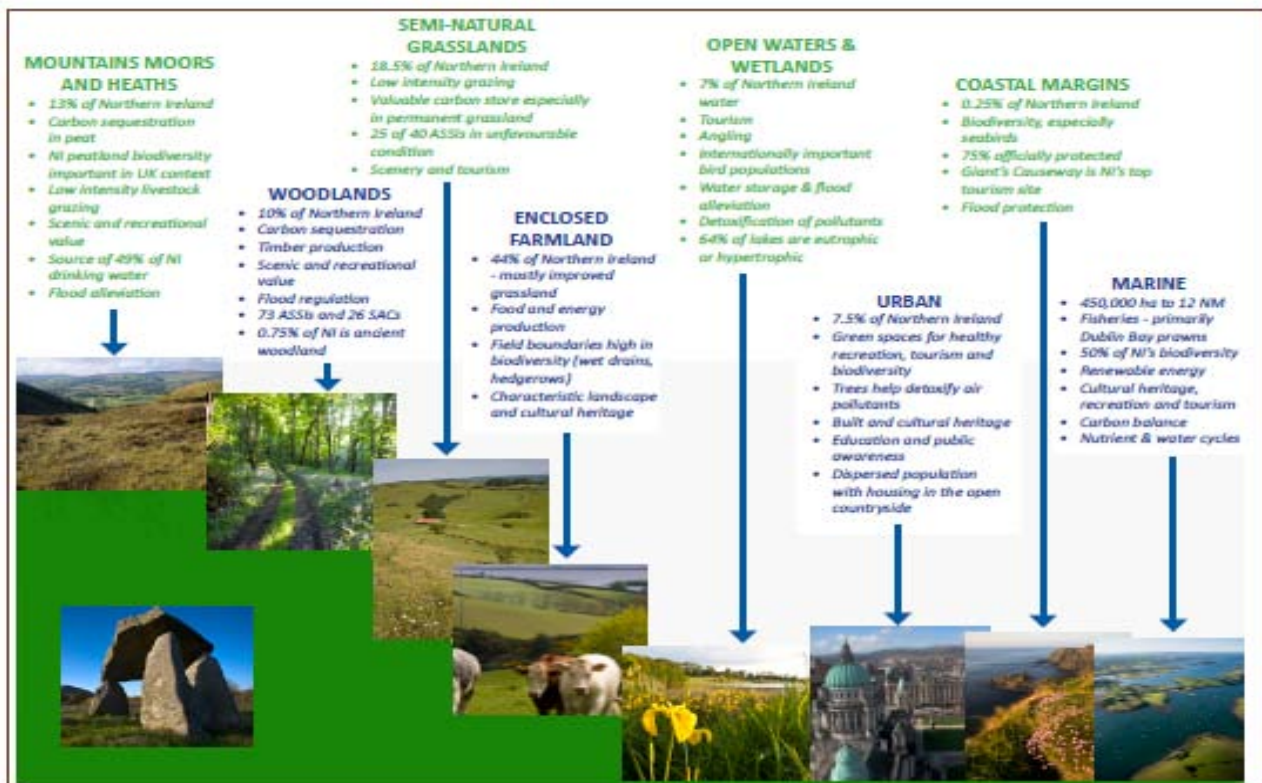


Figure 1: Delivery of services by Northern Ireland's ecosystems

Mountains, moors and heaths

Peaty soils cover almost 15% (206,400 hectares) of Northern Ireland's land, including most of the uplands. Of this total area, 165,000 hectares consists of either semi-natural blanket bog, lowland raised bog or fen vegetation each with a high biodiversity value. Overall, it is one of the most significant groups of habitats in a European context. The economic value of Northern Ireland's peatlands is viewed as increasingly significant in terms of their natural resources. Historically, peatlands have been valued primarily for use for grazing, fuel or horticultural peat. However, the highest values now recognised are for other ecosystem services such as clean water supply, carbon storage and recreation. Many current land management practices could compromise these services – for example, land drainage, over-grazing, intensive agriculture, forestry, peat-cutting and wind farm development.

The importance of peatlands is recognised through the International Union for Conservation of Nature (IUCN) UK Peatlands Programme set up in 2009 to promote peatland restoration in the UK. In Northern Ireland, the approach to peatlands is guided by the Department's Policy Statement, *Conserving Peatland in Northern Ireland*⁹. And Government encourages the sustainable use of peatlands. Agri-environment schemes provide incentives to manage peatlands (around 38,000 hectares) and peat-cutting and wind farms are regulated by planning policies. While the restoration of peatlands is complex, expensive and time consuming, there may be opportunities through EU funding

⁹ <http://www.doeni.gov.uk/niea/conserving-peatland.pdf>

and local initiatives to encourage both protection and restoration of this valuable habitat. The value of peatland soils and vegetation as a carbon store is very high and their value in sequestering carbon may become a particularly economically advantageous characteristic as carbon accounting becomes more important.

Garron Plateau

Background

Garron Plateau is an ASSI that holds the largest expanse of blanket bog in Northern Ireland and acts as the catchment for Dungonnell Reservoir. In 2010, it was found to be in unfavourable condition primarily due to over grazing and from drainage ditches that had caused damage by drying out and eroding the peat. This resulted in reduced capacity for carbon storage, decline of priority bird species and rare plants, and also impacted on the quality of drinking water leading to discolouration and higher treatment costs.

Key Points

- NI Water, RSPB and NIEA collaborated on a SCAMP (Sustainable Catchment Management) Project to re-wet the bog, improving water quality.
- Various materials were used to block drains, allowing peat to re-wet.
- Grazing on the land brought to a sustainable level.
- Increasing drinking water quality before it gets to the treatment works – vastly more effective and keeps treatment costs down.

Enclosed farmland and semi-natural grasslands

With around 70% of land in Northern Ireland devoted to agricultural activities, there is tremendous scope for influencing biodiversity and ecosystem services in a beneficial way through agricultural management. Agriculture is one of the cornerstones of the Northern Ireland economy, and ensuring conservation of the biodiversity that exists on agricultural land through sustainable management is essential to the continued robustness of this vital industry. Productivity is related directly to species diversity: loss of pollinators threatens apples and other crops, and farmland birds eat millions of crop pests.

Biodiversity and sustainability go hand in hand and are key priorities for the Northern Ireland Executive. Implementation of the Common Agricultural Policy (CAP)¹⁰ by DARD has been one of the key mechanisms for improving biodiversity on farms. Current economic pressure means that there may be less money to spend on nature conservation projects. There is therefore a greater need to prioritise how we spend available resources and to be more creative if biodiversity is to thrive on land managed primarily for agricultural

¹⁰ <http://ec.europa.eu/agriculture/cap-post-2013>

outputs. The Strategy aims to ensure that the Northern Ireland Rural Development Programme (NIRDP) and EFS support farming practices that contribute to the delivery of ecosystem services and biodiversity.

Two of the main ecosystem categories are primarily managed by agriculture – enclosed farmland covering about 44% of Northern Ireland, and semi-natural grassland, a much-threatened habitat covering just 18.5% of the land. In addition, agriculture impacts upon or is the main manager of much of the peatland, wetlands and woodlands, so agricultural practice is critical to most of Northern Ireland’s land and biodiversity.

Woodlands

Northern Ireland has around 111,000 hectares of forest and woodland (8% of land cover) of which 62,000 hectares, or 56%, is managed by the Forest Service, an executive agency of DARD. The remainder is predominantly privately owned and managed by a wide range of land managers. The distribution of forest area by forest type and management is shown in *Table 1* and illustrates that Forest Service woodland is made up of predominantly coniferous tree species, while non-Forest Service woodland is predominantly broadleaf.

Forest Type	Management	Forest Area (hectares)
Conifers	Forest Service	56,000
	Non Forest Service	11,000
Broadleaf	Forest Service	6,000
	Non Forest Service	39,000
Total	Forest Service	62,000
	Non Forest Service	50,000

Table 1: Forest Area by Forest Type and Management – Forestry Facts and Figures 2014, Forestry Commission¹¹

Forest Policy – Northern Ireland Forestry- A Strategy for Sustainability and Growth¹², Forest Service aims to achieve 12% forest cover by 2050 and to ensure that both public and privately owned forests are managed in a sustainable way to deliver a broad, balanced range of ecosystem services, including timber, biodiversity, public access, landscape, water quality, and actions to address climate change. The ecosystem services which individual forests provide will vary with different types of forest ecosystem and the ways in which they are managed. Forests and woodlands make a significant contribution to biodiversity, and approximately 28% of Forest Service woodland and 6% of non-Forest Service woodland have been designated as part of the Natura 2000 network.

¹¹ <http://www.forestry.gov.uk/website/forstats2014.nsf/TopContents?Open&ctx=5BFAF7169C6D2E03802573D00349319>

¹² <http://www.dardni.gov.uk/strategy-for-sustainability-growth.pdf>

In Northern Ireland, 58% of all woodland is managed on a sustainable basis and subject to independent audit and certification against the UK Woodland Assurance Standard (UKWAS)¹³. All Forest Service woodland was certified and 6% of non state woodland was certified. In addition, 8% of non state woodland is in receipt of woodland support under the RDP and requires forest plans. This standard encompasses the UK Forestry Standard and thereby the General Guidelines adopted by European Forestry Ministers at Helsinki in 1993, the Pan-European Operational Level Guidelines adopted at Lisbon in 1998, and other relevant national agreements. The UKWAS recognises that one of the strengths of woodland management here is its diversity. Therefore, there is scope within the standard for owners and managers to decide on appropriate objectives for their woodland, while the standard generally prescribes what must, overall, be achieved but leaves it to the owner or manager to decide how this is best done.

Wetlands

Wetlands, including lakes, fens and flooded grassland, cover around 7% of Northern Ireland. There are more than 1600 lakes ranging in size from small ponds to Lough Neagh, the largest freshwater lake in the UK. Most lakes are fringed by fen, marsh and swamp. However, this broad habitat also frequently occurs in low-lying wet ground or poorly-drained marginal land. Many have been highly modified over the years by drainage and nutrient enrichment from surrounding farmland and urban waste water. A high proportion of such wetlands are eutrophic with resultant negative impacts on biodiversity.

Wetlands provide key ecosystem services, including natural flood protection and water supply and also contain important fisheries. In addition, wetlands are used for, and impacted by, farming, towns and other land uses within their catchments.

The Ramsar Convention is an intergovernmental treaty that provides the framework for “the conservation and wise use of all wetlands through local, regional and national actions and international co-operation as a contribution towards achieving sustainable development throughout the world”¹⁴. It recognises wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities. There are currently 21 Ramsar sites in Northern Ireland.

The spread of invasive species has become a problem in many wetlands, affecting the biodiversity of these habitats. Eradication methods are proving complicated and resource intensive. The issues surrounding wetlands involve a wide range of Government departments and other organisations, including the Department (water regulation and planning), DARD (farming and drainage), the Department of Culture, Arts and Leisure (fisheries), Loughs Agency (fisheries) and NI Water (water supply).

¹³ <http://ukwas.org.uk/>

¹⁴ http://www.ramsar.org/cda/en/ramsar-about-about-ramsar/main/ramsar/1-36%5E7687_4000_0

The Water Framework Directive (WFD) provides a strategic approach to improve and integrate the way water bodies are managed.

Marine and coastal margins

Northern Ireland has a rich and varied marine environment with a high degree of biodiversity. About 50% of Northern Ireland's biodiversity is in its seas, and they support fishing, tourism and renewable energy and are a vital part of our cultural heritage. In 2013, NIEA produced an assessment and management plan for the biodiversity of the seas (State of the Seas report).

Many of the threats to Europe's marine resources require co-operation and collective action to be tackled effectively. The Marine Strategy Framework Directive (MSFD)¹⁵ provides the framework for that co-operation and collective action. It outlines a transparent, legislative basis for an ecosystem approach to the management of human activities, which supports the sustainable use of marine goods and services. The overarching goal is to achieve good environmental status (GES) by 2020 across Europe's marine environment. The MSFD lists 11 high-level descriptors of GES¹⁶, and timeframes are clearly set out. A programme of measures for Northern Ireland must be drafted by 2015 and be operational by 2016 with a view to achieving GES by 2020.

Marine Protected Areas (MPAs) and a coherent marine planning system will contribute to the achievement of GES. The Marine Act (Northern Ireland) 2013¹⁷ provides the mechanism for the Department to establish a new type of MPA called a Marine Conservation Zone (MCZ) in the Northern Ireland inshore region. MCZ designations aim to protect nationally important habitats, species and geological features, and the Department has established a clear process for selecting and designating them.

The Northern Ireland Marine Plan is based on an ecosystem approach to managing the wide range of activities which occur in Northern Ireland's territorial waters. It clarifies marine objectives and priorities, and directs decision-makers and users towards more consistent evidence-based decisions and sustainable use of marine resources.

Marine licensing, under the UK Marine and Coastal Access Act 2009, is used to regulate deposits and some removal activities in Northern Ireland's inshore waters. The main objective of marine licensing is to –

- manage the seas for sustainable use;
- balance the need to protect the environment and human health;

¹⁵ http://ec.europa.eu/environment/marine/eu-coast-and-marine-policy/marine-strategy-framework-directive/index_en.htm

¹⁶ http://ec.europa.eu/environment/marine/good-environmental-status/index_en.htm

¹⁷ <http://www.legislation.gov.uk/nia/2013/10/enacted/data.pdf>

- prevent interference with the legitimate uses of the seas; and
- address such other matters as the licensing authority (the Department) thinks relevant.

Supporting Ecosystem Services from the Marine Environment

Marine plankton provide more than half of the oxygen in the air and are fundamental in cycling this most essential of elements. Every time you breathe out, the resulting carbon dioxide could provide the building blocks for single-celled plankton floating around in the Irish Sea. By photosynthesising, that carbon dioxide makes more plankton and in the process gives off oxygen which we breathe. Without these tiny plants, as well as the tropical forests and every green plant, the carbon dioxide would build up and the oxygen decrease, thus making life impossible.

Northern Ireland's coasts are rich in biodiversity and major contributors to our attractiveness to tourists and residents alike. They are particularly rich for seabirds and intertidal marine life, but coastal development and pollution run-off have had locally serious impacts. Climate change and severe weather have a particularly strong impact on the coast physically and on biodiversity. Regulation of the coastal area is an active area of work with both terrestrial and marine legislation of relevance.

Urban and rural development

The value of urban areas for biodiversity – and the value that biodiversity provides for urban residents – has become much more apparent over recent years. Not only do green spaces provide urban lungs by creating oxygen and removing pollution, they are also key sites for recreation, exercise and making cities and towns attractive to residents and tourists alike. Rural development has increased over recent years and there is little of Northern Ireland that is not in view of a house or farm. This has an impact on biodiversity both directly in terms of loss of habitats and indirectly through provision of infrastructure.

Urban nature sites are particularly useful in raising public awareness and delivering environmental education – for example, through the EcoSchools programme. There is much opportunity for urban and rural dwellers to encourage biodiversity and recognition of the benefits this will provide.

Restoring ecosystems

In order to halt the loss of biodiversity, a key goal is the overall plan to restore main ecosystems, whenever possible, where they fail to reach Favourable Conservation Status (FCS). Many ecosystems, such as peatlands, are in a relatively poor condition, so there is

a great deal of work to be undertaken to identify the best ways to reverse the decline and work towards FCS, and this will be both lengthy and resource intensive.

To this end, the Department is working in partnership with other bodies to utilise external funding mechanisms. Where possible, the restoration and reinstatement of habitats and species will be funded through a range of measures in the 2014-2020 funding period. This will include INTERREG (5a) Investment Priority 2.1 (protecting and restoring biodiversity) and Investment Priority 2.2 (investing in the water sector). In particular, a major bid is being progressed under a number of work streams, in collaboration with the Scottish Government and the National Parks and Wildlife Service in Ireland, focusing on the cross border area. These work streams cover the development of habitat maps and management plans for EU sites, actions to restore blanket bog and other peatlands, the creation of wetland areas, and the management of marine protected areas and species. The project will also help management of the cross-border river and lake catchments required under the Water Framework Directive (WFD).

Other funding opportunities which will be explored are EU LIFE Fund Integrated Projects (IP) and LIFE Traditional Projects (TP). These projects offer opportunities for partnership with other regions of the UK or with Ireland and will assist in protecting ecosystems while delivering a wide range of goods and services to society. In addition, the Department grant-aids projects and other initiatives that are undertaken to manage ecosystems by a range of non-governmental organisations and research establishments.

CHAPTER 3 – ADDRESSING ADVERSE PRESSURE

Many factors affect biodiversity some of which we can control and others which we cannot. Climate, ocean currents and weather conditions can all affect landscapes, habitats and individual species. However, people have been a major factor in determining landscapes and biodiversity. While some of these influences have benefitted biodiversity, others have resulted in its decline.

The main problems that the Northern Ireland environment faces include agricultural intensification, pollution, the spread of invasive species, over- and/or under-grazing, and the spread of urban development and associated infrastructure. It is difficult to measure the impact of these changes individually and collectively on particular species. However, some species and habitats act as broad indicators of change. Monitoring them can help assess major changes and their impacts and alert us to potential problems.

Climate change

Climate change is one of the most serious environmental threats globally. Its consequences can include flooding, famine, drought, rising sea levels and ultimately, even the extinction of species. While Northern Ireland is likely to avoid some of the most severe direct impacts manifesting in some other regions, there will be impacts, both direct and indirect, on biodiversity. The general prediction of hotter, dryer summers and warmer, wetter winters may well be accompanied by increases in extreme weather events. Disruption to business, agriculture, services and daily life will increase if adverse changes occur. An increased risk of flooding and coastal erosion will put pressure on drainage, sewerage, road and rail infrastructure, water resources and habitats. Increased temperature, increased pollution and poorer air quality may bring discomfort to vulnerable and threatened species of animals and plants, including crops.

The Climate Change Act 2008¹⁸ extends to Northern Ireland and sets a long-term framework for the UK to reduce its greenhouse gas emissions. Targets are set at a UK-wide level and there are none that are specific to Northern Ireland. However, the Programme for Government 2010-2014 sets a target of continuing to work towards a reduction in greenhouse gas emissions of at least 35% on the 1990 baseline by 2025.

Renewable energy offers the potential for wider environmental benefits through mitigating greenhouse gas emissions from energy generation and socio-economic benefits including employment opportunities. However, renewable energy could also have potentially adverse impacts in both the construction and operational phases – for example, impacts of noise, collision risks and barriers to migrations. Planning and licensing systems regulate renewable energy projects to realise their potential for contributing to climate change mitigation while ensuring sustainable development is achieved.

¹⁸ http://www.legislation.gov.uk/ukpga/2008/27/pdfs/ukpga_20080027_en.pdf

Adapting to the impacts of climate change is also important. It means not only protecting against negative impacts but also being better able to take advantage of possible benefits. The Climate Change Act 2008 requires Government departments to develop an adaptation programme to address the findings of the most recent UK report on the risks and opportunities of climate change and to review it every five years. The first Northern Ireland Climate Change Adaptation Programme was laid before the Assembly in January 2014. A cross-departmental working group on climate change will monitor progress and report annually to the Executive on the actions set out in the Adaptation Programme.

Dig It and Eat It Project

The project teaches participants about fruit and vegetable growing and about improving ones diet. It aims to bring a lasting change in lifestyle to those involved by focusing on the combination of diet and physical health as the key for well-being and fitness. The combination of physical activity, horticultural training, and nutritional know-how motivates the groups and individuals to continue with their gardens on their own when funding ends. Co-ordinated by The Conservation Volunteers, the project covers County Down and Belfast and aims to work with a wide range of individuals of all ages and from all walks of life.

Growing your own also contributes to mitigating the effects of climate change by –

- reducing food miles – food transport = 2% of UK's total carbon emissions;
- reducing packaging – food packaging = 1/3 household waste;
- reducing waste – edible food equivalent to 20m tonnes CO₂ is thrown away in the UK each year; and
- changing behaviour – connecting to nature leads to an increase in environmental awareness and environmentally friendly lifestyles.

Planning and development

While there are many different reasons for biodiversity loss, the UK NEA identifies land-use change, including development, as one of the major impacts on biodiversity in the UK. Development is essential to growing the economy, but it has the potential also to play a part in decreasing biodiversity. It can be a major threat to biodiversity depending upon where it takes place, how it is conducted and the manner in which the site is used following development. Good developments incorporate biodiversity considerations in their design but can result in some biodiversity loss when there are impacts that cannot be avoided. Current planning policy requires mitigation for this loss.

Development is controlled through the planning system, many functions of which have transferred from central to local government. From April 2015, councils have become responsible for –

- local plan-making;
- development management (excluding regionally significant applications); and
- planning enforcement.

Under these new arrangements, the planning system has reformed and restructured from a unitary system (where planning powers rest with central Government) to a new two-tier model of delivery whereby councils have primary responsibility for implementation of most planning functions. These reforms provide for a planning system that is responsive to the priorities and needs of local people.

Currently the Department's Planning Policy Statements (PPSs)¹⁹ set out the regional policy framework on land use and for a wider range of issues. PPS2 sets out the Department's land use planning policies for the conservation of natural heritage. The hierarchy of nature conservation sites – local, national and international – is reflected in the tiered approach of the policies with the degree of protection afforded increasing in accordance with each site's importance.

The forthcoming Strategic Planning Policy Statement for Northern Ireland (SPPS) signals a new approach to the preparation of regional planning policy. It brings forward in a strategic way the general policy approach to natural heritage set out within PPS2 and when published in final form the provisions will apply to the whole of Northern Ireland. They must be taken into account in the preparation of Local Development Plans and are also material to all decisions on individual planning applications and appeals.

A consultation draft SPPS was published in early 2014. It identifies "Furthering Sustainable Development" as a cornerstone of the SPPS and one of eight overarching core planning principles for the reformed two tier planning system. The draft SPPS includes as a goal "working towards halting the loss of biodiversity". In addition, the importance of green and blue infrastructure is addressed under the core planning principle "Improving Health and Well-being" and, where appropriate, the role and value of biodiversity is identified within subject planning policies.

Local Development Plans guide the future use of land and are a fundamental tool in the implementation of Government policies and strategic objectives. In preparing LDPs, councils must take account of the Regional Development Strategy 2035 (RDS 2035)²⁰, the Sustainable Development Strategy for Northern Ireland and any other policies or advice and guidance issued by the Department, such as this Biodiversity Strategy. Councils must also carry out a sustainability appraisal of LDPs to ensure that the plan strategy and the local policies plan are assessed against environmental, economic and social objectives.

¹⁹ http://www.planningni.gov.uk/index/policy/policy_publications/planning_statements.htm

²⁰ http://www.drdni.gov.uk/rds_2035.pdf

With biodiversity still in decline, identifying new and innovative ways to tackle this is essential. Biodiversity offsets are conservation activities designed to deliver biodiversity benefits in compensation for losses incurred during development and there is increasing interest in this as a mechanism for ameliorating to some extent the negative impacts of development on biodiversity. However, recreating entire habitats is extremely costly and time consuming and can rarely replicate the complexity of natural systems. Nevertheless, biodiversity offsetting approaches are being used with varying degrees of success across the world – for example, in the USA, Australia and India.

In 2013, Defra published a consultation paper setting out proposals for biodiversity offsetting and how it might be introduced in England. In tandem with analysing the feedback to the consultation, Defra is also working with Natural England and local councils in six pilot areas to test the biodiversity offsetting approach. The Department will carefully consider the outcome of the Defra consultation and the six pilots to determine the way forward.

Declining Pollinators

Bees, hoverflies, butterflies, moths and other insects play a critical role within the UK and Ireland, pollinating wild flowers and agricultural and horticultural crops. They also influence the floristic diversity of the natural environment.

Value of Pollination

- The market value of insect pollination of agricultural and horticultural crops in Northern Ireland is estimated £7.1 million.
- In 2005, the total economic value of pollination worldwide amounted to €153 billion, representing 9.5% of the value of the world agricultural food production.
- Insect pollination is believed to benefit the yields of 29.75% of globally important crop species and is responsible for an estimated 35% of world crop production.
- California agriculture reaps \$937 million to \$2.4 billion per year in economic value from wild, free-living bee species.

The value of pollination demonstrates an obvious link between pollination services and food security. However, pollinators face a wide range of environmental pressures, including habitat loss due to an increase in built development and agricultural intensification, disease, use of pesticides, and climate change.

Pollinators require flowering semi-natural habitats such as wildflower meadows, hedgerows and woodland edges, as well as agricultural landscapes that include unimproved grassland, hay meadows, clover-rich grasslands, orchards and fields of arable

crops. The loss of such habitats, together with other pressures, has led to the decline of pollinators, resulting in biodiversity and economic losses.

In England, the issue of pollinators is being addressed by Defra through a specific National Pollinator Strategy, and in Wales an Action Plan for Pollinators²¹ has been developed. Meanwhile, the National Biodiversity Data Centre (NBDC) in Ireland is leading on an All-Ireland Pollination Plan that will run until 2022.

Improving the plight of pollinators requires a concerted effort across society to gather data, implement change and raise awareness of pollinators and the crucial service that they provide.

The Department will help to ensure the sustainability of Northern Ireland's pollinators by –

- contributing to the All-Ireland Pollination Plan 2015-2022;
- liaising with Defra on the National Pollinator Strategy;
- researching, collecting and analysing data to reveal trends;
- working with key partners to deliver landscape-scale outcomes and site-based actions; and
- developing policy to ensure the long-term viability of pollinators.

Invasive alien species

Invasive non-native or alien species (IAS) are a growing threat to the environment, the economy and human health. Not all species that have been introduced – intentionally or unintentionally – are problematic. Indeed, many are important to the economy – for example, agricultural and garden plants. However, some species spread widely and create significant problems. Once established, they can be extremely difficult and costly to control or eradicate. In some cases their ecological impacts are severe and irreversible. Some invasive species can be so successful that the functioning of entire ecosystems can be destroyed.

Cost of Invasive Alien Species

- IAS are estimated to cost the EU at least €12 billion per year and damage costs continue to rise.
- A study estimated the current annual cost to the Northern Ireland economy to be £46.5m.

²¹ <http://wales.gov.uk/docs/desh/publications/130723pollinator-action-plan-en.pdf>

To address this increasing threat, the EC has published a Regulation on the prevention and management of the introduction and spread of IAS. The Regulation will help to address the problem of IAS and protect native biodiversity. A list of IAS of EU concern will be drawn up with Member States using risk assessments and scientific evidence. The underlying ethos of the Regulation is in keeping with the CBD guiding principles and sets out three types of intervention: prevention, early warning and rapid response, and management. The intention is to encourage a shift towards a more preventative approach, increasing efficiency and reducing damage costs as well as the cost of action over time.

The Regulation requires a number of new legislative measures to be put in place by Member States, including a requirement to establish and implement action plans for pathways for the introduction of alien species of EU concern.

At a local level, the Department published *An Invasive Alien Species Strategy for Northern Ireland*²² in May 2013. This is an important step forward in efforts to tackle IAS. It establishes a co-ordinated policy and management framework that aims to minimise the impacts of IAS on the economy, environment and society. Thirty key actions that help to address some of the current threats posed by IAS are highlighted in the *Strategy Implementation Plan*. The IAS Strategy will be reviewed in 2016 and thereafter on a five-yearly basis.

Sustainable fisheries

DARD is committed to the development of a sustainable and competitive sea fishing sector through the growth of long-term fishing opportunities that are used in a manner consistent with a healthy, sustainable marine environment. Sea fishing is governed largely by the Common Fisheries Policy (CFP)²³ which has recently been reformed. The three most important objectives of the new CFP are –

- achieving Maximum Sustainable Yield (MSY) for fish stocks by 2015 or 2020 at the latest;
- commitment to land all fish subject to catch limits (the “landing obligation”) starting in 2015 and completing by 2019; and
- development of measures at regional level with Member States having a direct management interest in a fisheries region submitting jointly agreed recommendations for achieving the objectives of the relevant EU conservation measures, multi-annual plans or discard plans, starting in 2014 with the submission of discard plans for pelagic fisheries.

²² http://www.doeni.gov.uk/invasive_alien_species_strategy_2013.pdf

²³ http://ec.europa.eu.fisheries/cfp/index_en.htm

Value of Fisheries

- Sea fishing makes a significant contribution to the Northern Ireland economy.
- The value of landings by fishing vessels in Northern Ireland in 2012 was £31.8m.
- In 2012, the aquaculture industry produced shellfish and finfish to the value of £8.65m.
- In 2011, inshore fisheries were worth an estimated £48m.
- Recreational sea angling contributes to the Northern Ireland economy through tourism, chartering boats and buying equipment.

Inshore fisheries have been described as *“a sector of local cultural and tourism value with the potential to provide high value fishing jobs into the future”*. It is essential that the inshore fishing sector is managed in a way that balances future development with maintenance of a healthy marine environment and exploitation of fish stocks at sustainable levels.

DCAL is responsible for the conservation, protection, development and promotion of salmon and inland fisheries in Northern Ireland, with the exception of those in the Foyle and Carlingford catchments. A key component of DCAL’s broader strategy is to conserve and manage salmon, eels and freshwater fish nationally to ensure their sustainable use and maximise their socio and economic contribution to the Northern Ireland economy. The strategic approach to fisheries conservation reflects Northern Ireland’s obligations to both current EU legislation and the North Atlantic Salmon Conservation Organisation (NASCO)²⁴. The NASCO Implementation Plan (NI) 2013 outlines the steps DCAL will take over the next five years to assist with managing salmon stocks. This includes setting management targets for all major salmon rivers and only allowing exploitation on rivers which meet their management targets. It also involves habitat improvement projects on rivers and the provision of advice and guidance to other bodies with responsibility for regulating activities that are potentially detrimental to fisheries. DCAL has also produced draft fisheries management plans for both Lough Neagh and Lough Erne that provide a strategic approach to managing fish stocks in them and involve stakeholder engagement and consultation.

DCAL is committed to the restoration of marine ecosystems and addressing the impacts on marine food webs, so that marine survival of the salmon and eel improves from current levels. Sea survival rates for salmon are monitored and reported each year.

Responsibility for the Foyle and Carlingford catchments lies with the Loughs Agency, a cross-border body. It aims to provide sustainable social, economic and environmental benefits through the effective conservation, management, promotion and development of

²⁴ <http://www.nasco.int/>

the fisheries and marine resources of the Foyle and Carlingford catchments. The Agency has responsibility for salmon, eel and inland fisheries, as well as the native oyster fishery in Lough Foyle. The Agency undertakes assessments to fulfil obligations under the WFD and Habitats Directives, as well as wider commitments such as those under NASCO, in addition to regular monitoring programmes. Riverine habitat enhancement schemes are carried out annually with the aim of improving the quality of in-river habitat structure for salmonids. This has the benefit of increasing habitat diversity in many instances, thus aiding overall stream biodiversity. With regard to the native oyster fishery in Lough Foyle, regular monitoring and IBIS (Integrated Aquatic Resource Management between Ireland, Northern Ireland and Scotland) research is protecting this important natural resource for future generations.

Water quality

The WFD²⁵ is designed to improve and integrate the way water bodies are managed throughout Europe. It introduces a more holistic approach to water quality, and establishes a framework for the protection of inland surface waters (rivers and lakes), transitional waters (estuaries), coastal waters and groundwater. Under the WFD, Member States must aim to achieve good chemical and ecological status in identified water bodies by 2015. This includes coastal waters out to one nautical mile.

One important aspect of the WFD is the introduction of river basin districts that serve as the administrative areas for co-ordinated water management. There are three river basin districts in Northern Ireland that are managed through River Basin Management Plans (RBMPs). These provide a clear indication of how the objectives set for the river basin are to be attained within the required timescale. The Department, DARD, DCAL and the Department for Regional Development (DRD) all have responsibilities under each RBMP.

The first cycle River Basin Management Plans (2009-2015) set a target of 59% of water bodies to be at good status by 2015 and more than 98% by 2027. Second cycle River Basin Management Plans will be published in December 2015 for implementation by December 2021.

DRD's long-term water strategy, *Sustainable Water*²⁶, includes a number of measures for helping address biodiversity loss because of the valuable contribution that healthy ecosystems make to purifying water. These include NI Water's proposed Sustainable Catchment Management Plan NI (SCAMP NI), together with sustainable land management measures to address diffuse pollution and improve flood risk management. The proposed long-term aim is to ensure sustainable management of ecosystems and delivery of their services.

²⁵ <http://ec.europa.eu/environment/water/water-framework>

²⁶ <http://www.drdni.gov.uk/index/publications/publications-details.htm?docid=9730>

Under the water strategy, and as part of the RBMP implementation, DARD aims to promote the involvement of farmers in agri-environment schemes that are beneficial to biodiversity and water quality. There are also plans to complete the research programme to address the conservation of the freshwater pearl mussel by 2015, while by 2020 measures should be in place to conserve this and other water-dependent species. In addition, it is proposed to reduce the rate of loss of water dependent natural habitats and halt their degradation by 2020.

Since 2007, a comprehensive range of agricultural measures to improve water quality have been implemented through the Nitrates Action Programme (NAP) Regulations. The NAP applies to all farms in Northern Ireland, and the measures place controls on the management of manures and chemical fertilisers. The measures have reduced losses of nitrogen and phosphorus to rivers, lakes and ground waters. Implementation of the NAP has been assisted by DARD through capital grants, training and advisory support.

Air quality

Air pollution can have damaging effects on human health and sensitive habitats. For example, there is strong evidence that nitrogen deposition has caused changes in species composition and has significantly reduced species richness in a range of habitats of high conservation concern over large areas of the UK primarily through eutrophication. Most Special Areas of Conservation (SACs)²⁷ in Northern Ireland are currently receiving atmospheric nitrogen levels that are above the critical thresholds for at least some of the designated features of interest.

The Air Quality Directive (2008/50/EC)²⁸ contains mandatory limit values for a range of pollutants, together with non-mandatory target values for ozone. Each Member State must demonstrate compliance with the limit values by a specified date. The UK Air Quality Strategy (AQS)²⁹ establishes air quality objectives for key air pollutants. In most cases the AQS objectives are identical to the EC Directive limit values, the only difference being the more stringent dates by which the former must be achieved. Local authorities are responsible for reviewing the state of air quality within their areas and use the AQS to assist them in this. Northern Ireland Executive departments also have a responsibility to ensure limit values, target values and alert thresholds for specified pollutants are not exceeded.

Environmental crime

Environmental crime includes waste disposal crime, habitat damage, water pollution, and wildlife crime. The persecution of many raptor species is an example of wildlife crime.

²⁷ http://www.doeni.gov.uk/niea/protected_areas_home/spec_conserve.htm

²⁸ <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?URI=CELEX:32008L0050&from=EN>

²⁹ <http://www.gov.uk/government/publications/the-air-quality-strategy-for-england-scotland-wales-and-northern-ireland-volume-11> and <http://www.gov.uk/government/publications/the-air-quality-strategy-for-england-scotland-wales-and-northern-ireland-volume-2>

Persistent environmental offenders often have links to organised crime, and they inflict large-scale and long-term damage on the environment, depriving the local economy of considerable revenue. Their offending also impacts negatively on the competitiveness of legitimate businesses. Enforcement activity assists the creation of a level playing field to ensure that those who conform to the law are not disadvantaged.

NIEA's Environmental Crime Unit (ECU) works with the Police Service of Northern Ireland and other enforcement agencies to maximise the use of intelligence and resources in the fight against environmental offending. For example, in relation to wildlife crime, the Partnership Against Wildlife Crime Northern Ireland (PAWNI) is a multi-agency body comprising representatives of all organisations with an interest in combating wildlife crime. Its key objective is the reduction of wildlife crime. PAWNI also seeks to raise awareness of wildlife crime in order to facilitate greater intelligence and incident reporting, leading to an increase in prevention and enforcement action.

PAWNI's work feeds into that of a UK-wide PAW group, and there is also liaison with relevant organisations throughout Ireland, including the National Parks and Wildlife Service, the An Garda Síochána and the Irish Raptor Society.

Agriculture and land use

Northern Ireland's land, its diversity of soils and its abundant water, have the potential to make significant and varied contributions to society and the economy. However, there is a high demand on land, and clearly it is in limited supply. Land varies in quality and potential uses. It is important to consider both the capacity and current use of land when making decisions on future use, as well as international drivers such as food demand, carbon pricing, and energy supply and price. Land owners and managers are key in this discussion – they will ultimately deliver the management in response to policies, prices and personal preferences. Paying land owners to manage their land to deliver a range of ecosystem services for public benefit – known as Paying for Ecosystem Services (PES) – is an evolving practice, but it is at the core of the recent revision of the EU Common Agricultural Policy.

Biodiversity and Landscape

Biodiversity is a vital component of what we think of as landscape, along with other natural processes such as air and climate, hydrology, geology and soils, and a wide range of historical, social and cultural processes. These include land use, settlement, enclosure, and other less tangible, aesthetic and perceptual attributes such as memories and associations.

Changing agricultural, forestry and river management practices, urban expansion, road development, mineral extraction, pollution, water abstraction and climate change are examples of activities and events which can have a dramatic effect on Northern Ireland's

biodiversity and landscape character, whether at regional or local level. Landscapes have changed over millennia, with the current landscape largely determined by land use and patterns of development in the past few decades. Managing at the landscape scale is especially difficult given the conflicting demands on the land and the need to influence land owners, people holding a variety of rights, local authorities, and many others.

The Northern Ireland Landscape Character Assessment (NILCA) 2000³⁰ presents descriptive profiles for each of its 130 Landscape Character Areas. Information is presented in the form of key characteristics, followed by a brief overview of woodlands, grassland and arable land, heath and bogs, and wetlands and lakes. Landscape character areas also have associated geo-diversity profiles. Key issues are then described, followed by issues and actions for each of these biodiversity themes.

The new Northern Ireland Regional Landscape Character Assessment provides a consistent and robust landscape evidence base at a regional level that offers a common platform for future strategic, region-wide landscape management, which in turn will assist local authorities in the making of Local Development Plans. The regional scale Landscape Character Areas (LCAs) can be used to deliver greater integration with other regional themes and issues, such as habitat creation, woodland planting and management, informing green infrastructure strategies, the location of development, and identifying the role of landscape in the delivery of ecosystem services. The broad characteristic biodiversity profiles will form a vital strand in the process of the regional scale Landscape Character Assessment.

³⁰ http://www.doeni.gov.uk/niea/land-home/landscape_home/country_landscape.htm

CHAPTER 4 – PROSPERITY AND WELL-BEING

Prosperity and Biodiversity

A new way of looking at nature

Northern Ireland's biodiversity plays a significant role within its economy. A healthy, properly-functioning natural environment is the foundation of sustained economic growth, prosperous communities and personal well-being. But too often nature has been taken for granted and regarded as a free resource. The take-make-discard approach can no longer be continued, if the erosion of the natural environment is to be prevented and sustainable economic prosperity and well-being ensured. Instead, there needs to be a shift in understanding by everyone who benefits from all that nature provides.

Resource efficiency

Natural resources underpin the functioning of the European and global economy and our quality of life. We depend on natural resources – metals, minerals, fuels, water, land, timber, fertile soil, clean air and biodiversity – for survival. They all constitute vital inputs that keep the economy functioning. Resource efficiency – using the earth's resources in a sustainable manner while minimising impacts on the environment – will facilitate the creation of more with less and deliver greater value with less input. Increasing resource efficiency brings major economic opportunities, improves productivity, drives down costs and boosts competitiveness.

Resource efficiency should not be viewed as a barrier but rather an opportunity to –

- develop new products and services;
- minimise waste;
- improve management of resources and stocks;
- change consumption patterns;
- optimise production processes, management and business methods; and
- improve logistics.

Improved resource efficiency is critical to greening the economy and creating new opportunities for green economic growth. Many businesses now recognise that reviewing their efficiency leads to a reduction in overheads, improved competitiveness and makes good business sense. The challenge will be to achieve an environment where improving resource efficiency is the default choice.

Sustainable intensification

Given the inherent importance of agriculture to Northern Ireland's land area, an agricultural land use strategy is to be developed in partnership with stakeholders, as recommended by

the Agri-Food Strategy Board in their report “*Going for Growth*”³¹. This strategy will outline a series of practical actions which can maximise the production efficiency of agricultural land, while ensuring that balanced and, where possible, improved environmental outcomes are achieved. In particular, the strategy will aim to identify where agricultural output can be increased without damaging ecosystem services delivery, where enhanced biodiversity can be achieved while sustaining agricultural output and, crucially, where improving agricultural output and environmental outcomes can both be achieved.

Better regulation

In line with the Department’s objective of creating economic prosperity through environmental and heritage excellence, the operation of the current regulatory regime will be reviewed. Over time, the number and complexity of environmental regulations have increased, making it more difficult for them to be understood and their obligations to be met. The Department is, therefore, subject to Executive agreement, bringing forward new primary legislation, as part of the Regulatory Transformation Programme, to provide a more streamlined and effective regulatory system for business and regulators. As a first step, the focus will be on the creation of a new environmental permitting regime and the rationalisation of powers of entry and associated powers relevant to inspection and enforcement activities.

A business perspective

Northern Ireland has a wide range of businesses of varying sizes. Their impacts on the natural environment are diverse but so too is their potential to contribute to conserving and promoting biodiversity. There is a growing body of evidence and awareness linking a healthy environment to a healthy economy. Business in the Community Northern Ireland (BITCNI), a key business membership organisation, is keen to promote the benefits of biodiversity within their membership. To this end, BITCNI has developed a Business and Biodiversity Charter³² to guide and acknowledge businesses’ engagement with biodiversity. This Charter has differing levels of attainment and is appropriate therefore to all organisations, from micro-businesses to large employers with significant land holdings. To aid integration with existing practices, the Charter has been designed to reflect the clauses of environment management system standards BS8555 and ISO 14001:2004. The Department, through the Strategy, will support this initiative and others that help the business community to conserve and promote biodiversity.

Prosperity Agreements

To help deliver better outcomes for the environment and move towards a prosperous, resource efficient Northern Ireland, the Department has introduced Prosperity Agreements. Prosperity Agreements are voluntary agreements through which NIEA and a partner

³¹ <http://www.agrifoodstrategyboard.org.uk/pages/33/going-for-growth-report>

³² <http://www.bitcni.org.uk/what-we-do/planet/support-available/biodiversity/>

organisation can explore opportunities for reducing negative environment and heritage impacts in ways that create prosperity and well-being.

Individual Prosperity Agreements may be developed with a business, a non-governmental organisation, a trade association, or other partners that have an interest in strengthening their relationship with NIEA and working towards a healthier, and therefore more economically sustainable, environment.

Prosperity Agreements will be tailored to the needs and priorities both of the partner organisation and NIEA. They will be used to address significant environmental and economic issues facing Northern Ireland and to capitalise on opportunities which will aid delivery of biodiversity goals.

Well-being and Biodiversity

Health is our most basic human right. It is more than just the absence of illness or disease, it is “a complete state of physical, mental and social well-being” (World Health Organisation, 1948)³³. Health and well-being are largely determined by the social, economic, physical and cultural environment. The physical characteristics of the environment, and the extent to which they support health and enable and promote healthy behaviours, can make a major contribution to improving health and reducing social inequalities in health. The continuing loss of biodiversity on a local and global scale represents a direct threat to health and well-being.

An emerging body of research is recognising a hugely important range of ecosystem services – the benefits for human health. Providing the opportunities and access to the natural environment, including green spaces such as parks and urban forests, can enhance and promote both physical and mental health and well-being. Significant research shows that urban open spaces offer health benefits to city residents through exposure to a natural environment. There is a strong association between the enjoyment of nature and the health of a city population. When open spaces are attractive and accessible, people are more likely to engage in physical activity, which has obvious health benefits and highlights the importance of green infrastructure for preventing obesity.

Practical projects, such as developing hospital grounds with scenic walks and wildlife havens, have proven benefits for patients. Access to green space is associated with better outcomes, shorter hospital visits and reduced convalescence time for patients than purely urban environments. Moreover, an awareness of environmental values and respect for other spaces has been associated with reduced propensity towards anti-social behaviour in children and young adults.

³³ <http://www.who.int/globalchange/ecosystems/biodiversity/en/>

Causeway Hospital Grounds

Staff at the hospital have undertaken a positive initiative for biodiversity in the hospital grounds. Areas of grassland are now left uncut, which allows plants to flower over the spring and summer months. This creates an amazing wildflower meadow with an array of native flowers, grasses, rushes and sedges. A rare orchid, the marsh helleborine, has been found growing within the uncut meadows and has been recorded at only eight other sites in Northern Ireland.

The wildflower meadows provide an important source of nectar and pollen for pollinating insects, particularly bumblebees, hoverflies, butterflies and moths. These insects support the many species of birds and bats that have set up home within the hospital grounds.

The site is well utilised by staff, patients and visitors, including organised groups from both the acute and mental sectors. The initiative has brought great benefits to both local biodiversity and the health and well-being of people who visit the hospital grounds.

While more research is needed, activities such as walking or playing in green spaces may offer alternatives to some medical treatments, even if the effects are small, because of the low safety risks and economic costs.

There is growing concern about the health consequences of biodiversity loss and change. Changes to biodiversity affect the availability of food and medicines and the incidence of many different pests and diseases. Nature has been providing medicines to treat diseases and relieve suffering for thousands of years. Most prescribed medicines used in industrialised countries today are ultimately derived from natural compounds from plants, animals and microbes, and new cures continue to be found in both new and previously known species. Disturbances to biodiversity will have consequences for human health which will often be unpredictable and undesirable. Opportunities for incorporating health arguments into policy frameworks for action to conserve biodiversity will be explored.

The new cross-cutting strategic framework for public health, *Making Life Better*³⁴, outlines the inter-relationships between health and well-being and other Government policies, and the need to collaborate to ensure potential health effects are considered in policy-making. Health Impact Assessment is a practical tool to support this consideration. The Department of Health, Social Services and Public Safety (DHSSPS) engages the Institute of Public Health in Ireland to provide practical support for departments. DHSSPS's

³⁴ <http://www.dhsspsni.gov.uk/mlb-strategic-framework-2013-2023.pdf>

*Obesity Prevention Framework – A Fitter Future for All*³⁵ also supports the use of green open space to encourage and promote physical activity and active travel.

The Green Gym

This is a health initiative delivered by the Conservation Volunteers in Northern Ireland offering individuals an outdoor alternative to conventional gyms – the opportunity to increase their physical activity levels through direct involvement in practical conservation activities. By providing the appropriate support and training, the Green Gym equips people with knowledge, skills and confidence to achieve their vision of a better environment. The broad goals underpinning this approach include tackling social exclusion, tackling inequalities in health and social well-being and creating environments that will help people maintain good health and well-being.

The Green Gym is a simple way to improve your own health directly through practical activity and improve the quality of life for everyone who uses the enhanced environment. The regular, practical, task-based nature of the initiative increases participants' physical activity levels, sufficiently to benefit their health. It promotes a positive health message, creating a safe environment for people to exercise – without exercising in the traditional sense of the word. Taking the first steps to increasing physical activity through the Green Gym, with a retention rate of over 90%, participants remain committed and increase their physical activity levels at a pace that suits them. It is a natural workout in the outdoors, increasing physical activity, promoting mental well-being and improving the local environment.

The Green Gym is delivered across Northern Ireland supporting people of all ages, abilities and backgrounds to become involved and build confidence towards sustained, healthier lifestyle choices.

The Department's Single Planning Policy Statement (SPPS) requires planning authorities to contribute positively to health and well-being in plan-making and decision-taking. Incorporating green spaces into urban planning through the preparation of local development plans and decision-taking will combine opportunities for conserving biodiversity with health benefits to the population.

Recreation in the natural outdoors provides the opportunity to explore and enjoy biodiversity and special landscapes, inspiring a sense of place, appreciation and ownership of the natural environment and biodiversity. Northern Ireland's Outdoor Recreation Action Plan³⁶, developed in partnership between the Department, other

³⁵ <http://www.dhsspsni.gov.uk/framework-preventing-addressing-overweight-obesity-ni-2012-2022.pdf>

³⁶ www.doeni.gov.uk/niea/our_great_outdoors.pdf

sections of Government, Outdoor Recreation NI and land-owning representatives, sets out a range of actions to encourage more people to enjoy the natural and built environment while also ensuring that biodiversity is safeguarded. It highlights the benefits of outdoor recreation in the natural environment across a range of public sector policies, including health, education and public planning.

SportNI, the Department and many other Government departments and non-government bodies will be supporting implementation of the Outdoor Recreation Action Plan to encourage sustainable access to and enjoyment and understanding of the natural environment.

CHAPTER 5 – ENGAGING SOCIETY AND DEVELOPING PARTNERSHIPS

As biodiversity affects the lives of everyone, there is a responsibility on society to ensure that the true worth of biodiversity is recognised and valued.

Much of the work of central Government has a direct benefit to biodiversity – for example, the Department’s programmes of protecting European and nationally important species and habitats, DARD’s administration of the agri-environment scheme and DRD’s delivery of the long-term Water Strategy. Other benefits to biodiversity are incorporated into the activities or policies of Government departments and public bodies through the statutory Biodiversity Duty. This has resulted in practical benefits for biodiversity – for example, NI Water ensuring appropriate levels of grazing on their lands adjoining reservoirs in the Mourne. Understanding of the benefits that biodiversity can provide is still evolving, but it is clear that biodiversity is fundamental to our way of life and provides many essential services at low cost.

Partnerships

With diminishing budgets and the need to utilise and integrate actions across many organisations to achieve similar or related goals, the need for partnership working is becoming more important. Government can no longer develop and deliver strategies and practical action on its own. It will be important, therefore, to try to identify opportunities to develop and implement actions in partnership with others (NGOs, business, communities) with the potential to deliver multiple benefits. Partnerships across Government departments, with other sectors, and direct engagement with communities will be essential for delivery of this strategy and the achievement of its aims.

Partnerships will be crucial also in securing funding, particularly from within EU programmes and other international funding mechanisms. Organisations working together can achieve much to benefit biodiversity when each work to their strengths. One such example is the Eco-Schools Programme³⁷, which demonstrates the many benefits that young people derive from being engaged with their environment.

³⁷ <http://www.eco-schoolsni.org/>

EcoSchools Programme

- An internationally recognised and accredited programme of environmental education which spans 58 countries.
- Delivered in Northern Ireland by Keep Northern Ireland Beautiful, an environmental charity.
- Principal sponsor is SSE Airtricity with further funding and support provided by the Department, most councils and a number of other organisations.
- Education and Library Boards support the programme with children undertaking practical projects and learning about the issues affecting biodiversity both locally and globally.
- 100% of Northern Ireland's schools registered with the programme, most of which are working towards one of the achievement levels culminating in the Green Flag award.
- Northern Ireland is ranked ninth out of the 58 participating countries for number of Green Flag status schools.
- Northern Ireland was the first country in the world to award a Green Flag to one of its schools.

This is only one example. Much work is undertaken by many organisations, including community groups, NGOs, business interests and individuals. Partnerships, both within and across sectors, have been developing over recent years and are very effective in many aspects of delivery. Projects span community engagement, education, public awareness and practical activities and are delivered across a wide range of species, habitats and geographical area. Together they inspire and co-ordinate public understanding and voluntary activity.

The introduction of the NGO Challenge Fund³⁸ has allowed the Department to support local environmental works, with around 250 projects undertaken in 2013/14 with monies from the levy on single use carrier bags. Grants support local action to deliver projects and have enabled communities to interact fully with their local biodiversity through practical biodiversity projects as well as education and public engagement. The Challenge Fund has enabled biodiversity work to be undertaken in nature reserves, ASSIs, and the wider community and provided direct community benefits from the levy.

³⁸ <http://www.nienvironmentlink.org/news/a/12m-for-Challenge-Fund-2014>

Pine Martens of Crom Estate

Pine martens are one of Northern Ireland's rarest mammals. The National Trust was awarded funding from the Challenge Fund to investigate their distribution and abundance at Crom Estate. A number of non-invasive techniques were used including motion-sensitive cameras and "hair tube" genetic analysis which allowed for identification of individual animals.

Environmental NGOs

Environmental NGOs (eNGOs) play a significant role in all aspects of nature conservation, managing nature reserves, encouraging public participation in practical biodiversity projects, providing data on biodiversity trends, devising and testing innovative ideas, and influencing policy through lobbying Government and other decision-makers on policies affecting the environment. The biodiversity projects and other initiatives undertaken by well-organised and motivated eNGOs have also assisted in raising awareness of the important role which the environment play in well-being. eNGOs are particularly good at engaging the public and enthusing them about their local area. Changing behaviours and attitudes is vital with respect to how the public and decision-makers view biodiversity but it is notoriously difficult. eNGOs have experience in this and can support Government in getting the message across. Increasingly, eNGOs are seen as having a significant role in designated site management in partnership with Government or private landowners.

Resourcing is always an issue for these organisations as they rely heavily on public subscriptions and volunteers to ensure that important biodiversity work is undertaken. Organisations are often able to avail of direct Government funding as well as drawing down external funds – for example, through the EU or the Heritage Lottery Fund. Increasingly, Government works in partnership with many eNGOs to meet EU or national targets. NGO and "citizen scientist" expertise and knowledge on specific birds, plants or habitats plays a crucial part in the overall objective of halting biodiversity loss.

Societal engagement

Many individuals have a huge range of expertise and enthusiasm which they are willing to use to help maintain and improve their local biodiversity. There has been a steady growth in the numbers of individuals, communities and organisations involved in environmental issues at all levels. Mechanisms facilitate and encourage involvement in the active management of particular areas, in measuring environmental parameters, and in recording biodiversity assets. Such engagement at an individual and community level offers great potential for the effective delivery of data and the integrated management of local areas.

Mechanisms for Societal Engagement

- Volunteering with a conservation charity or organisation.
- NGO Challenge Fund providing funding for communities and organisations to develop new and inspiring local environmental programmes across Northern Ireland.
- Heritage Lottery Fund providing funding for natural heritage projects.
- Environmental Recorders Group (ERG), established by CEDaR, operating a grant scheme to encourage biological and geological recording.

Local authorities

As with all public bodies, Northern Ireland's local authorities have a statutory duty to protect biodiversity and the capacity to directly protect and safeguard biodiversity through their management of parks, gardens, nature reserves and other open spaces within their boundaries. In addition, most councils engage biodiversity officers to draw up and implement Local Biodiversity Action Plans (LBAPs). These LBAPs set out practical actions which are designed to –

- ensure that nationally and locally important species and habitats are conserved and enhanced;
- increase public awareness of the importance of biodiversity and the role it can play within all aspects of regeneration, health and sustainable development; and
- involve as many bodies and individuals as possible.

Councils also have discretionary powers to designate local nature reserves and provide rights of way for people to access and enjoy the countryside. With the advent of additional responsibilities, including development control and community planning powers, councils will have greater scope to influence issues affecting biodiversity. The availability of data and information will be critical to the effectiveness of this.

Business Community

Businesses have traditionally viewed biodiversity action as part of their site management or corporate/social responsibility. Working more closely with businesses will help to highlight their dependence on a healthy environment and natural ecosystems, as well as the economic potential of working differently and taking account of nature in business planning. It is vital to invest in the services that nature provides. Successful companies not only take account of the market price of natural resources, they assess both the risks and opportunities, take account of the role of biodiversity in resources used, and consider the need for resilience in the supply chain to achieve resource efficiency. They also assign value to the services provided by nature and account for them in business planning.

Many companies are now embracing the concept of the circular economy. This challenges businesses to move away from the take-make-discard model and, instead, adopt one that preserves material through reuse or recycling, zero waste, and the use of renewable energy.

Partnerships with other parts of the UK and Ireland

The problems associated with safeguarding local biodiversity do not start or end at Northern Ireland's land and sea boundaries. Many of the issues which affect biodiversity are common throughout Ireland, the UK, the European mainland, and beyond. It is therefore more practical and cost effective to tackle these issues geographically where possible. As Northern Ireland shares a land and sea border with the Republic of Ireland, there is ongoing cooperation with officials there to deal with invasive species, protection of priority species, and European sites which straddle the border, as well as the wide range of marine-related issues in Carlingford Lough, Lough Foyle and the seas around the coast. Indeed, many of Northern Ireland's European commitments require close cooperation across Member States, and there is a commitment to build on existing practical collaboration and information sharing.

In the UK, Defra leads on policy negotiations at EU level and in relation to the international Convention on Biological Diversity (CBD). Nature conservation is largely a devolved matter, with the Northern Ireland Assembly legislating on environmental and other activities which affect biodiversity here. The Department and DARD work closely with Defra and the other Devolved Administrations on European initiatives and national priorities and targets. On an operational level, scientific expertise and assistance from organisations such as the Joint Nature Conservation Committee (JNCC) is availed of. JNCC is the scientific advisor to the UK Administrations, and coordinates information across the UK for reporting on the Habitats and Birds Directives and to the CBD. They also provide direct assistance to the Department on many issues, such as the process for designating a range of Marine Conservation Zones.

Data capture and recording

Bio- and geo-diversity action needs to be underpinned by robust science. A scientific, evidence-based approach to decision making requires a range of inputs, including core data and research that is updated on a regular basis. Evidence needs to be driven by need: this includes guiding policy development, informing decision-making processes, and assessing the effectiveness of policies and strategies. Collecting evidence, whether it is through research, survey or biological recording or case studies is time consuming and potentially costly. It also presumes that the various mechanisms for accessing information are maintained and that data produced has the potential for more than one end use.

The move towards better integration of data products is a key objective of Government. Where there is a spatial or geographical aspect to data, a centralised system, Spatial NI, provides a mechanism for sharing and accessing data. There are obvious benefits in better integrating the data gathering activities of departments and other institutions to enhance compatibility and reduce costs. Collaboration between the Department and AFBI is a prime example of using existing data and expertise for multiple purposes. Continued development of this and other knowledge bases is important in facilitating the interpretation, utilisation and further gathering of data.

Action in relation to biodiversity data and information will be addressed through a number of key areas –

- Continuing to develop and further integrate science expertise within Government and making the data and information more widely available to external users to increase the benefit of data re-use. Capacity building in the various key disciplines such as geology, freshwater, marine, invertebrates, non-flowering plants and fungi is also an area of need.
- Projects will be developed and taken forward to enhance the availability of data held. CEDaR, Northern Ireland's record centre, collates data supplied by Government, volunteers, NGOs and environmental consultants and makes available data products through a range of media.
- Commissioning research work to meet specific demands for research evidence will continue to be undertaken as necessary by NIEA and other parts of Government. A wide range of research can be accessed via published literature and review articles. NIEA has also research partnerships with a variety of academic institutions which provides such evidence. Maintaining linkages to other research institutions and research programmes in other parts of the UK and EU Member States will provide opportunities for partnering in wider research programmes of mutual benefit where external funding sources can be accessed.
- Working towards a more integrated and strategic approach to identify various data needs and timescales, using other organisations' software and analysis gathering, to serve multiple uses across the public sector.
- Addressing gaps in knowledge about where habitats and ecosystems are and how they are changing will be addressed through the development of mapping products that detail what is on the surface of Northern Ireland. The aim is to produce a range of products that can be used in specific locations and for regional or national action/monitoring.

CHAPTER 6 – DELIVERY, MONITORING AND REVIEW

Implementing the Strategy

The Strategy contains seven overarching goals closely linked to the internationally agreed Aichi Target to help halt the loss of biodiversity in Northern Ireland. An Implementation Plan is included as part of the Strategy and sets out the 57 actions that will be taken to meet the goals. Together, the goals and actions set out accountability and demonstrate a long-term commitment by the Northern Ireland Executive and wider society to halting biodiversity loss. The Strategy also recognises the value of biodiversity in relation to economic prosperity and health and well-being.

It is clear that the task of halting biodiversity loss cannot be achieved by Government working in isolation. Substantial good work is undertaken by others, thus the Strategy and Implementation Plan also reflect the steps that NGOs, local authorities and business are taking and intend to take to complement Government's undertakings.

Oversight of the implementation process will be undertaken by the Department working closely with relevant stakeholders.

Funding

Funding is crucial to all aspects of nature conservation, with monies allocated for biodiversity coming from many different sources in a variety of ways. Budget allocated to Government departments is determined by the Executive. In the current funding climate, and given competing demands and priorities, it is difficult to say what future budget allocations will be, and the Department will have to take account of this in prioritising all of its work including implementation of this Strategy.

In this funding climate European funding becomes increasingly important. Funding streams include monies allocated under the EU CAP and from the EC's Multi-annual Finance Framework (MFF). The MFF funding period will run from 2014 to 2020. The Commission has asked each Member State to provide a Prioritised Action Framework (PAF), a strategic planning tool which describes the action needed to deliver the EU's Biodiversity Strategy to 2020. This document will be used by the Commission in directing European funding for biodiversity and nature. The Department has already prepared its PAF, which was submitted to the EU in 2013.

Local authorities are funded primarily from rates and Government grants, as well as from fees for some of the services they provide. In addition, local authorities and charities can apply to a number of DOE grant programmes for support for projects that will help deliver DOE priorities. Money raised from the Carrier Bag Levy is channelled through the

Challenge Fund and is used to help communities, charities, schools and voluntary organisations deliver local projects to improve the environment for everyone.

The Heritage Lottery Fund (HLF) also offers a key funding opportunity to many organisations in Northern Ireland, particularly community and non-Government organisations involved in a wide range of natural heritage projects with a lasting impact on people and places. Projects range from parks and historic places to archaeological sites, the natural environment and cultural traditions. Biodiversity has benefited greatly from projects funded under the HLF since 1994.

Drumnaph Community Nature Reserve

Drumnaph Community Nature Reserve is unique in that it is owned and managed by the local community. With assistance from the HLF and NIEA, Carrtagher Community Association purchased the land and created the nature reserve.

Benefits

- Reserve covers 215 acres and boasts nature habitats and species of national and European importance.
- Public can now access a wide range of habitats and countryside experiences.
- Project is preserving culture and folklore.
- Prompted a revival in traditional skills such as dry stonewalling and coppicing.
- Providing local community with volunteering opportunities and range of new heritage skills.

Monitoring and reporting

The Department will have lead responsibility for monitoring and reporting on progress towards delivery of the Biodiversity Strategy and its Implementation Plan. The WANE Act of 2011 places a statutory requirement on it to publish a report on the implementation of the Strategy not later than five years after the Act came into operation and then once in every period of five years. The first report is due in late 2016, and the Department will work with all those contributing to achievement of the goals and delivering actions to ensure that a comprehensive report is prepared and published within that timescale.

In addition, the Department will publish an annual update on progress towards achieving the actions set out in the Implementation Plan, and these will be used to assist preparation of the five-year report.

Measuring performance

While the annual progress reports will demonstrate what is being achieved in terms of delivery, there is also a need to assess whether the goals and actions are benefitting biodiversity. There are a number of ways in which that assessment can be made.

The Department can make use of information provided in relation to other obligations. This includes the information contained in the Article 12 and 17 reports under the Habitats and Birds Directives, as well as reports required under other EU initiatives, such as the MSFD and WFD. Climate change has the potential to affect biodiversity radically, and reports on adaption and mitigation measures will be valuable in determining biodiversity trends. Information and data held by JNCC will also assist with identifying trends and solutions.

There is a wealth of information about biodiversity collected by eNGOs and other bodies. This is usually made public and can be used by the Department. As a signatory to the Convention on Biological Diversity and the Aichi Target, the UK is committed to developing and using a set of indicators to report on progress towards meeting the international targets and goals. The UK publishes a set of indicators³⁹ annually, and these were comprehensively reviewed in 2011 and 2012 to ensure they continue to be based on the most robust and reliable available data and that they remain relevant to the new international goals and targets. Northern Ireland contributed to these reviews and, consequently, many of the indicators will be helpful in assessing the impact of the goals and actions in the Strategy and its Implementation Plan.

The Department has now published two State of the Environment (SOE) reports⁴⁰. The first, published in 2008, presented baseline indicators across six themes. The 2013 SOE Report commented on 44 indicators across eight themes. An equivalent document on the marine environment, the State of the Seas report⁴¹, completes the picture and helps to assess emerging trends to assist in decision-making over the longer term.

Another source of data capture is the Biodiversity Action Reporting System (BARS)⁴², a web-based UK reporting system. The system collates standardised data on actions taken to achieve specific biodiversity objectives. The use of BARS is a useful tool to report the breadth of biodiversity action across Northern Ireland.

Data collated by CEDaR will continue to provide a useful source of information to identify trends. Where required, research work will be commissioned to meet specific demands when resources are available.

³⁹ <http://jncc.defra.gov.uk/page-1824>

⁴⁰ http://www.doeni.gov.uk/niea/index/about-niea/state_of_the_environment.htm

⁴¹ http://www.doeni.gov.uk/niea/water-home/state_of_the_seas_ni_report.htm

⁴² <http://ukbars.defra.gov.uk/>

Review

The Department will use the information in the first report due in 2016 as the basis of a review of the Strategy. A number of the associated actions are due for completion by 2016, therefore a review at that time will help to renew and reinvigorate interest in the overall aim of halting biodiversity loss. The review will look at what has been achieved, what has been successful and changing circumstances. It will identify key challenges and any new initiatives or threats that have emerged.

Glossary of Terms

ASSI	Area of Special Scientific Interest
AFBI	Agri-Food and Biosciences Institute Northern Ireland
AONB	Area of Outstanding Natural Beauty
AQS	Air Quality Strategy
BARS	Biodiversity Action Reporting System
BITCNI	Business in the Community Northern Ireland
CAP	Common Agricultural Policy
CBD	Convention on Biological Diversity
CDWGCC	Cross-Departmental Working Group on Climate Change
CEDaR	Centre for Environmental Data and Recording
CFP	Common Fisheries Policy
COP10	Conference of the Parties 10 (held in Nagoya, Japan)
DARD	Department of Agriculture and Rural Development
DCAL	Department of Culture, Arts and Leisure
Defra	Department for Environment, Food and Rural Affairs
DRD	Department for Regional Development
DSD	Department for Social Development
DSM	Designated Site Management
EC	European Commission
ECU	Environmental Crime Unit
EFS	Environmental Farming Scheme
eNGO	Environmental Non-Government Organisation
EU	European Union
FCS	Favourable Conservation Status
GES	Good Environmental Status
GHG	Greenhouse Gas
IAS	Invasive Alien Species
IRBD	International River Basin District
IUCN	International Union for Conservation of Nature
LPS	Land and Property Services

MCA	Marine and Coastal Access Act 2009
MCZ	Marine Conservation Zone
MPS	Marine Policy Statement
MSFD	Marine Strategy Framework Directive
Natura 2000	An EU-wide network of nature protection areas comprising Special Areas of Conservation designated under the 1992 Habitats Directive and Special Protection Areas designated under the 1979 Birds Directive
NEA	National Ecosystem Assessment
NGO	Non-Government Organisation
NIBG	Northern Ireland Biodiversity Group
NICMS	Northern Ireland Countryside Management Scheme
NICS	Northern Ireland Countryside Survey
NIEA	Northern Ireland Environment Agency
NIMP	Northern Ireland Marine Plan
NIRDP	Northern Ireland Rural Development Programme
NPWS	National Parks and Wildlife Service
OFMDFM	Office of the First Minister and Deputy First Minister
PAF	Prioritised Action Framework
PAWNI	Partnership Against Wildlife Crime Northern Ireland
PfG	Programme for Government
PPS	Planning Policy Statement
RBMP	River Basin Management Plan
RDP	Rural Development Programme
SAC	Special Area of Conservation
SOE Report	State of the Environment Report
SPA	Special Protection Area
SPPS	Strategic Planning Policy Statement
SPP	Statement of Public Participation
The Department	Department of the Environment
WANE Act	The Wildlife and Natural Environment Act (Northern Ireland) 2011
WFD	Water Framework Directive
WGS	Woodland Grant Scheme

Aichi Biodiversity Targets

Strategic Goal A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across Government and society

Target 1

By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.

Target 2

By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.

Target 3

By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio-economic conditions.

Target 4

By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.

Strategic Goal B: Reduce the direct pressures on biodiversity and promote sustainable use

Target 5

By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.

Target 6

By 2020, all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem-based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.

Target 7

By 2020, areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.

Target 8

By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.

Target 9

By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.

Target 10

By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.

Strategic Goal C: To improve the status of biodiversity by safeguarding ecosystem, species and genetic diversity**Target 11**

By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.

Target 12

By 2020, the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.

Target 13

By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.

Strategic Goal D: Enhance the benefits to all from biodiversity and ecosystem services**Target 14**

By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.

Target 15

By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.

Target 16

By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation.

Strategic Goal E: Enhance implementation through participatory planning, knowledge management and capacity building

Target 17

By 2015, each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan.

Target 18

By 2020, the traditional knowledge, innovation and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.

Target 19

By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.

Target 20

By 2020, at the latest, the mobilization of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization, should increase substantially for the current levels. This target will be subject to changes contingent to resource needs assessments to be developed and reported by Parties.

Twelve Principles of the Ecosystem Approach

1. The objectives of management of land, water and living resources are a matter of societal choice.
2. Management should be decentralised to the lowest appropriate level.
3. Ecosystem managers should consider the effects (actual or potential) of their activities on adjacent and other ecosystems.
4. Recognising potential gains from management, there is a need to understand and manage the ecosystem in an economic context. Any such ecosystem management programme should –
 - a) reduce those market distortions that adversely affect biological diversity;
 - b) align incentives to promote conservation and sustainable use; and
 - c) internalise costs and benefits in the given ecosystem to the extent feasible.
5. Conservation of ecosystem structure and functioning, in order to maintain ecosystem services, should be a priority target of the ecosystem approach.
6. Ecosystems must be managed within the limits of their functioning.
7. The ecosystem approach should be undertaken at the appropriate spatial and temporal scales.
8. Recognising the varying temporal scales and lag-effects that characterise ecosystem process, objectives for ecosystem management should be set for the long-term.
9. Management must recognise that change is inevitable.
10. The ecosystem approach should seek the appropriate balance between, and integration of, conservation and use of biological diversity.
11. The ecosystem approach should consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations and practices.
12. The ecosystem approach should involve all relevant sectors of society and scientific disciplines.

Implementation Plan

2020 Goals	No	Associated Actions	Target Date for Actions	Lead Body	Related Aichi Target
Healthy Ecosystems					
Create a more integrated ecosystem approach to terrestrial, marine and freshwater conservation to help safeguard ecosystem services	1	Develop a biodiversity screening tool to include guidance and appropriate training to ensure Government policy is proofed for its effects on biodiversity	June 2018	DOE	2, 4
	2	Publish an Agricultural Land Use Strategy which includes a commitment to balanced environmental outcomes	Dec 2016	DARD	1, 2, 17
	3	Review the Strategic Planning Policy Statement to ensure that measures to promote biodiversity remain appropriate	Dec 2020	DOE	1, 2, 17
	4	Publish the Rural Development Programme	Sept 2015	DARD	4, 7
	5	Develop and introduce an Agri-Environment Climate Programme, comprising an Environmental Farming Scheme and a Land Management Programme, as part of the Northern Ireland Rural Development Programme (NIRDP)	Dec 2020	DARD	4, 7, 15
	6	Review the Environmental Impact Assessment (EIA) (Agriculture) (Northern Ireland) Regulations 2007	May 2017	DARD	2, 4, 7

2020 Goals	No	Associated Actions	Target Date for Actions	Lead Body	Related Aichi Target
	7	Finalise Flood Risk Management Plan based on River Basin Districts	Dec 2015	DARD Rivers Agency	8, 14
	8	End the practice of discarding unwanted fish quota species; support highly selective gear trials and adoption of new technology through EMFF; and introduce appropriate monitoring, enforcement and control measures in line with regional and local plans	Dec 2019	DARD	6, 7
	9	Contribute to UK policy on developing regionally agreed discard plans, multi-annual plans to deliver maximum sustainable yields and discard reduction targets	Dec 2020	DARD	6, 7
	10	Expand a wide range of forest types and area of broadleaf trees from 8% to 12% of Northern Ireland land area	Ongoing to 2050	DARD	7
	11	Make 30% of direct payment (Pillar 1) support to farmers as a greening payment in respect of crop diversification, retention of permanent grassland and the establishment of ecological focus areas as required by EU CAP	Dec 2019	DARD	20
	12	Publish a Marine Plan for consultation to assist the management of Northern Ireland's waters	Nov 2015	DOE	1, 18
	13	Develop a programme of measures to	Dec 2015	DOE	10, 14

2020 Goals	No	Associated Actions	Target Date for Actions	Lead Body	Related Aichi Target
		achieve Good Environmental Status as required by the Marine Strategy Framework Directive			
	14	Implement the programme of measures to achieve Good Environmental Status as required by the Marine Strategy Framework Directive	Dec 2016	DOE	10, 14
	15	Undertake two reviews of the lists of priority species and habitats as required by the WANE Act	Dec 2017 Dec 2020	DOE	5, 11
	16	Deliver peatland and wetland habitat restoration around the Lough Neagh Basin "Futurescape" through support for "Rebuilding the Countryside Programme for 2015/16"	Mar 2016	RSPB	14, 15
	17	Develop projects to refurbish Blue Circle Island and Green Island in Larne Lough and Carlingford Lough SPAs to ensure favourable condition	Dec 2020	RSPB	11, 14, 15
	18	Review the implementation of the Sustainable Development Strategy to identify recommendations for the effective mainstreaming of sustainable development in Executive Departments	Dec 2016	OFMDFM	1, 2, 4, 8
Complete the statutory designation programmes, subject to scientific evidence and resources, and manage designated sites to achieve favourable conservation status.	19	Complete the MCZ designation process	Dec 2016	DOE	5, 6, 11, 12
	20	Complete the SAC and SPA designation programmes	Dec 2016	DOE	5, 6, 11, 12
	21	Complete 95% of the identification and	Dec 2020	DOE	5, 6, 11, 12

2020 Goals	No	Associated Actions	Target Date for Actions	Lead Body	Related Aichi Target
		selection of nationally important terrestrial sites			
	22	Maintain a risk-based programme of ASSI designation	Annually	DOE	5, 6, 11, 12
	23	Develop habitat maps for all cross-border sites	Dec 2016	DOE	11, 14, 15, 17
	24	Develop approaches for knowledge exchange, expertise development and quality assurance	Dec 2020	DOE	18, 19, 20
	25	Develop management plans for all SACs	Dec 2020	DOE	11, 14, 15, 17
	26	Protection, enhancement and management of 4,400 hectares of designated land for biodiversity benefit	Dec 2020	National Trust	5, 7, 11
	27	Management of the remaining 5,900 hectares of non-designated land to maintain and enhance priority habitats and species	Dec 2020	National Trust	5, 7, 11
Addressing Adverse Pressure					
Reduce direct pressures to help safeguard biodiversity	28	Implement the Water Framework Directive through delivery of second cycle River Basin Management Plans (2016-2021)	Dec 2021	DOE	10, 14
	29	Consider the outcome of the consultation on Biodiversity Offsetting carried out by Defra and decide on the way forward in Northern Ireland	June 2016	DOE	1, 2
	30	Establish a cross-border data hub for	Dec 2017	DOE	18, 19

2020 Goals	No	Associated Actions	Target Date for Actions	Lead Body	Related Aichi Target
		recording information on targeted sites			
	31	Contribute to an all-Ireland pollination plan 2015-2022.	Dec 2015	DOE	1, 2, 19
	32	Report on progress on the Invasive Species Strategy Implementation Plan and undertake a review of its associated actions	Dec 2016	DOE	9, 10
	33	Develop and introduce new legislation to prevent the introduction of invasive species with a high impact on biodiversity.	Mar 2016	DOE	9, 10
	34	Implement measures in the Environmental Farming Scheme within the NIRDP to control non-native plant and animal species	Dec 2020	DARD	9
Work towards meeting the 2025 target to reduce greenhouse gas emissions by at least 35%, based on 1990 levels	35	Report on progress on Implementation of the Greenhouse Gas reduction plan	Annually	DOE	10, 15
	36	Publish a revised adaption programme to address climate change risks	Dec 2018	DOE	10, 15
	37	Identify options to lower ammonia and associated nitrogen emissions to meet UK targets	Dec 2018	DOE	15
Prosperity and Well-being					
Promote the natural environment for the wider benefits which biodiversity provides and encourage better management of	38	Develop actions within Prosperity Agreements, where appropriate, that enhance biodiversity	Annually (as indicated in each	DOE	1, 2, 4, 20

2020 Goals	No	Associated Actions	Target Date for Actions	Lead Body	Related Aichi Target
biodiversity by a wide range of stakeholders.			Prosperity Agreement review)		
	39	Implement the recommendations of the Outdoor Recreation Action Plan, including a review of existing legislation, to increase public enjoyment and understanding of land and seascapes	Dec 2018	DOE	4, 11, 14, 15, 19, 20
	40	Embed outdoor recreation into all AONB management plans	Dec 2020	DOE	4, 11,14, 15, 19, 20
	41	Outdoor learning established and embedded into Teacher Training Programmes	Dec 2016	DOE	4, 11,14, 15, 19, 20
	42	Develop a Land, Outdoors and Nature Strategy for Northern Ireland	Dec 2016	National Trust	1, 7,11
Engaging Society and Developing Partnerships					
Engage widely across society to benefit biodiversity and achieve greater resource efficiency	43	Positive management of 700 hectares of land for biodiversity benefit	Dec 2020	Ulster Wildlife	3, 5, 7, 8, 14, 15
	44	Publish guidance to assist public bodies to comply with the Biodiversity Duty	Dec 2015	DOE	1, 2, 17, 18, 19
	45	Deliver grassland conservation training to over 500 landowners	Dec 2017	Ulster Wildlife	18, 19
	46	Implement the Business and Biodiversity Charter to promote environmental standards across business interests	Dec 2018	BITC	17, 18, 19, 20

2020 Goals	No	Associated Actions	Target Date for Actions	Lead Body	Related Aichi Target
	47	Review Local Biodiversity Action Plans to assist in the promotion and conservation of biodiversity at a local level	Dec 2020	Local Authorities	1, 2, 18
	48	Restore 240 hectares of ancient woodland	Dec 2018	Woodland Trust	11, 12, 13, 14
	49	Develop a co-ordinated and integrated mechanism to assist NGOs to bid for external funding on a more strategic and long-term basis	Dec 2017	NIEL	17, 20
	50	Increase the number of schools which achieve the internationally recognised standard under the Eco Schools programme from 19% to 50%	Dec 2020	Keep NI Beautiful	1, 2, 18
	51	Increase volunteering engagement in biodiversity management to 82,000 hours.	Dec 2020	National Trust	1, 7
	52	Increase number of individuals actively involved with citizen science recording projects by 10%.	Dec 2020	CEDaR	1, 7, 18
	53	Work with DARD, NIEA and land managers to increase populations of certain species in HELP project areas in Fermanagh, Lough Beg and Lough Foyle to demonstrate agri-environment best practice	Dec 2020	RSPB	3, 4, 7
	54	Survey of priority species on RSPB nature reserves	Annually	RSPB	19
Implement an integrated approach to data gathering and accessibility of bio/geo	55	Undertake protected site monitoring	Ongoing	DOE	18
	56	Initiate Article 12 (Birds Directive) and	Oct 2017	DOE	20

2020 Goals	No	Associated Actions	Target Date for Actions	Lead Body	Related Aichi Target
diversity evidence and advice to inform better decision making		Article 17 (Habitats Directive) reporting exercise to meet overall EU timescales			
	57	Agree and initiate bio/geo diversity monitoring, mapping and surveillance programmes	Dec 2020	DOE	20