



A REVIEW OF OPTIONS TO ENHANCE BUSINESS CONTRIBUTION TO IRELAND'S NATIONAL BIODIVERSITY OBJECTIVES

2020



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Executive Summary

The continuing loss of biodiversity presents the risk that one million of the eight million species on earth are threatened with extinction within the next few decades. The global biodiversity crisis has received less attention as a policy priority than climate change, but is equal in the severity of its consequences and interrelated to a significant degree. It is an existential crisis in that biodiversity supports the many ecosystem services on which human beings depend, including food supplies, clean water and climate regulation as well as our quality of life. Business has a considerable role to play in protecting biodiversity by ensuring that any adverse impacts from business activity are avoided and by working towards a situation of environmental net gain. Just as human beings are dependent on biodiversity, so too are businesses for supplies of products, quality of products, water availability, health and safety, and avoidance of environmental risk. Many businesses are also embracing biodiversity and environmental sustainability as a means of differentiating themselves competitively with new products, new customer markets and enhanced access to finance.

This report has been commissioned by the Department of Housing, Local Government and Heritage (NPWS), with the co-operation of the Department of Enterprise, Trade and Employment (DETE), to examine the relationship between business and biodiversity in Ireland and the potential for establishing a platform to support and encourage business engagement with biodiversity.

It addresses Action 1.1.12 of the **National Biodiversity Action Plan 2017 to 2021** and builds on the discussion and commitments made at the National Biodiversity Conference in Dublin in February 2019.

Chapter 1 of this report commences by setting out the policy landscape and business context, namely:

- The contribution of biodiversity and natural capital to human wellbeing
- The status of biodiversity and relevant pressures
- Drivers of global and EU business action on biodiversity
- International business and biodiversity initiatives
- What businesses can do for biodiversity.

Chapter 2 sets out the **methodology** followed in this project. This consisted of three core activities:

- A **review** of business impacts and dependencies on biodiversity, as well as examples of good practice by businesses who have taken actions with respect to biodiversity, the environment and climate change.
- An **online survey**, covering **122** respondents from 12 sectors: Agriculture and Forestry; Aggregates and Mining; Chemicals and Pharmaceuticals; Construction; Energy; Food and Drink; ICT (Information Communication and Technology); Marine and fisheries; Retail; Transport; Tourism and hospitality; and Water.
- A series of **20 semi-structured interviews** with a selection of survey respondents, to explore their responses to the survey in more detail.

Chapter 3 describes relevant **policies** for Irish business, including those directed at environmental protection, climate change and sustainability. The chapter also reviews the role of various **economic sectors**, their relevance to biodiversity, including impacts and dependencies on biodiversity. The seven sectors profiled are: Agriculture and forestry; Aggregates and mining; Energy; Food, drink and retail; Marine and fisheries; Peatlands; and Tourism and hospitality.

The review of these different sectors shows the considerable impact that economic activity can have on the environment and biodiversity. This relationship has often been negative. However, the review also reveals the considerable influence that businesses can have, including the opportunity to adapt and innovate in relation to protecting biodiversity, and the potential benefits for competitiveness.

Chapter 4 looks at why and how businesses in Ireland engage with biodiversity, providing evidence of good practice including Business in the Community Ireland's Biodiversity Framework, Corporate Biodiversity Strategies and Biodiversity Action Plans. It reviews examples of actions and initiatives including payments for ecosystem service (PES), biodiversity offsets, and the value of natural capital assessments and accounts. It also presents case studies of good practice from several sectors.

Chapter 5 presents the **results** of the online survey of businesses' awareness and actions on biodiversity along with observations from interviews conducted with sample companies. The survey and interviews helped to determine the extent of business engagement with biodiversity and the extent of current and planned activities. Many businesses reported taking actions on Corporate Social Responsibility, sustainability and climate change mitigation and adaptation. However, businesses did not always recognise how these actions could impact biodiversity and how activities can benefit both biodiversity and the business itself. Few businesses in Ireland have yet implemented dedicated biodiversity strategies.

Chapter 6 provides **conclusions and recommendations** based on the findings from the study. It recommends that:

- Steps are taken to increase business awareness of biodiversity, its relevance to business, and of the potential synergies that can be realised with actions on sustainability and climate change mitigation;
- Businesses undertake biodiversity audits and natural capital accounting, particularly those businesses which have large landholdings or the potential to impact on biodiversity;
- Key state agencies and authorities create an "enabling environment" by which businesses can be supported by policy frameworks and guidance to take action on biodiversity.

In line with its Terms of Reference, the project also examined the possibility of developing a **Business and Biodiversity platform** to facilitate the engagement of businesses with biodiversity. This option was also explored through the online survey and interviews. The report recommends the establishment of such a platform and presents proposals on the form it should take and the opportunities and benefits for businesses.

The survey showed that businesses recognised the utility of a Business and Biodiversity Platform, in terms of its potential to:

- Be a **forum** for businesses to increase their awareness and seek advice regarding actions they could take with respect to biodiversity;
- Provide an environment for businesses to **network** and to learn from, and collaborate with one other, to appreciate their shared responsibility and capacity to address biodiversity within business strategies and actions, including the opportunities that exist within each sector;
- Understand the current and future direction of **government policies** relating to biodiversity and the environment, and take actions to pre-empt, and possibly influence, future legislation regarding biodiversity;

- Act as a platform to **share data, case studies** of good practice, and sectoral **guidance** regarding actions to manage businesses’ impacts and dependencies on biodiversity;
- As a means to explore emerging opportunities for sustainable finance, and
- Provide a forum to discuss and agree **key performance indicators** (KPIs) for businesses to monitor and report their actions and progress with respect to biodiversity.

Based on the research undertaken, priority organisations for engagement in the Platform could be businesses with:

- An existing interest in biodiversity and a track record of relevant actions;
- Membership of existing networks such as Business in Community Ireland, or Natural Capital Ireland ;
- Large landholdings, including businesses the agriculture, forestry, peat, energy, and tourism sectors, as well as industrial parks;
- Businesses whose operations have a significant influence on the status of biodiversity including Agriculture, Forestry and Fisheries, Food and Drink, Retail, and Tourism and Hospitality;
- Sectoral representative bodies who can keep other businesses and SMEs aware of policies on biodiversity and the environment, of the opportunities, and of guidance relevant to their business.

The platform would need to stay aligned with key policies that affect the governance of biodiversity in Ireland, as many of these policies are subject to reviews over the coming year, including Ireland’s **National Biodiversity Action Plan**, the **Sustainable Development Goals (SDGs) National Implementation Plan** and the **National Plan on Corporate Social Responsibility**.

The considerations above inform the main output of this project namely a set of three options for a potential **Irish Business and Biodiversity platform**. Each option aims to facilitate additional public and private sector engagement and support, to ensure the business sector can make the optimum contribution to Ireland’s biodiversity policy objectives including the relevant Sustainable Development Goals.

Of these, the project team recommends the establishment of an external, collaborative and multilateral platform that involves Government bodies, but which builds on existing networks such as Natural Capital Ireland , Business in the Community Ireland and Sustainable Nation.

Given the potential impact of impending changes to biodiversity, climate and SDG policy in Ireland, it is recommended that the creation of the platform should include an initial period of feasibility analysis and consultations, to confirm the relevance of the approach from a business perspective.

Glossary

AES	Agri-environment Schemes
AIPP	All-Ireland Pollinator Plan
BAP	Biodiversity Action Plan
BITC	Business in the Community Ireland
CAP	Common Agricultural Policy
CBD	Convention on Biological Diversity
CRAMP	Closure Restoration Aftercare and Management Plan
CSR	Corporate Social Responsibility
DETE	Department of Enterprise, Trade and Employment
DHLGH	Department of Housing, Local Government and Heritage
EIA	Environmental Impact Assessment
EIP	European Innovation Programme
EPA	Environmental Protection Agency
IBEC	Irish Business and Employers Confederation
IFNC	Irish Forum on Natural Capital
IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
IPC	Integrated Pollution Control
IUCN	international Union for the Conservation of Nature
NPWS	National Parks and Wildlife Service
NBS	Nature Based Solutions
NCI	Natural Capital Ireland (formerly IFNC)
NNL	No net loss (of biodiversity)
PES	Payments for Ecosystem Services
SDGs	Sustainable Development Goals
SEA	Strategic Environmental Assessment
SUDS	Sustainable urban drainage
WEF	World Economic Forum

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Chapter 1: Introduction

The Status of biodiversity and relevant pressures

In 2020, the World Economic Forum (WEF) ranked biodiversity loss and ecosystem collapse as one of the top five risks for the coming 10 years in terms of likelihood and social and economic impact. This warning has been reiterated by the Organisation for Economic Cooperation and Development (OECD), an institution that was founded to stimulate economic progress and world trade, but which has evolved over the years towards a global mission for economic cooperation and development. In 2019, the OECD acknowledged biodiversity loss as a primary threat to this economic growth and society and placed it on a par with climate change [1].

IPBES, the Intergovernmental Panel on Biodiversity and Ecosystem Services, is charged with reporting on the global status of biodiversity. Its 2019 report [2] emphasised the importance of global ecosystems, providing as examples the 75% of food crops which are dependent on natural pollinators and the 5.6 gigatons of carbon sequestered each year by terrestrial and marine ecosystems. It remarked on the vital contribution that ecosystems make to our diet, physical and mental health, to the regulation of water quality, to soil productivity, to the management of pests and pathogens, protection from erosion, storms, flooding and sea level rise, and thereby to our economy, employment, incomes, quality of life and, indeed, survival.

IPBES added that the abundance of native species in most terrestrial environments has fallen by at least 20% since as recently as 1990, and that populations of insects had fallen especially precipitously. Without action, 1 million of the 8 million species on earth are at risk of extinction, a rate hundreds of times higher than natural trends. The causes are anthropogenic and familiar, and include habitat destruction, over-exploitation of natural ecosystems such as natural forests, fish and shellfish; the pollution of soils, waters and seas by excess nutrients, toxins, oils and plastics; alien species introductions; and persecution, poaching and disturbance.

Ireland is following this same trajectory. Specific pressures on biodiversity here include:

- a continuing and persistent degradation of natural habitats,
- agricultural intensification,
- eutrophication of inland waters by polluting nutrients such as nitrogen and phosphorus,
- over-exploitation of some fish and shellfish species, and
- the spread of invasive alien species occupying habitat niches important for native flora and fauna.

Although Ireland may be spared from some of the worst extremes of climate change given its maritime climate, its biodiversity is at particular risk given its island status and the barrier this represents to species movement. In May 2019, the Oireachtas declared a climate and biodiversity emergency. The Programme for Government (2020) does contain new commitments in relation to climate change and biodiversity.

Drivers of global and EU business action on biodiversity

At international level, Governments have committed to protecting biodiversity. The Convention on Biological Diversity (CBD), for example, is a UN multilateral treaty with the goals of conserving biodiversity, ensuring the sustainable use of biological resources, and the fair and equitable sharing of genetic resources. As well as addressing the aforementioned pressures on biodiversity, these efforts must now also respond to the additional threat presented by climate change. Indeed, dedicated actions on biodiversity have been a lesser priority than climate change within corporate strategies.

Climate change is an existential threat, its principal impacts will be overt and directly felt, and its origins clearly lie with human beings. Actions to mitigate the risk of climate change have received much greater attention in terms of commitments and funding than those associated with nature-related risks.¹ This priority is also apparent in the guidance and support for emissions reductions for business that are provided by Governments, and in the Environmental, Social and Governance (ESG) considerations for businesses and investors.

The impact of biodiversity loss is no less significant than climate change, but its effects and consequences may be more subtle and less obvious in the first instance. For businesses, biodiversity loss presents equivalent risks in terms of the availability of raw materials, including food products and natural materials, along with disruptions to supply chains. Fortunately, business actions on climate are expanding to include nature. An increasing number of businesses are investing in carbon offsetting as an option for their environmental reporting or to demonstrate good environmental practice to customers or investors. Some companies have begun to invest in voluntary climate offsets, for example by investing in forestry which has the capacity to sequester and store carbon, and to support biodiversity too. Financial institutions have also become interested, including in relation to peatland restoration which can protect carbon stores in the short term and has the capacity to return peatlands to a more pristine condition in the long term so that they can sequester once again.

Environmental sustainability is also a long established priority for businesses. Many companies are also anxious to demonstrate their credentials in this area, particularly around contributions to the community and through CSR. Prevalent sustainability initiatives have been reducing energy use, water use, polluting emissions and waste (including plastic waste), and actions to purchase locally or nationally sourced foods and raw materials.

The publication of the UN **Sustainable Development Goals** has stimulated progress. The associated targets were adopted in 2015, building on the former Millennium Development Goals and Rio+20. Most of the SDGs have an indirect relationship with a quality environment, including biodiversity, and in particular:

- SDG 3 (Good Health and Well-being),
- SDG 6 (Clean Water and Sanitation),
- SDG 11 (Sustainable Cities and Communities),
- SDG 12 (Responsible Consumption and Production),
- SDG 13 (Climate Action),

¹ World Economic Forum. http://www3.weforum.org/docs/WEF_New_Nature_Economy_Report_2020.pdf

- SDG 14 (Life Below Water), and
- SDG 15 (Life on land).

International business and biodiversity initiatives

Earlier this year, the EU launched its new *Green Deal*. The Green Deal is intended to realign all EU policies towards sustainability. It proposes to make Europe climate neutral by 2050, to boost the economy through green technology, to reduce waste by adopting a *Circular Economy* approach to manufacturing and resource use, and to improve the quality of air, water and soils for both biodiversity and human health. The Strategy views all these environmental factors to be linked and as essential to mitigating climate change, sustaining economic growth, and maintaining health and quality of life. The new *EU Biodiversity Strategy 2030* is an important part of the Green Deal. It succeeds the former 2020 Strategy with a more ambitious set of objectives to enlarge the EU-wide network of protected areas by up to 30% and to restore degraded ecosystems, including 25,000km of rivers. It includes steps to increase ecologically sustainable farming, to halt the decline in pollinating insects and to reduce the use of pesticides by 50%.

The Strategy contains a business case which identifies the essential contribution that biodiversity inputs to the European economy which, it estimates, contributes 50% of product gross value added. The EU proposes to establish a new initiative in 2021 on sustainable corporate governance. Businesses' reporting obligations may also change with a forthcoming review of the Non-Financial Reporting Directive (2014/95/EU) which currently requires only large companies to disclose information on operations and their social and environmental impacts. The Directive aims to inform investors, consumers and policy makers of companies' efforts to operate responsibly in relation to the treatment of employees, human rights, social diversity, financial ethics, and protection of the environment.

In addition, the EU Biodiversity Strategy strongly emphasises the need for businesses to integrate biodiversity into their own strategies. The *EU Business and Biodiversity Platform*² has the objective of encouraging businesses to engage more with biodiversity, and fundamentally through an awareness of their dependence on biodiversity or of their own impacts on biodiversity. The platform believes that biodiversity considerations can be mainstreamed within company decision making and is keen to raise awareness through solid examples of where businesses have included biodiversity in their decision making. Case studies are presented of how pioneering businesses have successfully engaged with biodiversity.

Other international bodies also see a greater role for business. For example, the CBD also has a *Business Engagement Programme* which aims to incorporate biodiversity objectives in business supply chains and to formalise the reporting of biodiversity use and impacts in annual reports. The CBD's *Global Partnership for Business and Biodiversity* aims to facilitate dialogue and build capacity by supporting best practice through the use of standard tested reporting tools and by communicating examples of case studies and guidance for various sectors.

A similar initiative, *Business for Nature*, is run by the **Natural Capital Coalition** which developed out of The Economics of Ecosystems and Biodiversity (TEEB) organisation whose mission was to raise

² https://ec.europa.eu/environment/biodiversity/business/index_en.htm

awareness of the value of biodiversity.³ TEEB had been instrumental in furthering policy recognition for biodiversity and in promoting the adoption of *natural capital accounting*. Its contribution has been especially significant in demonstrating the economic and social value of biodiversity and in enlisting positive measures by financial institutions and major companies. Its report, *TEEB for Business* [1], provides a succinct discussion of the value of biodiversity and its relevance to business.

These policy initiatives are supporting general trends in the attitudes and expectations of stakeholders. Businesses see that their investors and clients are demanding evidence of sustainability and responsible behaviour, but also disclosure of environmental risks. Ten major banks are, for example, calling for businesses to publicly disclose material financial risks relating to nature.⁴ On the consumer side, a 2018 Eurobarometer survey found that two thirds of Europeans agree that looking after nature is essential in tackling climate change and that the overwhelming majority of Europeans are unwilling to accept damage to protected nature in exchange for economic development.

Business's own actions on biodiversity

The key question is what is it that individual businesses should be doing? Of course, one action would be for businesses to cease activities which have impacts that contribute to any of the pressures on biodiversity identified above. In this respect, EU and Irish regulations for environmental protection have reduced the incidence of the more overt examples of air and water pollution, of habitat destruction, or the prevalence of unsustainable fishing practices. The residual pressures are now more subtle and include a moderated, but continued dominance of monocultural (single crop) farm and forestry systems, eutrophication of surface waters, the spread of invasive non-native species, and on-going degradation of valuable habitats from lack of traditional management. These trends do not typically originate from careless or intentional actions of individual businesses, but with our quest for economic growth and the need to maintain productivity in a globalised world. In a purely market system, the public good benefits of natural capital are not priced, even though they may be valued immensely by individuals. However, these trends are not inevitable, can often be avoided and, in principle, can be offset through policies that ensure No Net Loss of biodiversity or even a Net Gain.

Many businesses themselves depend directly or indirectly on biodiversity. For these businesses, the loss of biodiversity manifests itself as a business risk. Many companies depend directly on nature for their success, most especially in agriculture, forestry, fisheries and in downstream agri-food and retail. For the former, the dependence is profound. Regardless of agriculture's centuries old battle to manage or control nature, culminating in the prevalence of fertilisers, pesticides and the removal or transformation of unproductive areas, farming and forestry depend entirely on the productivity of supplied by soil invertebrates, microfauna and flora, and the contribution of pollinators or natural pest control. Despite industrial fishing methods, modern fishing still harvests *wild* species. Aquaculture too depends on a functioning marine ecosystem for oxygen, water purification and pest control [3].

For many other businesses, the dependence is indirect, but biodiversity is an input into the supply chain which determines their capacity to remain competitive. For these sectors, the continued

³ Natural Capital is our stock of natural assets, both living organisms and inorganic resources such as water, air and minerals.

⁴ <https://www.edie.net/news/12/Banking-giants-team-up-for-Task-Force-for-Nature-related-Financial-disclosures/>

provision of *ecosystem services*, i.e. the services that nature provides to human beings, through healthy soils, pollination, clean water, and a stable climate, are critical. As the WEF states, “*as nature loses its capacity to provide such services, these sectors could suffer significant losses*”. These losses will reign in economic growth, employment and incomes and ultimately demand high levels of spending simply to protect whatever environmental quality remains.

Biodiversity is therefore highly relevant to wide sections of the economy, including for:

- Companies who engage directly or indirectly with land use (agriculture, forestry or horticulture) or with fisheries, including also wholesalers, food processors and grocers.
- Companies whose activities impact directly on biodiversity or who own large land banks, for example, water supply, transport infrastructure, power generation, aggregates or golf courses.
- Tourism, given the importance that visitors place on Ireland’s landscape, including also ecotourism and wellness tourism and the benefits to the providers of recreation services or outdoor equipment suppliers. Indeed, for any business where there is an interaction between visitors and nature.

In addition, the locations of operations and business premises also benefit from the protection from flooding, soil erosion and coastal storms provided by surface vegetation, wetlands or forests.

There will be other businesses who see their interaction with biodiversity as being limited or remote. Yet biodiversity is often of relevance to the supply chain even of non-primary sector, non-food companies, for example construction, furniture companies, clothing companies or pharmaceuticals. There may also be corporate opportunities in relation to climate change mitigation and adaptation including carbon offsetting by companies who are large energy users, but who might have no obvious direct interaction with biodiversity. And biodiversity is also relevant to companies who have sustainability or CSR written into their corporate strategies, who understandably wish to promote a positive corporate image, to engage with local communities or to contribute to the welfare of their work force and to social well-being generally.

Objectives of this report

This report sets out to examine the relationship between business and biodiversity in Ireland. The methodology adopted is described in Chapter 2. Chapter 3 then describes the relevant policies for business, including those directed at environmental protection, climate change and sustainability. The chapter also reviews the role of various economic sectors, their relevance to biodiversity, including impacts and dependencies on biodiversity. Chapter 4 looks at why and how businesses can engage with biodiversity, providing evidence of good practice including Business in the Community Ireland’s Biodiversity Framework, Corporate Biodiversity Strategies and Biodiversity Action Plans. It also presents various case studies of good practice from across different sectors.

Chapter 5 presents the results of our survey of businesses’ awareness and actions on biodiversity along with observations from interviews conducted with sample companies. Chapter 6 further examines the findings from the surveys and interviews and considers the potential for establishing a Business and Biodiversity platform, or “hub”. In Chapter 7, a recommended types of platform is presented along with discussion of the opportunities and benefits for businesses.

Chapter 2: Overview and approach

Target areas for project

The study was called upon to examine five target areas.

Target Area 1 - Business impacts and dependencies on biodiversity

The target area involved *a review of the range of impacts of the business sector on biodiversity in Ireland, including a sectoral analysis and quantification of land areas affected by sector and by large enterprises.*

The review of this first target area commences in **Chapter 3** with a presentation of the factors influencing the biodiversity impact of various sectors internationally, based on a review of the literature.

Target Area 2 - Good practice

Chapter 4 deals with the second target area of the project, namely to *review information on good practice, actions and initiatives by Irish businesses which have contributed to the enhancement or restoration of biodiversity, and to examine the applicability of international examples of best practice for Ireland.*

The review draws on the literature to first examine the influence of international agreements and EU Directives on the relationship between business operations and the environment. This includes direct functional relationships with environmental goods, environmental quality or biodiversity, but also with regulation or measures on climate change mitigation or adaptation, environmental assessment, pollution, water quality, and environmental liability, as well as with EU biodiversity directives, most particularly the Habitats Directive. It explores the implications of the forthcoming **European Green Deal** which will have effects on the business environment and with business reporting. It also discusses literature on the relationship between economic growth and development, and the environment and biodiversity.

Chapter 4 then discusses why businesses should address biodiversity loss, including the economic case for doing so, the social or ethical arguments, and the effect of policy compliance. It draws on existing information on how this can be done, referencing existing business sustainability and **Corporate Social Responsibility** (CSR) initiatives, and draws on widely available examples of how some companies have gone about providing for the protection or enhancement of biodiversity, either on the business site or on company-owned lands, through strategies addressing sustainability or climate change, or with policies that have specifically considered biodiversity within company operations or supply chains.

Target Area 3 - Current business engagement

The third target area required the project to *identify the extent of business engagement and current or future activities*. The area also required *a review of the international supportive structures available to businesses to facilitate engagement* to identify what structures would best work for Irish businesses.

This part of the study was mainly addressed using a mixture of an online survey and interviews. A list of businesses was drawn up, beginning with companies that had expressed an interest in biodiversity or made commitments in this area, for example those who signed up to the [Seeds for Nature charter](#) a set of 40 commitments by Government Departments, public organisations and companies at the National Biodiversity Conference held in Dublin in February 2019; companies who were featured as case studies in the Business and the Community Ireland handbook [2] and those listed as members of the **All-Ireland Pollinator Plan (AIPP)**. However, it was important that the sample also included businesses who had not yet implemented initiatives relating to the environment or biodiversity, as well as those that do not have a clear direct connection with the natural environment or only an indirect or lesser connection.

To define industry sectors, the project used the pan-European NACE codes to group economic activity, including those sectors for whom impacts are discussed in Chapter 3. Businesses were contacted by the project team, **Business in the Community Ireland (BITC)**, as well as the **CSR Forum** and **Retail Forum** maintained by the Department of Enterprise, Trade and Employment (DETE). Additional invitations were sent out within newsletters or bulletins distributed by IBEC, Irish Cement Manufacturers, Bord Bia, Dairy Industry Ireland, the Irish SME Association, Dublin Chamber, the AIPP and the Irish Solar Energy Association. The project description and link were also included in the regular Irish Forum for Natural Capital (IFNC) newsletter.

Survey

An online survey was developed using Smart Survey©. A copy of the online questionnaire is contained in Appendix 4. The survey commenced with an overview of the importance of biodiversity and ecosystem services which was aimed at businesses with little knowledge of biodiversity. The questionnaire contained 15 questions that consisted of single and multiple choice questions as well as open-ended questions aimed to elicit a range of information from businesses. On average, the survey took around 10 minutes to complete. The questions required information from respondents regarding:

- The sector in which they operate,
- The size of company landholdings (where relevant and substantial and subject to confidentiality),
- The company's dependence on natural or environmental inputs (for which a list was provided),
- The relevance of environmental risk to the business (e.g. pollution, climate change, etc.),
- The company's awareness of biodiversity,
- Practical and strategic actions taken on biodiversity,
- The drivers of companies' willingness to engage with biodiversity (where present),
- Challenges to business engagement with biodiversity, and
- Business interest in receiving further guidance or information.

A final question was included to gauge businesses' interest in participating in a **Business and**

Biodiversity platform or hub. This, along with the question on land ownership, was an area that required specific consideration based on the terms of reference for the project.

Interviews

Although the online survey had the potential to provide a sizeable amount of data that could be analysed quantitatively, the team also conducted in-depth interviews to gain a fuller understanding of the relationship between business and biodiversity and explore the responses of individual businesses who had completed the online questionnaire.

The project team conducted semi-structured interviews of 30 to 45 minutes with 20 companies drawn from a range of sectors. The interviews followed a semi-structured interview protocol which allowed questions to be adapted as appropriate for the interviewee.

Following the interviews, the findings were synthesised using the successive questions in the online survey as headings for the report.

Case studies

The survey and interviews indicated that various companies had taken marked steps in acting on biodiversity. These companies' activities are described in four case studies which are presented in Chapter 4.

Target Area 4

Chapter 6 reviews the results of the survey and interviews to address Target Area 4 to *set out options for additional public and private sector engagement and support to ensure the business sector can make the optimum contribution to Ireland's biodiversity policy objectives including relevant SDGs.*

One form of engagement and support will be provided by the proposed Business and Biodiversity platform, or *hub*, to promote a business case for companies to buy into biodiversity policy and allow them to share their own experiences and to propose policies that would encourage the wider business sector to engage more and accept some responsibility.

Target Area 5

The report will set out recommendations for engaging business with biodiversity and to promote more proactive actions. For Target Area 5 this included to *recommend a suite of companies that would have the best potential to maximise the contribution of business to the biodiversity agenda.* The recommendations refer to businesses who signed up to the *Seeds for Nature* commitment, but also examples of other company types from different sectors based on the review of material, survey and interviews.

Webinar

On 6th October 2020, the Irish Forum on Natural Capital (now NCI), in collaboration with BITC delivered a webinar to promote the project to Irish businesses and inform them about interim progress and findings. A copy of the agenda is available in the Appendix of this report.

The webinar began with an overview of the rationale for the study provided by the Department of Housing, Local Government and Heritage (DHLGH). This was followed by a summary of the interim findings by the project team and a case study presented by a business that has already taken action with respect to biodiversity.

Over 160 people attended, across a range of sectors from business to academics, NGOs and policymakers.

Chapter 3: The relationship between business and biodiversity

Overview

Economic growth, globalisation, international tourism, consumerism, population and development pressures are all factors which have had much reported negative effects on the natural world and presented us with a global biodiversity crisis. Combined with these effects has, however, been the positive influence of international agreements on climate change, sustainable development, biodiversity and the oceans, as well as positive actions on the assessment of environmental impacts and the protection of wild areas. The fundamental economic system remains much as it is, but our capacity to regulate or manage it to reduce environmental impacts has improved, often in ways that can actually stimulate innovation, growth and competitiveness in the private sector.

This chapter first reviews the effect of policy in Ireland, and especially the prevalence of climate change and sustainability policies. This is followed by a review of business impacts in nine sample sectors or sub-sectors, namely agriculture, forestry, fisheries and the marine environment; retail and food; peat extraction, mining, cement and aggregates; energy; and tourism. The chapter examines the biodiversity relevance, and economic and social contribution, of these different sectors. It discusses some of the impacts of economic activity of biodiversity, including the effect of agricultural expansion and intensification, commercial forestry and deforestation, demands on fisheries, the effect of the mining, extractive and petrochemical industries, industrial pollution from a variety of industrial types, and the contribution of industry to climate change. For each sector, the chapter considers the respective dependence on ecosystem services, but also companies' awareness of this relationship.

The chapter also discusses the positive steps that have been taken by many companies, even in sectors which might be perceived as having a lesser relationship with biodiversity. These actions have often been influenced by a company ethos, a belief in CSR, the welfare of employees and the local community. Policies are also influenced by self-interest related to company turnover, reducing business risk, customer or investor demands or as a means to advance competitiveness. Increasingly, there are synergies with an identified need to address CO₂ emissions or to adapt to climate change. The sectoral review examines the specific influence of these initiatives and the corresponding role of policy, economic development within the sector, and structural change on aspects of biodiversity.

Environmental policies in Ireland

The Irish Government has issued national policies in relation to both sustainable development and climate change going back to the 1990s. Historically, the responsibility for biodiversity policy has rested with the National Parks and Wildlife Service (NPWS), although there is now a policy of mainstreaming and shared responsibility between Government Departments.

National policies relevant to biodiversity include *Our Sustainable Future* [4] which builds on the inaugural policy document *Sustainable Development – A Development Strategy for Ireland* [5]. This document identifies 70 measures by which Government Departments can progress sustainable

development to achieve a resource efficient, low-carbon, climate resilient future. Sustainable development is widely understood to include the three pillars of environment, economy and society, but sustainability initiatives within each pillar are mutually supporting. Emphasis is placed on working within ecological limits, on social justice and well-being.

Our Sustainable Future recognises that the economic growth of the previous decade achieved much in terms of improved infrastructure, competitiveness, employment and incomes, but at the expense of the natural environment for which it refers specifically to traffic volumes, GHG emissions, waste and biodiversity loss. Key challenges are set for consumption and production generally, for natural resource use, for energy, agriculture, transport, spatial planning, health, education and communication. A green economy model is set out based on the second **UN Conference on Sustainable Development (Rio +20)** and the **EU Europe 2020** strategy for economic growth founded on social progress and the eradication of poverty, more efficient use of resources, innovation and renewable energy.

The Department of the Environment, Climate and Communications (DECC) has responsibility for overseeing the SDG National Implementation Plan [6]. The SDGs feature in *Project Ireland 2040, the National Planning Framework* [7] and the *National Development Plan* [8]. The Framework aims to balance an expected increase in the population, by one million people over its term, with sustainable development. The importance of biodiversity is acknowledged in the sections on land use and marine planning, including proposed investment in green infrastructure to provide for ecosystem services in water quality, amenity, carbon capture and climate adaptation. The challenges in this respect are acknowledged in the accompanying Strategic Environmental Assessment (SEA) of the Plan which recommends that stronger consideration be given to biodiversity backed by specific quantitative targets.

Climate change is an area that Government policy is addressing, increasingly urgently. Under the *EU Effort Sharing Decision* agreed in 2013, Ireland had committed to a 20% reduction in greenhouse gas (GHG) emissions by 2020 but, in fact, is on course to exceed its emission targets by up to 17 MtCO₂eq. Although Ireland has made progress on renewable energy and participates in the EU Emissions Trading Scheme (EU ETS), economic growth in Ireland remains coupled to energy consumption supplied primarily by fossil fuels. Poor planning, a dispersed population and inadequate public transport have locked Ireland into energy dependence such that per capita energy consumption is the third highest in the EU at 13.2 tCO₂eq despite the country's mild winter climate. The Government's position towards climate change is set out in the National Policy Position on *Climate Action and Low Carbon Development* [9] and the *Climate Action and Low Carbon Development Act 2015*. However, these strategies were given more urgency by the 2016 Paris Agreement, the EU's ambition for carbon neutrality by 2050, and by Ireland's Climate Action Plan [10] which seeks to mobilise all strata of Irish society towards reduced emissions, including business. All of these policy positions are certain to be revisited given the more ambitious targets proposed by the current coalition Government.

Responsibility for biodiversity protection resides with the DHLGH, and specifically with the NPWS. Objectives and targets for biodiversity are set out in the *National Biodiversity Action Plan (NBAP) 2017-2021*. Key targets in respect of business and biodiversity include Action 1.1.12 which proposes the establishment of a Business and Biodiversity Platform. It is one of the objectives of this study to investigate businesses' needs and expectations in relation to such a hub. This is complemented by Target 3.1 which aims to enhance appreciation of biodiversity and ecosystem services amongst policy makers, businesses, stakeholders and communities. Action 1.1.10 proposes that a Natural Capital Asset Register and National Natural Capital Accounts be developed. The **Central Statistics**

Office already compiles environmental accounts including for environmental taxes, subsidies and transfers, emissions and material flows. This is part of a European wide objective to integrate environmental accounts into national accounts supported by national assessments of the economic value of biodiversity and ecosystem services studies as proposed by the EU 2020 Biodiversity Strategy. The accounts are relevant to understanding businesses' use of environmental resources. For example, a tax has been applied to carbon fuels since 2013, while a Public Service Obligation levy supports renewable energy, but had also underpinned the viability of peat harvesting prior to 2020.

Implications for business and the role of business

As a non-market good, environmental quality is vulnerable to overuse or even exploitation, be this as a sink for pollutants or damage to habitats which are perceived as having no value. Without measures to protect the environment, economic activity and infrastructure development have the potential for adverse impacts on biodiversity.

Of measures, the **Planning and Development Act 2000** intends that planning should be strategic in approach and encompass sustainable development. As part of the planning process, biodiversity is addressed through the Strategic Environmental Assessment (SEA) of plans or programmes typically prepared by State Agencies, Regional Authorities or State-owned companies with an infrastructure remit. For individual developments in prescribed sectors, including by private companies, potential impacts are addressed in advance through an **Environmental Impact Assessment (EIA)** in line with the EU Environmental Impact Assessment Directive (85/337/EEC). Identified impacts are subject to a mitigation hierarchy commencing with avoidance (of impacts), through actions to minimise, restore, offset and, more recently, enhance (net gain).⁵ These measures are then, in principle, incorporated into the planning conditions. EIA is complemented by **Appropriate Assessment (AA)** where there is a risk of adverse impacts on Special Areas of Conservation or Special Protection Areas in accordance with the EU Habitats Directive (92/43/EEC).

Specific activities which present a possible risk of air or water pollution require an Integrated Pollution Control (IPC), Industrial emissions (IE) or Waste license from the EPA. The EPA is also the competent authority for certain Waste Water Discharge License applications. The EPA is especially concerned to identify impacts on health, as well as the environment and biodiversity. The adoption of Environmental Management Systems helps companies to minimise the risk of incidents. Where these do take place, enforcement proceedings are taken by the EPA. Most recently, incidents have involved on-site fires or pollution of waterbodies, often resulting in fish kills. Environmental damage to natural habitats or protected species, water or land is addressed under the Environmental Liability Directive (2004/35/EC).

However, while economic activity can present a risk of impacts on biodiversity, many industries are dependent on biodiversity and this relationship provides an opportunity for positive engagement. The biodiversity element of Natural Capital, along with geology, soils, air and water, provides for the ecosystem services that contribute to human well-being, including the economy and livelihoods. Where industrial operations do present a risk of adverse impacts, ecosystem services can themselves be nurtured through *nature-based solutions* to neutralise or minimise this impact by, for example, slowing the flow of pollutants and capturing or assimilating organic pollutants through the planting of hedgerows, vegetated riparian buffer strips or the creation of wetlands. Trees are regularly planted in transport and development projects to moderate noise and visual impacts. Carbon

⁵ To reverse aggregate biodiversity loss, strategies towards 'net gain' are being increasingly proposed. Net gain is to be included in the UK's forthcoming Environment Bill 2020.

emissions can be offset by investing in the restoration of forests or peatland for the purposes of carbon sequestration.

Both sustainability and climate change are areas which can be complementary to company strategies. The **National Mitigation Plan** [11] does not contain a specific section on either business or biodiversity, but does refer to the ecosystem services contribution of agriculture, forestry and peatlands, and to the potential for what it describes as “sustainable intensification”, i.e. sustainable productivity growth that includes the protection of biodiversity and the setting aside of space for biodiversity. It references agri-environmental measures and the requirement for Areas for Biodiversity Enhancement in grant-aided forestry. The need to meet national emissions targets has meant that the national strategy for agriculture, **FoodWise 2025**, has had to marry ambitions to increase agricultural output with measures to control emissions of GHGs. In principle, this means farmers and agri-business adopt more sustainable approaches to land use that could lower carbon intensity and restrain the dependence on fertiliser and slurry spreading (for example through anaerobic digestion) with benefits for water quality and aquatic ecosystems. If adopted sufficiently, these actions will allow Government to meet the targets set by the EU Water Framework Directive. These measures could, with the right incentives and design, also contribute significantly to reversing a long standing trend of biodiversity loss due to agricultural intensification. Food and dairy companies can contribute by actively supporting this transition to low carbon intensity and more sustainable production at farm level, while benefiting themselves by marketing quality produce.

Businesses are also being encouraged to address their energy use and carbon footprint. Policy briefs have emphasised supports to help business to transition to a low carbon economy through energy efficiency, renewables and the circular economy. For example, in relation to power generation, policy has stimulated energy companies to move away from high carbon fuels, including peat. This has motivated Bord na Móna to plan for a transition away from peat, providing opportunities for the rehabilitation of harvested peatlands, a requirement to which other private peat and horticultural companies will necessarily become committed in turn. In other areas, public subvention support for renewables does present potential challenges in relation to the planning and siting of windfarms and their implications for biodiversity, but there is the potential also to achieve win-win outcomes for both reduced CO₂ emissions and for habitat protection through No Net Loss obligations or community gain. There are other, potentially substantial, indirect benefits for biodiversity if some large businesses choose to engage in voluntary carbon offsetting by investing in forestry, specifically broadleaf forestry which has positive implications for biodiversity.

With regard to adaptation to climate change, the **National Adaptation Framework** [12] has taken a sectoral approach. For example, flood mitigation will have to respond to a heightened risk of high rainfall events. The criteria for **Catchment-based Flood Risk Assessment and Management (CFRAM)** are currently being reviewed and this could result in more emphasis on soft, or environmental approaches that make more use of catchment management, floodplains and wetlands. The Framework includes similar tentative suggestions in relation to restoring saltmarshes and dunes as coastal defences against rising sea levels and more severe storms. Although the net implications of climate change for coastal and wetland habitats remain severe, wetland restoration and creation will provide a return for biodiversity. Generally, the Framework is presented in rather high-level terms, but there are again potential benefits for businesses to be ahead of the game by investing in climate resilience and adaptation measures to reduce their own risk profile or to input to initiatives taken by the public sector or Local Authorities.

Rationale for the business sectors selected for this study

In view of the preceding discussion, the project has identified the following sectors as being useful to illustrate existing and potential interaction with biodiversity.

- Agriculture
- Construction
- Energy
- Food and retail
- Forestry
- Marine and fisheries
- Mining and aggregates
- Peat extraction
- Tourism and hospitality
- Transport.

Agriculture clearly has a fundamental dependence on biodiversity, but this dependence is most clearly realised as farm level. The question is to what extent is this dependence realised by agri-business or food processing companies and what actions are these businesses taking, if any, to protect the biodiversity and ecosystem services on which they depend?

The same arguments apply to **marine and fisheries** which depend on the sustainability of wild fisheries, and to aquaculture which requires a healthy marine ecosystem.

Retail companies and supermarkets are at the top of the supply chain where it interfaces with the public as customers. They sell a range of grocery produce, including Irish food products, but also imported processed products, fruit and vegetables, which all depend on natural ecosystems, as well as products such as household products and detergents that do not necessarily depend on biodiversity, but which can impact on, for example, water quality and aquatic ecosystems.

The **forestry** sector has a high dependence on biodiversity through soil fertility most especially, but also marginally through pest control. Like agriculture and fisheries, the sector has the capacity for negative impacts on biodiversity.

Peat is extracted either for fuel, by Bord na Móna, private contractors or private households, but also as a horticultural product. Its harvest has a profound negative impact on biodiversity, habitats and potentially on water quality, unless mitigation measures are taken. However, extraction companies are obliged to *rehabilitate* their landholdings and this presents opportunities for carbon sequestration and habitat restoration.

Similarly, quarrying for **aggregates** can have direct negative impacts on biodiversity, but also presents opportunities for habitat restoration and creation even while operations are in effect. **Mining** has been scaled down in Ireland in recent years, but obligations in relation to post-extraction environmental management remain. Historically, there have been profound negative impacts on the landscape and water quality, but there is also potential for habitat restoration.

The **construction** sector may at first seem quite divorced from biodiversity, but has a need for land, timber products and other natural materials. There are also opportunities for new habitat provision

or for biodiversity offsets especially where land of potential biodiversity value is lost to development. Similarly, **transport** infrastructure has impacts on biodiversity, but here too there is the requirement for mitigation and the potential for No Net Loss. Habitat fragmentation is a risk, but linear habitats can also be created and maintained to provide for ecological connectivity.

The **energy** sector includes hydrocarbon companies with an interest in the marine environment, most of whom are sizeable multinationals with well-developed environmental strategies that must coexist with a core activity that fundamentally contributes to climate change. Wind energy development is controversial for its potential impacts on peatland habitat, birds and landscape, but there are also opportunities for habitat restoration supported by income from wind farm developments.

Finally, **tourism** can be heavily dependent on landscape quality and what might be perceived as characteristic regional and cultural landscape settings. Natural capital also has a direct impact ecotourism and wellness tourism. Associated with this is the significant societal value of the outdoor recreation sector and public access to National Parks, Nature Reserves, coastal and upland areas, urban green spaces and the wider countryside.

Each of these business sectors are profiled below in terms of their relationship with biodiversity.

Economic Sectors

Agriculture



Over 64% (4.5m ha) of the total land area of Ireland is subject to agriculture. There were 7.2 million cattle, 5.1 million sheep, 1.6 million pigs and 11 million poultry in production in 2019. There were 2.5 million hectares under pasture and 22,700 hectares under fodder crops. A total of 267,000 hectares was under cereals, 26,000 hectares of pulses, oilseed and potatoes, and 40,300 hectares devoted to other crops [13]. The total value of output amounted €8.1 billion with non-capital inputs worth an additional €5.8 billion. Farm subsidies or transfers contributed a further €1.7 billion. Agri-food exports totalled €14.5 billion. The largest agri-food businesses are Kerry Group (turnover €7.2bn), Glanbia (€3.9bn), ABP (€3bn), Ornuia (includes Kerrygold) (€2.1bn) and Dawn Meats (€2bn).

Inevitably, due to the large area under agriculture, farming practices, good or bad, can have a considerable impact on biodiversity. In recent decades, agriculture in Ireland has become more intensive and more specialised with the result that many habitats, including both semi-natural habitats and uncultivated corners such as small woods, wetlands and ponds, have been lost. Drainage, the replacement of diverse pastures with single species rye grass, the conversion of hay meadows to silage production, over-fertilisation with phosphates and nitrates, and pesticide use have also contributed to biodiversity loss. The result has been a considerable decline in wildlife that once comprised *farmland species*, including birds such as corncrake, partridge, corn bunting, yellowhammer, skylark, lapwing and barn owl, but also small mammals, amphibians and insects including bees. Insects, of all kinds, have declined very significantly globally as agricultural change and expansion has reduced the diversity of flora, including wildflowers and herbaceous plants in grasslands and wet areas, with knock-on effects for the entire ecosystem. In addition, agriculture is identified by the EPA as the principal contributor to poor water quality (53%) [14] which, in its latest report, the EPA [15] finds to be continuing to decline due mainly to nutrient pollution and sediment load. Agriculture is also a major contributor to greenhouse gases at 33% [16].

Much of the damage to farmland biodiversity has been linked to the **Common Agricultural Policy (CAP)** which has incentivised intensification. Payments tied to production that encouraged excessive intensification have been replaced with a basic farm payment based on the area of land under production. There is, in principle, a requirement for good environmental practice, but no incentives for the maintenance of habitats or for environmentally sensitive farming aside from voluntary agri-environmental schemes (AES). Foodwise 2025, the strategic plan for agriculture, foresees a further expansion of agricultural production. In recent years, the greatest expansion has been in the dairy sector following the lifting of milk quotas in 2015. This has led to an expansion in the dairy herd to 1.3 million. Individual farm numbers are subject to nitrate regulations which, in principle, mitigate nutrient runoff by limiting each farm's fertiliser application and herd size. Dairy is the most profitable agricultural sector and rather few dairy farmers have been willing to sacrifice production flexibility for the restrictions included in AES. Dairy, and tillage, are considerably more profitable than beef or sheep production. By comparison, Irish beef farms are typically smaller, less capital intensive and possess less fertile land than dairy farms.

Despite these trends and increasing capital intensity, agriculture remains fundamentally dependent on ecosystem services, primarily the role of biodiversity in soil productivity, the assimilation of

nutrients and erosion control. Irish agriculture is less dependent on pollination services than in many other countries where oil seed or fruit are more common. Nevertheless, pollination is extremely important to the 8,000 hectares in fruit production and to the maintenance of flowering plants and hedgerows that provides habitats for birds, bats and insects which are important to the predation of agricultural pest species.

Although modern agricultural policy has had a negative impact on biodiversity, things are changing. The current **Green Low-Carbon Agri-Environmental Scheme** (GLAS) is more selective in the support provided to farmers than former schemes. GLAS is also being joined by new locally-led and results-based schemes supported under the pilot **European Innovation Programme** (EIP) in 29 locations. The NPWS has also continued to support AES for farms under its **Farm Plan Scheme** within Protected Areas belonging to the Natura Network. In addition, there are a handful of **EU LIFE** Projects which are encouraging environmentally sensitive farming. As part of the River Basin Management Plan for Ireland 2018-2021, the **Agricultural Sustainability Support and Advice Programme** (ASSAP) is providing confidential advice to farmers on measures to minimise diffuse pollution in order to improve the quality of water bodies, although there are currently no financial incentives to do more to demonstrate good nutrient management. There is a likelihood that the reform of the CAP post 2021 will introduce more incentives for biodiversity, provide for buffer strips along water courses, tighten the Nitrate Regulations and link the basic farm payment more firmly to sustainable environmental practices and outcomes.

Ireland's agriculture is often presented as being more environmentally sustainable than that of other countries. Irish cattle, for example, are housed for shorter periods of time and are predominantly grass-fed. **Origin Green** is the food industry's voluntary programme for sustainable production and is supported by Bord Bia. The initiative provides certification for the majority of farmers (51,000) who can demonstrate a minimum commitment to sustainability criteria. However, few agri-food companies have initiatives which proactively support sustainable production. The National Dairy Council, Dairygold and Glanbia⁶ encourage environmental actions and Glanbia recently paid a "biodiversity premium" on top of its milk price, albeit unconditionally to all farmers. There are no schemes which provide premium prices only to farmers who meet higher environmental criteria but for a few bespoke arrangements with some retailers. The absence of such measures is surprising given that some agri-businesses are substantial in size, highly profitable, and regularly draw on Ireland's "green image" when marketing their products. The **BRIDE EIP** in County Cork demonstrates what can be achieved in the dairy sector under different circumstances. Within this scheme, farmers are incentivised on a payment-by-results basis for maintaining field margins, including hedgerows, in good condition. The project is over-subscribed with farmers having been attracted to the project, partly due to the modest constraints placed on operations in the more productive parts of the farm and a frustration with the capital intensity of modern dairy farming. BRIDE is also exploring the potential of premium milk payments for farmers who are registered with the project.

⁶ Sean Molloy, chief agri-business growth officer.

Retail and food



The retail sector in Ireland has a significant impact on biodiversity, mostly through purchases by the grocery sector of processed food goods, i.e. dairy products, meat, fish, vegetables and fruit. Some of this influence extends to biodiversity abroad, but retailers are keen to demonstrate a commitment to the purchase of Irish produce, particularly following the entry of British and German retailers to the Irish supermarket sector in the early 2000s.

There are 37,400 retail and wholesale businesses in Ireland. The value of the grocery sector is huge, but is dominated by a handful of key players who are amongst Ireland's largest companies. The share of food in household consumer purchases is 14.7%, or approximately €123 per week [3]. Supermarket sales were €9 billion in 2013 and have been increasing at just under 0.3% per year since that time.⁷ Relative market share amongst the major supermarkets has varied over time. In 2019, Dunnes Stores had the largest market share:

- **Dunnes Stores** 22.2%
- **Supervalu** 21.4%
- **Tesco** 21.4%
- **Aldi** 12.5%
- **Lidl** 11.9%
- **Other** 10.6%

The supermarkets have been criticised for not publishing their profits, but their turnover provides an indication. For example, Tesco Ireland's turnover is €3.2 billion per year of which €2.7 billion is spent on the purchase of goods and services, Dunnes is €3.9 billion, and Musgrave (who operate Supervalu, Day Break and Centra) is €3.9 billion. The international connection of most supermarkets benefits Irish food producers, and around €700 million worth of Irish produce is sold outside of Ireland, a higher proportion than is accounted for by other EU Member States.

Clearly, retailers have a lot of potential leverage when it comes to pushing forward the agenda on biodiversity. The greater focus, however, has been on other aspects of sustainability and primarily companies' carbon footprint and their use of packaging. This is not surprising given that these are areas which supermarkets can manage or over which they have significant control, compared to other parts of their supply chain. Food is at the heart of the supermarkets' offering and features prominently in advertisement, typically along with reference to 'quality produce'. Most supermarket chains and many food processing companies can refer to sustainability policies in company objectives. Most large retailers, representing 70% of the domestic food market, have signed up to Origin Green. This includes over ten of the largest retailers. However, while certification certainly encourages sustainable actions, the absence of firm indicators means it is not a guarantee of comprehensive environmental sustainability, or the protection of biodiversity. Several major food companies and processors were recently revealed by the EPA to have poor compliance with environmental regulations, mainly in relation to poor site management and wastewater, with implications for aquatic biodiversity. Others, such as Lidl, Aldi and Supervalu, have been more proactive and have signed up to the All-Ireland Pollinator Plan. So too have some major food companies including Dawn Meats, Glanbia, Glenisk and Diageo.

⁷ Kantar World Panel

Forestry



From one of the least forested countries in Europe in the early 20th century, Ireland has experienced a rapid expansion in the area of forested land over the past five decades to 770,000 hectares, or 11% of Ireland's land area. Much of this commercial expansion of forestry was managed through Coillte, the semi-state forestry company. However, between 1980 and 2018 farmers accounted for 82% of the afforestation of private lands assisted by Grants and Premium Scheme. This has been a cost-effective method of expanding the national forest area without the public costs of labour and land acquisition. Commercial forestry companies have become increasingly involved and there has been almost no public planting of new forest in recent years [17]. Policy is managed by the Forest Service division of the Department of Agriculture, Forestry and the Marine (DAFM). The Forestry Programme 2014-2020 foresees an expansion of the area of forest to meet increased demand which could be as much as 7.9 million m³ by 2035 [18]. However, the rate of expansion has slipped in part due to competition with agriculture for more productive land given the stricter land suitability requirements.

Forestry is highly dependent on biodiversity and ecosystem services, including, for example, soil fertility. Due to its geographical isolation, and the clearance of former forests, Ireland has rather few forest wildlife species and natural predators. This depleted ecosystem presents issues in relation to the management of deer numbers and potentially diseases and pest species. Only around 100,000 hectares of true native woodland remains, much of which is negatively impacted by invasive species such as rhododendron. Native forest, in particular, can provide important ecosystem service benefits for recreation and water quality [19].

Forestry, most particularly the planting of monocultures of exotic conifer species, has had impacts on landscape and water quality, including through acidification and eutrophication. Sediment has been implicated in impacts on salmonid spawning and freshwater pearl mussel. Firmer guidance has been provided on planting and water quality, and tighter regulations on planting mean that buffer strips are now required between forests and waterbodies. Harvesting operations are now better managed to minimise sediment loss and some clear-felling has been replaced with more selective harvesting. Harvested areas are required to be restocked.

The high density of planting and the non-native origin of most conifers supports a limited number of species. Forestry has contributed to an expansion of the deer population with severe impacts on the regeneration of native trees. Mature plantations have often replaced open grazing and moorland of higher nature value, impacting on species such as hen harrier and also ground-nested species such as curlew by harbouring predators such as foxes and crows. However, planting is no longer grant aided on peatland soils.

The **Forest Service** has a target of increasing the proportion of broadleaf and native species planting to 30%. The proportion is currently 27%. Forest grants now require that 15% of the managed area is planted with broadleaf species or up to 15% for biodiversity. This will have a positive effect on biodiversity. Preferable grants for broad-leaves are available through the Native Woodlands Scheme. However, most of the forest industry still relies on supplies of softwoods which have shorter rotation periods and for which Ireland's mild climate is particularly suited. There has been planting for biomass too, although this activity may be of mixed value for biodiversity. Nevertheless, forest planting generally contributes to climate change adaptation and mitigation as it delivers flood risk

protection benefits and carbon sequestration benefits. In addition, harvested wood products have carbon storage and carbon substitution benefits when compared to other more carbon-intensive materials, and depending on their lifetime and life cycle. In this sense, forest creation has a big role to play in the pathway to achieving net zero carbon emissions in Ireland by 2050.

Coillte is the principal state forestry operator and manages 7% of Ireland's land area and 440,000 hectares. The company has a turnover of €330m [20]. It manages its lands to FSC standards and was the first Irish company to develop an organisational natural capital account. Coillte Nature is a non-profit branch that was established in 2019 with a focus on the management and restoration of native woodland with biodiversity, climate and ecosystem services as major objectives.

Private companies include Green Belt and Arbor Forest Management. The contribution of private companies to timber output is expected to grow from 16% to 50%. Green Belt currently manages 400,000 acres. Recently, private investors have entered the broadleaf market through accredited intermediaries in search of carbon offsetting or credits to demonstrate their actions towards carbon neutrality and realise CSR or other corporate benefits.

Peatlands



Peatlands (both lowland raised bog and upland or coastal blanket bog) once covered 1.2 million hectares or approximately 20% of the land area of Ireland [21]. Ireland's Article 17 report to the European Commission on the status of protected habitats reveals a continuing decline in the condition of peatlands with the structure and function of both raised and blanket bog assessed as being in "bad" condition [22]. Almost all of Ireland's peatlands have been impacted by drainage and cutting for peat fuel, horticultural products, overgrazing and afforestation. The industrial mining of peat for energy and horticulture has impacted severely on the larger raised bogs, while private cutting for domestic fuel has increasingly become the domain of contractors using machinery. Only two-thirds of the original area of raised bog remains, of which around 2.4% is classified as intact and less than 1% is thought to be actively peat forming [23].

Peatlands are a vital habitat for many specialist species, for example plants such as sphagnum moss and sundew, as well as amphibians and insects. They also support birds such as golden plover, curlew and lapwing whose numbers have fallen significantly. If intact, peatlands deliver very significant ecosystem services in the form of carbon sequestration, water flow moderation and benefits for water quality. Carbon sequestration and storage is a vital ecosystem service in the context of climate change. Sediment losses have had significant impacts on water quality and fisheries. Once drained prior to peat extraction, these ecosystem services cease and, indeed, are reversed. Sequestration will be replaced by the emission of substantial quantities of atmospheric carbon through oxidation even prior to burning for fuel.

The **National Peatlands Strategy**, published in 2015, brought together stakeholders from various Government Departments and Agencies along with the knowledge gained through research projects such as the EPA-funded Bogland [24]. **A Cessation of Turf Cutting Compensation Scheme** (CTCCS) has been in effect since 2011. Under the scheme, the holders of peat cutting (turbary) rights are compensated for ceasing peat cutting. In 2014, the scheme was extended to an additional 36 raised bog NHAs. Thus far, the CTCCS has had over 2,000 applications and paid out over €32 million in compensation payments between 2010 and 2018 to prevent further damage. Restoration of these

cutaway workings is necessary to curtail carbon emissions, but is challenging and costly given the nature of harvesting and the damage to peatland hydrology. A peatland restoration fund was established by the Government in Budget 2020, of which €5 million is to be derived from the carbon tax under the Just Transition category [25].

The largest commercial extractor of peat is the semi-state company, **Bord na Móna**. In 2016, the company produced its **2nd Biodiversity Action Plan 2016-2021** [26]. Bord na Móna has recently signalled its intent to withdraw from commercial peat production before 2030 and has begun to experiment with peatland rehabilitation. The company has already restored 1,000 ha of raised bog and began the rehabilitation of 15% of its original 80,000 ha landholding. The commitment also coincides with the Government's intention to cease Public Service Obligation subsidies for milled peat as a fuel. Rehabilitation of the company's cutover sites will involve drain blocking and rewetting in the first instance. Full restoration would involve the recovery of the hydrological status and the return of carbon fixing sphagnum mosses. This transformation will have significant benefits for biodiversity and for returning peatlands to a situation of active carbon sequestration. It has been estimated that the sequestration benefits could amount to over €100 per hectare per year in avoided climate change impacts. The position would go a long way towards realising Ireland's commitments in relation to climate change [27].

There remain a large number of bogs which were purchased by private contractors mainly for horticultural production. This production had a farm gate value of €437 million in 2018, the fourth highest land use value after dairy, beef and pig production. The milled peat is purchased mainly for garden, mushroom, fruit and vegetable compost. Exports amounted to 821,000 tonnes in 2018. The principal producers are Bulrush, Clover, Erin Peat, Klasmann-Deilmann, and Westland [28].

Many bogs were purchased as recently as the 1990s, although there may have been more limited household or local contractor cutting previously. Peat extraction was able to continue as the new works fell below the 50ha threshold previously required for environmental impact assessment. The EPA's interpretation of the new EIA Directive 2014/52/EU has led to the recent suspension of some peat workings pending renewed applications for planning permission and IPC licensing backed by a new EIS. The Department of Housing, Local Government and Heritage (DHLGH) is currently developing a regulatory regime for these works that provides compliance with the Habitats Directive. As a minimum, this is likely to involve improved sediment capture prior to the discharge of waters to local rivers. These peatlands cover a substantial area of the Midlands. Some sites are now nearing the end of their working life and companies will be required to at least re-wet and rehabilitate workings. Some purchasers of peat are also switching to non-peat products.

Aggregates and Mining



Total aggregate production in Ireland has been rising steadily to 36 million tonnes in 2018. There are 500 active commercial quarries and annual concrete production is 4.8 million m³. Demand for aggregates in Ireland has been higher than other EU countries due to the rate of construction growth based on infrastructure and housing needs. This demand is projected to increase to meet the objectives of Project Ireland 2040 [29]. Major aggregate and cement companies in Ireland

include Roadstone, Irish Cement (CRH), Lagan, Quinn Group, Kilsarin Group and Keegan Quarries. Mining activities in Ireland concentrate on lead and zinc with an output value of €550 million per

year. Diminishing reserves have led to some closures in recent years. Ownership changes hands frequently, but principal companies have included Boliden, Buchans, Anglo-American plc and Lundin.

The aggregates and mining industries have little primary dependence on ecosystem services, but wetland ecosystems can have a role in capturing sediment and pollutants in settlement ponds. Negative impacts can occur to surface water and groundwater from pollution, spills and a lowering of the water table, to habitats due to disturbance or removal, from noise or dust, or to marine mammals from seismic surveys. Closed mines have a need for remediation to avoid subsequent environmental and health impacts arising. Historic mining in Ireland is responsible for continued severe pollution of the Avoca River. New operations however require planning permissions and licenses from the DECC and EPA supported by EIA, mitigation measures and Environmental Management Systems. As the geological characteristics of many sites are special, these can also mean that sites qualify as protected habitats for which Appropriate Assessment is needed under the Habitats Directive. In Ireland, much gravel is excavated from eskers which are often important habitats.

A recent study by AECOM (2020) explored the social, environmental and economic effects of the Galmoy and Lisheen mines⁸. Both mines were subject to strict regulation regarding the assessment of natural capital and extensive environmental monitoring as part of their licence conditions. Both mines were also required to develop Closure, Rehabilitation and Aftercare Management Plans (CRAMP) outlining the rehabilitation works that would be carried out during closure, with funding set aside during operations for that purpose. A Closure Bond ensured that the funds were available to meet the cost of ‘known liabilities’, and although these closure plans were dynamic and could be revised to take account of evolving closure practices or local needs, funds could be topped up where necessary.

The mines had resulted in two significant changes in terms of land use. Firstly, the development of such large sites meant that there had been a long-term change of land use, i.e. pastureland had been converted to industrial land, leading to a loss of agricultural output during this period. However, both sites were largely rehabilitated to grazing post-closure, following trials confirming the sites’ suitability. Secondly, an integrated constructed wetland was constructed at the tailings management facility at Galmoy resulting in reported positive effects on water quality and biodiversity. During the closure phase at Lisheen, operators also created wetlands to trap excess run-off at discharge points from the tailings management facility.

Monitoring of water quality and fisheries was undertaken over the lifetime of both mines in accordance with the EPA Integrated Pollution Control Licence that is required for all metal mines in Ireland. Dewatering of the mine had significant effects on groundwater during operation phases of both mines, although measures were put in place to mitigate any negative effects on local water supply.

Although the mine license requires robust monitoring, it was often not possible to isolate the direct effects of the mines on water quality from other influences. Several existing water quality issues were identified during the baseline studies at both mines, and other environmental influences in the catchment may have had an effect on water quality independent of mining activities.

Given the prospective benefits of being seen to be proactive in a sector which has evident and legacy adverse impacts for landscape and biodiversity, extractive industry bodies have been keen to demonstrate positive actions for the purposes of future license applications and corporate public relations. Reputable companies have been keen to distinguish themselves from the instances of

⁸ <https://www.dccae.gov.ie/en-ie/natural-resources/publications/Pages/A-Social,-Environmental-and-Economic-Assessment-of-Galmoy-and-Lisheen-Mines.aspx>

environmental impacts at smaller or unlicensed operations. A recent RTE Investigates⁹ programme highlighted serious ecological, landscape and community impacts of 150 unauthorised quarries which continue to operate by submitting lengthy appeals against planning judgements, a situation not foreseen by the enforcement actions allowed for in the Planning and Development Act 2000 and the subsequent guidelines of 2012.¹⁰ For the wider industry this presents issues for companies whose legitimate quarry applications are increasingly appealed.

Open cast mining and the excavation of aggregates have a direct impact on the landscape, but there are potential compensations both when operations are continuing and when they have ceased. In south-east England, for example, flooded gravel pits provided a habitat for the spread of the little ringed plover. Dungeness is one of the RSPB's premier reserves established in this terrain. The location is bleak, a natural gravel spit and site of a nuclear power station, but the many pits excavated for gravel have provided an opportunity for the proactive creation of lakes and wetlands.

Both the NPWS¹¹ and the IUCN¹² have produced guidelines for the aggregates industry, including Integrated Biodiversity Management Systems, Biodiversity Action Plans and the use of biodiversity indicators and reporting. The Works based on these guidelines can reduce impacts by identifying resident species or areas of biodiversity value, by training operators to recognise potential impacts and through long-term planning for rehabilitation. The **Irish Mining and Quarrying Society (IMQS)** has been active in promoting environmental mitigation.

During operations, there may be habitats (e.g. scrub) that remain untouched and potentially little disturbed. Pre-existing habitats in areas of aggregates excavation often have good drainage with sparse nutrients, favouring niche plant and animal species, particularly in a damp country like Ireland. There will be areas that may have filled with water or been developed as settlement ponds, or where the bare ground attracts specialist species, including ground nesting birds. Bare banks of cliffs can attract solitary bees/wasps, sand martins and nesting falcons. Application of an integrated Biodiversity Management System can ensure that risks to biodiversity during operation (and subsequent closure) are minimised. This also has a potential benefit in terms of the acceptability of operations and minimising the risk of any subsequent environmental liability.

As well as taking steps to protect to biodiversity, there are opportunities for proactive environmental measures. The **European Aggregates Association (UEPG)** has Sustainable Development Awards with examples from across Europe.¹³ In Ireland, these include protection of the Kildavin Stream, a salmon spawning waterbody, beside the CEMEX quarry in County Carlow, pond management at the Roadstone Quarry in Denhamstown, County Meath, as well as general actions taken by the two companies to protect peregrines, bats, sand martins, amphibians and ferns. In addition, the **Irish Concrete Federation** and UEPG have both collaborated with NPWS. The NPWS guidelines present additional examples from Bennetsbridge Limestone Quarry in County Kilkenny (Roadstone), Cahir Sand Pit in County Tipperary, Cregaree Quarry in County Mayo (McGrath Quarry Group) and the Midleton Quarry in County Cork (CRH) which includes scrub habitat on a pHNA. Each

⁹ Between a Rock and Hard Place 2019.

¹⁰ Section 261A of the Planning and Development Act 2000 (Supplementary Guidelines for Planning Authorities)

¹¹ <http://www.noticenature.ie/files/Notice%20Nature%20quarry%20brochure%20web.pdf>

¹² <https://www.iucn.org/theme/business-and-biodiversity/resources/business-sectors/cement-and-aggregates>

¹³ <http://www.uepg.eu/key-uepg-topics/case-studies/biodiversity>

of the main quarrying and mining companies have protocols to provide for sustainability and biodiversity.

Marine and fisheries



Ireland's marine territory covers 400,000 km². Following a consultation process, a Marine Spatial Planning Framework is in the process of being agreed. Biodiversity protection is emphasised in the plan which aims to balance competing demands on marine resources. Fishing has always been a core element of marine policy, although Ireland's fishing effort only grew significantly following membership of the European Economic Community in 1972. In recent years, this activity has been joined by hydrocarbon extraction and wind, or tidal, energy. The Marine Spatial Plan builds on the recognition given to biodiversity within ***Our Ocean Wealth***, the preceding Integrated Marine Plan. The Marine Strategy Framework Directive (MSFD) is the guiding EU legislation which aims to bring all marine waters to good environmental status (GES). However, only just over 2% of Irish waters are currently protected for biodiversity. Specific measures to protect biodiversity include the designation of Marine Protected Areas (MPAs) which may have some momentum following Seanad motions to this effect in 2019 and the subsequent establishment of an expert group by the DHLGH. The Programme for Government 2020 includes a commitment to increase the area of MPAs to the *"outstanding target of 10% under the Marine Strategy Framework Directive as soon as is practical and aim for 30% of marine protected area by 2030"*.

Around 130 Special Areas of Conservation (SACs) or Special Protection Areas (SPAs) have been designated to protect habitats around the coast such as inlets, sandbanks and mudflats, but only Lough Hyne has been described as a marine site even though it is coastal, but essentially "a giant rockpool" (Irish Wildlife Trust, 2017). Protected marine species include cetaceans and seals.

Ireland had an integrated Department of the Marine in the 1980s/90s, but more recently, a range of Government Departments and Agencies have been involved in the management of the marine environment with responsibilities spanning research, fishing, seafood processing and sustainability. Although environmental protection forms part of the sustainability agenda, only the NPWS has specific responsibilities for biodiversity, although in practice its remit and budget restrict much of this activity to the coast and inshore areas. The Marine Institute engages in research, spatial mapping and fish stock analysis, and is actively researching the biodiversity of offshore reefs, bycatch reduction, microplastics and restoration of native oyster populations. The Department of Housing, Planning and Local Government (DHPLG) is the Government Department responsible for spatial planning and is the competent authority for the MSFD and the Marine Spatial Planning Directive.

The sea fishing, processing and aquaculture industries are supported by the work of Bord Iascaigh Mhara (BIM). Its primary objective has been the expansion of the volume, quality and value of outputs from these sectors. However, BIM is paying increasing attention to sustainability initiatives that focus on quality and sustainability, reducing energy use and waste, as well as the development of less intensive aquaculture systems, reduced bycatch, control of invasive species and the recycling of fishing gear. BIM also conducts an increasing number of programmes directly related to biodiversity, such as invasive species monitoring, harvesting of native oyster and mussel seed and experimentation around native seaweed aquaculture (BIM, 2017). The agency also initiated a natural capital assessment in late 2019 in collaboration with the Irish Forum on Natural Capital (now NCI).

In 2018, the value of landings was €370m and that of aquaculture €176m. €653m of fish and fish products were exported. Overall, the fishing industry is worth €1.25bn to Ireland's GDP and employs

over 14,000 people directly or indirectly. The wild catch industry is entirely dependent on a healthy ecosystem to underpin fish catches. While aquaculture farms captive fish, it is highly dependent on a quality marine environment and on a healthy biodiversity to manage pathogens, pest and alien species. The shellfish industry (both wild catch and farms) depends on healthy ecosystems to provide high water quality, productive nursery areas, food and pest control. Despite this fundamental dependence on ecosystem services, these industries engaged in over-fishing, the capture of deep sea species with low-reproduction rates, the eutrophication of shallow bays, and the use of damaging harvesting methods that included discards, bycatch and the use of bottom dredging by heavy rollers capable of destroying benthic habitats. Given the composition of marine litter in the NE Atlantic, it is also evident that the industry has been a contributor to this global problem which leads to widespread entanglement and ingestion by marine wildlife.

However, the relationship between marine economic activity and biodiversity is improving. The Common Fisheries Policy is pursuing an **ecosystem approach** towards the wild harvesting of fish and an increasing number of species are subject to Total Allowable Catch (TAC) limits. The distribution of TAC among Member States is subject to national politics, argument and lobbying and so some limits (e.g. cod, whiting, sole) remain in excess of Maximum Sustainable Yield in many fisheries. However, the stocks of others have begun to improve. All TAC species are now subject to Landing Obligations (reporting) and a discards ban. Inshore fishing is promoting quality and realising higher prices for some catches as well as benefiting from a recent ban on larger vessels entering coastal waters (recently challenged in the courts). The situation for aquaculture is improving with most salmon farms now working to organic principles and with farms in Protected Areas being subject to Appropriate Assessment. The lengthy and non-transparent licensing system has been independently reviewed, but few recommendations have been implemented leaving the system subject to appeals and complaints of monitoring shortfalls. While there are positive trends, Ireland is amongst those Member States which continue to fish beyond scientific recommendations. As recently as 2019, in the Northeast Atlantic, Ireland caught 34,000 tonnes, or 22%, above TAC (Griffin and Heisse, 2019).

Foodwise 2025 envisages a substantial increase in seafood output while aiming also to reduce the proportion sold in commodity form and to improve environmental sustainability. **Bord Bia**, through the Origin Green scheme, and BIM have promoted sustainability programmes for the industry including Responsibly Sourced Seafood and Certified Quality Assurance Standards. **BIM** has launched Fishery Improvement Projects to which many processors have signed up. The Fishery Local Area Group Development Scheme (FLAGS) are supported by the European Maritime and Fisheries Fund (EMFF) and aim to strengthen the relationship between fishing and local development and this indirectly benefits biodiversity by strengthening the case of sustainability. Sea-fish distributors and seafood processors have enthusiastically bought into sustainability initiatives, not least as a means to market products and release higher values. Company websites describe encouraging measures which have been taken to improve environmental performance. Companies are contributing directly to ecological sustainability through activities such as improved net design, the V-notching of lobsters or the use of wrasse as cleaner fish as an alternative to pesticides in fish farms. The case study by MOWI in Chapter 4 provides further evidence in this regard.

The opportunity for businesses to contribute to biodiversity directly has been less available, in part due to the absence of proactive State funded measures to protect the offshore marine environment. While there is a direct link between the sustainability of fish populations and fish harvests, the relationship between the marine ecosystem and fish populations is still not well understood while being subject to numerous pressures, including exogenous threats such as climate change. The shared access to the resource, or at least its common property characteristics, mean that investment

by any one entity does not ensure a return to that entity. The return for businesses from investing in the marine environment or in habitats is a long-term commitment. There are potential opportunities for the industry to work collectively with the State to protect bays, nursery areas or benthic habitats such as deep water reefs, but such investment needs collaboration from an industry where businesses are competitive and critical of European fisheries policy.

Energy

Wind energy



The Government set revised Renewable Energy Targets in December 2019 of 55% by 2030 (70% of electricity). Of this, wind is assumed to contribute to between 41% and 54% [30]. At present, 28% of Ireland's electricity is now provided by wind from 250 wind farms with most electricity provided by natural gas (52%). The Arklow Bank is the only off-shore site, although this may change given the challenge of obtaining planning permission onshore and the higher wind velocities to be found offshore. The forthcoming **National Marine Planning Framework** is intended to balance economic and environmental concerns. It proposes to identify zones for offshore wind which should streamline applications. Potentially, €6 billion could be invested in offshore wind in the next decade [31]. Renewable energy was supported under the Renewable Energy Feed-in Tariff (REFIT), but this is now being replaced by a competitive renewable energy auction under the **Renewable Energy Support Scheme (RESS-1)**.

Major wind farm operators include SSE Airtricity, ESB, Bord Gáis, B9, SWS and ABO Wind. Wind farms are mostly concentrated in the more exposed upland areas of the South-west, West and North-west of Ireland.

Although wind energy is supported by 83% of people according to the Irish Wind Energy Association [32], the erection of wind turbines typically faces a lot of local opposition. This has arisen mainly for reasons of landscape impact and from perceived direct impacts on people living locally from light flicker and noise. In principle, renewable energy, including wind, can benefit biodiversity by contributing to reduced national carbon emissions and so climate change mitigation. While this is true, wind energy development is not carbon neutral as much embodied energy is included in the erection of turbines, grid connections and the fall-back on other energies, including fossil fuels, at times when the wind is not blowing. Turbines can potentially impact negatively on bats and birds (of particular concern is the *hen harrier*). Sensitivity maps are available to guide applications, but a risk exists at all sites from collision, disturbance and habitat loss. For offshore sites there is a particular concern for migratory birds. Offshore wind farms could also potentially impact on reef species, cetaceans (due to noise) or sea currents. Wind farms in upland peatland areas are also a concern given bog bursts or peat slides such as that associated with wind farms at Derrybrien in County Galway in 2003 and at Corrie Mountain in Leitrim in 2008. To avoid this risk, construction works need to be sensitive and without drainage or drying out of the peatland. Bog bursts have an obvious impact on habitat, water quality and fish, but also negate any carbon savings associated with wind farms due to the carbon content released from the peat. Nevertheless, it could be argued that this impact is over-stated as bog bursts are not new and typically result from heavy rain following a period of dry weather, often aggravated by disturbance from over-grazing as much as engineering works. All wind farm applications are subject to environmental impact assessment to minimise this risk.

To mitigate local opposition, a **Community Benefits Fund** must be set up in connection with any new wind farm development. The IWEA has proposed a contribution of €2 per MWh. For a typical 3MW farm this could amount to €250,000 over 15 years. Communities are also encouraged under RESS-1 to develop their own schemes. Typically, these funds go towards local social causes, such as local sports facilities, proposed by the community. Funds do not generally go towards enhancement of the lands on which the wind farm is built unless it satisfies criteria such as amenity, community facility, culture/heritage, education or recreation/health. Many communities would be unaware of the potential benefits of peatland restoration so are unlikely to propose this as community gain. Moreover, sites are inevitably at a distance from villages or the centres of communities. However, SSE Airtricity is combining the restoration of former peatland with visitor facilities at Cloosh Valley in County Galway (this is discussed in a case study in Chapter 4). As Bord na Móna winds down in peat harvesting operations towards a total cessation by 2030, it is simultaneously investing in wind energy. BnM's worked bogs are concentrated in the Midlands where wind velocities are modest, but the company already owns the land, local opposition tends to be low due to the former industrial use, and sites have good connection to the national grid due to former peat-based power generation. Potentially, the income from electricity sales could contribute to peatland restoration at many privately worked bogs too. In a roundabout way, this is happening within BnM given its obligations to rehabilitate peatlands.

Hydrocarbons

Ireland has no terrestrial oil or gas fields. The relationship between the exploitation of hydrocarbon resources and the environment has been dominated by the offshore Corrib Gas Field in North-west Mayo. Development of the project commenced in 2004, but the plan to build a pipeline across farms above Broadhaven Bay to connect to an onshore terminal quickly ran into local opposition. Locals had hoped that the gas would be refined offshore. Safety concerns were stated as an issue. Environmental concerns were also raised in relation to later proposals to run the pipeline under Sruwaddacon Bay as proposed by an An Bord Pleanála hearing. The bay is important for wintering sea birds and tern colonies and is visited by cetaceans. Opposition was heated and ignited the Shell to Sea Campaign. The Corrib field has been in production since 2015 and has contributed up to 60% of Ireland's gas needs, although production has fallen in recent years and is due to end around 2030. Considerable investment was made in both the offshore pipeline and in the rehabilitation of lands through which the pipe passed onshore. Shell has recently sold its stake in the project.

It is generally accepted that the public consultation prior to the Corrib development was deficient in dealing with local concerns. Subsequent exploration has focused on more distant waters. In support of its climate commitments, the Government decided in 2019 that all new licensing should be for gas and not oil (although no viable oil fields have been found to date). Controversy instead turned to fracking. It has been argued that fracking has the potential to impact adversely on groundwater. It would also extend dependence on fossil fuels. A Carboniferous shale basin around the Lough Arrow in Counties Sligo, Leitrim and Fermanagh was identified as a potential opportunity. However, fracking was prohibited in 2017. There was a possibility that fracking could be permitted from the Northern Ireland side of the border, but the licenses have since expired.

Tourism and hospitality



Tourism is worth around €6 billion to the Irish economy. Over 11 million tourists visited Ireland in 2019 and income in the sector had been increasing at between 5%-10% per year. The tourism and hospitality sectors employed between 150,000 and 250,000 people, but supported many more people indirectly through inputs and services. Tourism is also of considerable value to regional development and to economic development in more economically peripheral areas of tourism value in the West and North-West.

Tourism is the responsibility of the **Department of Tourism, Culture, Arts, Gaeltacht, Sports and Media**. The role of the **Department of Housing, Local Government and Heritage** (DHLGH) is also very relevant given its responsibility for cultural events and heritage destinations, and for the Natural Landscape Strategy [33]. Strategic development is the responsibility of Fáilte Ireland, the National Tourism Development Authority. The tourism industry is recognised as a powerful lobby to rival, for example, agriculture or foreign direct investment. Relevant policy documents include *People, Place and Policy – Growing Tourism to 2025*, and the *Tourism Action Plan 2019-2021*. In 2018, the value and potential of National Parks for tourism was described in *Experiencing the Wild Heart of Ireland: A Tourism Interpretative Master Plan. A Sustainable Tourism Working Group Report* was published in December 2019. These documents acknowledge the importance of protecting biodiversity, of tourism activity within the natural environment to collective health and wellbeing, and of tourism as a custodian of Ireland’s natural heritage. Ecotourism, which developed out of the earlier *Greenbox* initiative in the Northwest, is one company that has responded by providing training for the sector in sustainability.

In recent years there has been significant growth in cultural tourism, city breaks, adventure tourism, sports tourism, and business and corporate visits and tours. Irish culture and cultural attractions are a major draw. So too, is the natural environment. This is reflected in visits to key attractions by both overseas tourists and Irish nationals and residents. Fee charging attractions are typically cultural in nature with the top attractions including the Guinness Storehouse, Dublin Zoo and the Book of Kells, but also the Cliffs of Moher Visitor Experience which receives 1.58 million visits each year. The top free attractions include Kilkenny Castle and the National Gallery, but also Glendalough and the National Botanic Gardens. The landscape in which cultural attractions are located, for example, Skellig Michael, are often at least important. Many natural attractions have no means of counting visitor or user numbers, but “beautiful scenery” and “natural attractions” are listed as important by respectively 92% and 87% of overseas visitors [34]. Over three-quarters say that “unspoilt natural scenery” is an important reason for visiting. It is fully acknowledged that the Wild Atlantic Way has been a major success in providing a means for visitors to locate a route to move between attractions while experiencing stunning scenery along the way. Of visitors to the Western Region, 34% said that the **Wild Atlantic Way** had influenced their decision to come to Ireland “a lot” [34]. Where infrastructure has been provided to permit this interaction with the landscape, for example the Great Western Greenway, these facilities have been a great success. This has especially been the case for domestic tourists who have, in the past, been given less attention than visitors from overseas. Of domestic visitors, the highest proportion (39%) visited places of “cultural interest”, but 26% undertook hiking/walking, 21% visited national parks and 20% engaged in water-based activities [35].

Included within the overall figures is the role of ecotourism and environmentally relevant sectors such as some spa tourism. Globally, the ecotourism market has been growing three times faster than tourism generally. Whale and dolphin watching and guided walks are examples of ecotourism which have a distinct link with biodiversity and the natural environment, but the definition extends to include any accommodation or activities that permit visitors to experience the landscape and nature with minimal impact. Destinations such as the Delphi Resort in Connemara are well-established. Others such as the Slieve Aughty Centre in Loughrea are more recent. The Burren has become a focal point for numerous enterprises. Numerous small enterprises have established around the country, including retreats offering local walking, cycling, horse-riding nature themed spa treatment or yoga. Fáilte Ireland has recognised the benefits of positioning Ireland within the market for environmentally-friendly or low impact tourism and many tourism providers have responded by emphasising their sustainability credentials. There is a role for quality food in this movement including local sourced and organic products. Higher value markets of this nature can potentially strengthen more sustainable farming, fishing and aquaculture.

Tourism in Ireland relies heavily on a green image and landscape attributes. However, the size and rapid growth of the tourism sector means that there is a significant environmental impact. Tourism is a major factor behind the growth in air travel and the corresponding rise in CO₂ emissions. Emissions from tourist accommodation are predicted to increase by 170% between 2005 and 2035. Waste and wastewater are also major issues. Visitor numbers, congestion and certain activities present a distinct challenge including the biodiversity of bays, beaches and dunes and to upland ground-nesting birds. Links golf courses have a direct impact on dune habitat and are regularly in the news in relation to defences sought against coastal erosion. Fáilte Ireland is acutely aware of the challenges and of *killing the goose that lays the golden egg*. The ability to demonstrate sustainable practice can be a marketing asset for tourism businesses and guidelines have been produced to encourage this [36] The strategy for the Wild Atlantic Way has aimed to provide adequate facilities to cope with visitors at honeypot destinations and to reduce pressure at other less high profile locations. The SEA of the programme was thorough, and unusually perhaps amongst mitigation measures, provides for regular monitoring, revealing that managing visitor behaviour at destinations requires more attention than visitor numbers alone [37]. The reliance of the tourism industry on the environment coupled with its impact on this same environment demonstrates the trade-off between protecting biodiversity for its own sake as opposed to protecting it for people's enjoyment.

Summary

The review of different sectors demonstrates the considerable impact that economic activity can have on the environment and biodiversity, but it also reveals the considerable influence that businesses can have, including the opportunity to evolve, adapt and innovate in relation to protecting biodiversity. In Chapter 4, we further develop the case for business engagement with biodiversity and discuss further the positive actions that businesses can take.

Chapter 4. Overview of good practices, actions and initiatives by business in Ireland and internationally

The economic case for business to engage with biodiversity

The viability of many, if not most, businesses ultimately depends on the natural world. The essential step is one of raising awareness of the strength of the connection. It is a connection which varies between businesses from critical to slight, direct to indirect, from operations to customers' willingness to purchase certain products. Loss of biodiversity introduces costs (in economic language *externalities*), either for business, or for society. The cost risk to businesses applies to the operating environment, including supply chains, income flows or markets. From the perspective of a single business, this risk may be ill-defined or long term. It can also have impact in terms of business access to finance or insurance. Globally, tangible risks are emerging for business operations from supply constraints due to land degradation, mismanagement of marine resources and climate change. Financial institutions, including the insurance sector, are not blind to these trends and the cost of finance is rising in response.

Individually, many businesses, most especially smaller businesses, may be making little or no direct contribution to global losses of biodiversity, and so the issue could appear peripheral to their business strategy. However, they may already be realising additional costs in terms of rising input prices, higher insurance premia or higher interest rates on loans.

Businesses can assess their own environmental footprint, determine their dependence on biodiversity, and assess if they themselves are having an impact, either directly or indirectly. The adoption of good environmental practice strengthens a company's reputation, particularly for those companies that have a retail or consumer face or which supply to public authorities. Commitments to good environmental management can be extended to businesses involved in the company's supply chains. Reputational gain is further enhanced through proactive and visible strategies to protect biodiversity along with the related environmental criteria of sustainability and mitigation of climate change.

There are also opportunities to make use of so-called *nature based solutions* to minimise environmental impacts, for example, by installing soakaways or integrated constructed wetlands to capture or assimilate pollutants or nutrients (by wetland plants and fauna), by vegetating or restoring areas vulnerable to erosion such as peatlands, by protecting business operations from flood or storm damage through the restoration of saltmarsh, creation of wetlands or planting of trees, or simply by using natural vegetation to mitigate noise or visual impacts.

Box 4.1 Reasons for businesses to engage with biodiversity

Biodiversity-related risks:

Operational risks:

- Business dependence on soils, pollination, pest control, good water quality, water retention
- Risks from flooding, erosion, poor water quality.

Supply chain continuity:

- Safeguarding supplies of raw materials, e.g. agricultural commodities, fish stocks, natural fibres

Liability risks:

- Minimising risks to environment or human health by, for example, protecting or rehabilitating habitat or species, protecting water quality through use of integrated wetlands or buffer strips, protection from land or mud slides through maintenance or restoration of vegetation/ecosystems, use of natural pest control and minimal use of pesticides, etc.

Reputational risks:

- Being seen to protect or enhance biodiversity, linking biodiversity objectives with sustainability and climate, mitigating or offsetting impacts through restoration of habitat or ecosystem services, reducing risks to environment or human health (as above).

Regulatory risks:

- Acting in advance of regulation, minimising costs and gaining competitive advantage.

Financial risk:

- Where risks to business projects reduces access to project finance.

There are opportunities for synergies between biodiversity and many companies' existing commitments to sustainability and climate change. Internationally, many companies have acted to offset greenhouse gas emissions through voluntary offsetting initiatives. These have included schemes to balance company emissions of carbon with investment in certified schemes to restore grasslands, peatlands or forests to sequester CO₂ back from the atmosphere. There are further potential social benefits where these habitats can provide for amenity and be a means to engage with local communities or the public generally.

This chapter reviews good practice, actions and initiatives that Irish businesses have taken to mitigate biodiversity impacts and to enhance or restore biodiversity. It also provides international examples that could be relevant to Ireland.

Actions by business

At the National Biodiversity Conference in 2019, businesses were asked to consider a Biodiversity Pledge consisting of nine commitments to understand their impact on biodiversity, minimise negative impacts and optimise positive ones, develop biodiversity management plans, regularly report on biodiversity impacts and dependencies, promote awareness, act as ambassadors for biodiversity, share experiences, take concrete actions and account for these, and to provide information on actions taken.

Government Departments and Agencies committed to various actions for biodiversity or *Seeds for Nature*. Amongst these was a proposal for a national *Business for Biodiversity platform* to which various companies, including Gas Networks Ireland, Kepak, Eirgrid, Dawn Meats, Coillte and Bord na Móna, agreed to participate subject to its Terms of Reference. It is an objective of the current study to propose recommendations for the structure and operation of such a platform. Examples of

international experience with business and biodiversity platforms have been compiled by the IUCN [4].

Business in the Community Ireland (BITC), whose remit is to promote CSR, used the conference to launch its *Biodiversity Handbook for Business* [2]. The handbook contains a *Biodiversity Framework for Business* which begins by calling on businesses to know what wildlife habitat they have on site (Step 1) so as to guide them towards their own preferred level of engagement across the five pillars of CSR (Step 2). The CSR pillars are Governance, Environment, Community, Workplace and Marketplace which are linked together by a straightforward framework of complementary actions. A Corporate Biodiversity Strategy or Biodiversity Action Plan forms part of this strategy, but the Framework places these in a context of wider optional and graduated actions.

Table 4.1: The Biodiversity Framework for Businesses (source: BITC)

Pillar	Level 1	Level 2	Level 3
Governance	Develop Corporate Biodiversity Strategy	Prepare public Biodiversity Action Plan	Change practice, monitor, communicate
Environment	Map habitat on site, identify areas of potential and create biodiverse area	Prepare strategic plan with other organisations to connect habitats via green corridors	Set aside areas for biodiversity
Community	Undertake local biodiversity review with local groups and NGOs	Implement activities Encourage volunteers and citizen science	Provide leadership with the community
Workplace	Raise staff awareness	Train and engage staff	Review biodiversity impacts and prioritise actions.
Market	Review supply chain and create impact table	Audit biodiversity impacts within the supply chain	Change supplier, subcontractor and customer practice

Levels of activity within the pillars are presented below in the figure below (*Biodiversity Wheel*)

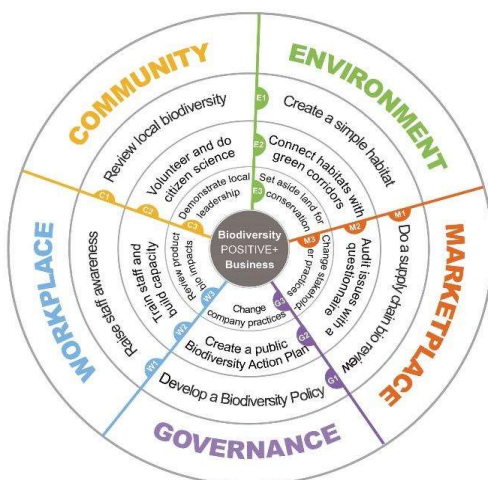


Figure 4.1: “The Biodiversity Wheel”

Source: BITC

Box 4.2: Examples of actions for biodiversity

Peatland restoration

At Galway Wind Park in the Cloosh Valley of Connemara, both *Roadbridge* and *SSE Airtricity* and have been active in the restoration of peatland that was previously overgrazed or cut for turf. Roadbridge was responsible for the erection of the turbines and SSE Airtricity is the operator. All peat cutting has ceased and grazing reduced to low levels permitting a 17-22% increase in vegetation cover in the first eighteen months. SSE Airtricity and Coillte have felled low productivity plantation forestry at the 69 turbine site, replacing this with restored peatland habitat. The restoration is permitting the return of carbon-sequestering sphagnum mosses and improving habitat for birds of prey species. A network of six trails has been established with input from the local community to allow local people to experience the site and its biodiversity (Hamilton, Reynolds, and McMahon 2019).

Support for pollinators

Pollinator plans have been put in place at *SSE Airtricity's* windfarms to plant suitable tree and wildflower species (Hamilton, Reynolds, and McMahon 2019). To help promote awareness of biodiversity, the company has also been supporting local beekeeping associations across the country through its Community Fund, for example Cumann Beachairi Chonamara (Connemara Beekeepers Association) and at Dunneill in Co Sligo

Site management

Gas Networks Ireland manages a pipeline network of 14,000km on 7,000 private landholdings. It has been working with the National Biodiversity Data Centre to support reduced herbicide use on their lands and to improve planting for pollinators. The company is also supporting a post-doctoral researcher at Trinity College in Dublin. Gas Networks Ireland is working with both Cork County Council and South Dublin County Council on biodiversity projects near their premises and has sown plants suitable for pollinators and erected "bug hotels" and bird boxes, including for sand martens along the Rivers Blackwater and Bride in East Cork [2]

Integrated constructed wetlands

An engineered wetland has been created by *Roadstone* at their quarry in Belgard, Dublin, to intercept and treat drainage water from the site. The site has been planted with species such as sweet water grass, bulrush, iris and common river sedge, along with native trees and shrubs to further improve conditions for biodiversity [2]

Supplier biodiversity

Dawn Meats has been supporting 1,200 of its suppliers to manage High Nature Value Farmland as part of the Hen Harrier Project which commenced in 2017. A light level of livestock grazing provides for suitable habitat, but has also resulted in an average 10% weight gain equivalent to an extra economic return to the farmer of €160 per animal [2].

On-site biodiversity

At its production site in Leixlip, *Intel Ireland* have developed an Environmental Management Plan and integrated biodiversity within their ISO 14001 Environmental Management System. The company has planted native trees, restored a 300 year old orchard, established a wildflower meadow and erected bird, bat and insect boxes. It has engaged with the local community through nature walks on the site and by working with local schools. The company has also undertaken surveys of salmon and native white-clawed crayfish on the local River Rye [2, 5].

The current study has provided some interesting examples of how businesses in Ireland have responded to biodiversity.

Case Study 1: Mowi Ireland (policy and strategies)

Mowi Ireland is part of the global MOWI Group with its headquarters in Norway and is the leading producer of farmed organic salmon in Ireland. The firm is fully integrated, with three freshwater sites and 10 near-shore sites along the west coast of Ireland (see photos) together with a processing plant in Donegal.

Policy Drivers and Risks: Mowi has published a 30 page **Sustainability Strategy** - www.mowi.com. The MOWI commitments are aligned with ten of the UN Sustainable Development Goals, which include Climate Action and Life Below Water: “Our business depends on a healthy ocean environment. We minimise our environmental impact by monitoring, applying best practices and following the strictest environmental standards available for aquaculture”. Climate change is seen by MOWI as a key business risk, with the increasing frequency of storms off the Irish Coast and algal blooms at sea.

Minimising Impacts

MOWI adopts a three-fold approach to minimising impacts on biodiversity.

Biodiversity: MOWI sources its *raw feed material* from sustainable vegetable protein sources and the use of trimmings from fish already caught for human consumption to reduce overall fish use to a maximum of 40% of the feed. To minimize the impact of *sea lice* without chemicals that can affect water quality in enclosed bays, Mowi uses a range of biological treatments, including wrasse in summer and Lumpfish in winter-time. It follows a range of national protocols to monitor impacts on *water quality* and on the seabed near its rearing facilities.

Standards: MOWI is committed to ASC (*Aquaculture Stewardship Council*) certification of its farms, which was initiated by WWF and is regarded as amongst the strictest standard for environmentally and socially responsible aquaculture. Mowi is a participant in the **Carbon Disclosure Project** - its main energy use has been identified as the vessels which service its sea sites. It is investigating carbon offsets to mitigate these emissions.

Challenges/role of Government agencies: MOWI works closely with a range of Agencies such as the Marine Institute, BIM and Udarás, and supports research at its sites by UCC and other colleges. It is obliged to carry out detailed Environment Impact Assessments (EIA) at each of its sea sites. It welcomes the move towards Marine Spatial Planning in Ireland, which is to be enacted this year. It supports the provision of integrated advice, across Departments, from a Business & Biodiversity hub.



Pictured L to R: Anny Point Seafarm, L. Swilly Co. Donegal. Deenish Seafarm, Co. Kerry.

Case Study 2 - SSE Ireland (policy and strategies)

Company Policy & Impacts on Biodiversity:

SSE Renewables is a leading developer and operator of renewable energy in the UK and Ireland. It aims to **“create simultaneous value for shareholders and society by aligning business goals with the Sustainable Development Goals”**. SSE aims to put sustainability at the core of its business - It has adopted the UN SDGs as its long-term business goals. SSE’s **Sustainability Report 2020** discloses information on the material economic, social and environmental impacts SSE’s business activities had during 2019/20 - www.sse.com

A key SSE focus is to support the transition to low-carbon electricity systems in the UK and Ireland. SSE interacts with the environment in many ways and impacts on a range of issues from climate change down to local habitats. The company’s strategy seeks to address the SDGs through:

- **Climate Action** - Cut the carbon intensity of its electricity by 50% by 2030, based on 2018 levels;
- **Fleet** - Achieve EV100 commitment of 100% in vehicles up to 3.5t; 50% of vehicles between 3.5t and 7.5t to be electric by 2030;
- **Responsible Consumption and Production** - substantially reduce waste by delivering a waste minimisation strategy, developing a baseline in 2020 and set targets in 2021 onwards.
- SSE’s **Natural Environment** policy *“promotes the integration of amenity, ecosystem and biodiversity improvement into business activities”*. It aims to *“develop and implement a means of assessing Natural Capital and delivering biodiversity Net Gain”*. SSE’s biodiversity objectives include *“to protect and restore habitats”*, although it admits that it is challenging to avoid impacts in upland areas where there are sensitive habitats and complex land ownership issues. Its habitat reinstatement is relevant to a range of habitat types, including peatlands, forestry and wetlands.

Sponsorship, Research links and Education projects:

- SSE works with **iCRAG** - a geophysical assessment of peat stability, run by University College Cork (UCC) Peat Research Group, which is designed to improve risk assessment and environmental practices for sites located on peatland habitats.
- **Nature + Energy** - SSE and the Irish Wind Energy Association (IWEA) industry operators are developing tools, in collaboration with TCD, to optimise land management and deliver biodiversity benefits from onshore wind farms
- SSE developed the **Galway Wind Way**, a series of interpretative walking trails in Galway Wind Park, Connemara, in collaboration with Coillte.
- SSE supports the **All Ireland Pollinator Plan**, which includes actions to protect earth banks, support beekeepers and create apiaries. SSE runs many events around biodiversity awareness which it sees as *“a great way to engage with staff and senior management”*.
- **SSE Community Fund**, which is mandated for wind farms, has supported a variety of projects relating to energy efficiency, environment and biodiversity (e.g. community gardens, Green Schools, Tidy Towns).
- SSE is a partner in **EcoEd4 All**, a collaborative group, centred in Galway, bringing an online environmental education programme to Irish 2nd level Schools www.ecoed4all.ie



Case Study 3 - Veon Forestry (policy and strategies)

Company policies on biodiversity

Veon Forestry is an Irish based forestry company that manages approximately 20,000 hectares of converted woodland for clients that range from large corporate companies to individual farmers. Their services have evolved from purchasing and selling forestry plantations to include corporate services such as carbon offsetting and rewilding projects.

This has meant the company has got to a point where they would like to be able to measure changes in biodiversity, which is an area that is still developing in Ireland.

In terms of policy documents, Veon Forestry has an integrated pesticide strategy, which supports foresters to assess a site for the need to use pesticides. This has been developed to reduce the amount of pesticides used, as a more reactive approach to pest control means that Veon can reduce the amount of chemicals they use on a given site.

Veon strictly adheres to all Department of Agriculture guidelines around biodiversity, water and the environment as laid out in the Biodiversity Guidelines, the Forestry and Water Quality Guidelines, the Harvesting and Environmental Guidelines. All operations carried out by Veon are carried out in accordance with the Code of Best Forest Practice in Ireland.

Impacts on biodiversity

Veon Forestry is becoming increasingly aware of its impacts on biodiversity. This is becoming evident through the higher proportion of afforestation projects which are focusing on native woodland rather than commercial conifers. This is being driven, in part, by the additional biodiversity benefits that these types of projects provide.

Veon acknowledges that climate change is providing a new challenge to the management of their forestry assets. Warmer and wetter conditions may be providing better conditions for tree growth but there are also challenges in terms of pest control and vegetation management.

Whilst it is acknowledged that this may not be the most commercially viable approach in terms of timber production, corporate clients believe that native trees will fit better into their CSR requirements whilst individual farmers want to enhance the diversity on their farms and believe native woodland can deliver that. Additionally, the increasing awareness of the global biodiversity crisis means that clients want to be part of the solution; they don't want to be associated with the crisis.

Veon is now widening their services to provide ecological expertise related to the forestry sector, the organisation has recently employed their second ecologist.

Examples of good practice

Where Veon are undertaking afforestation or reforestation projects, specified buffers are kept from aquatic zones depending on the size of water features. These buffers allow discharged water to gently fan out over the buffer zone before entering the aquatic zone, with sediment filtered out from the flow by ground vegetation within the zone.

Setbacks are also installed from dwelling houses, roads and archaeological zones etc. Within these buffers and setbacks native species are planted adding to the biodiversity of the site.

Veon are involved with numerous project where State Organisations are being encouraged to use the land under their ownership. Veon are working with these organisations to create biodiverse ecosystems through planting native woodlands with public access.

Veon are also working with private corporates converting previously conifer forests following harvesting into native woodlands.

Case Study 4 – Irish Water (policies and proposed actions)

Company policies on biodiversity

Irish Water is Ireland’s national water utility responsible for providing water and wastewater services throughout the country. It supplies drinking water to approximately 80% of the public (3.3 million people), the equivalent of approximately 1,670 million litres of drinking water each day. Irish Water also collects wastewater from over 1,000 separate communities and treats 1,600 million litres of wastewater daily, before discharging it back into our rivers, estuaries and coastal areas.

It is recognised that historical under-investment in water services infrastructure also means that biodiversity requires further consideration within the organisation and its operations. Progress has been made in recent years, beginning with the development of internal guidance documents on invasive species and biosecurity protocols to manage these species where they occur on Irish Water sites. The organisation has also developed a landscape guidance document to ensure that new infrastructure blends in with the existing landscapes and protects and enhances the biodiversity of those sites. These documents have provided an important educational platform for staff to better recognise the concept of biodiversity and how the organisation needs to protect it.

The company is developing a Biodiversity Action Plan (BAP), which will be published in the coming months. The BAP sets out objectives and measures for all 4,000 sites owned by the organisation. It is expected that the BAP will be accompanied by a webpage to engage with the general public on the topic.

Impacts on biodiversity

Protection of the ecosystems is fundamental to Irish Water’s business. Irish Water has committed to ensuring that it builds and manages its infrastructure responsibly so that ecosystems are protected, and where possible enhanced. A healthy and resilient water environment can result in lower water treatment costs.

Irish Water manages infrastructure that is located within a range of habitats and its infrastructure interacts directly with freshwater, estuarine, marine and terrestrial habitats through the abstraction of water for drinking or the discharge of treated wastewater. The EPA enforces standards on water quality through the licensing process which aims to ensure that the quality of receiving water bodies is not impacted by Irish Water’s discharge. Waterbodies in Ireland are also regulated and monitored under the EU Water Framework Directive.

One of the challenges faced by Irish Water is related to their responsibility for over 4,000 sites, of varying sizes. In most cases, sites are small and well managed (e.g. mowed lawns). However, from a strategic level the company is eager to protect across all of its sites, which may also reduce the operational costs of managing sites through the development of natural meadows and the planting of native trees.

Examples of good practice

Irish Water is exploring the use of an afforestation government grant at a number of its larger sites. The grant will provide funding to plant native trees that will in turn protect drinking source water, enhance biodiversity of the area and deliver carbon sequestration benefits.

The company promotes the use of nature-based solutions for water protection and wastewater treatment, particularly through the development of integrated constructed wetlands (ICWs). ICWs are an environmentally-friendly way to treat wastewater and can result in reduced operational and maintenance costs, biodiversity creation, while also reducing energy consumption and carbon emissions more sustainably. Working in partnership with Kerry County Council, Irish Water is currently developing a 5.5 hectare site at Lixnaw (pictured) which will be made up of four ponds and is designed to look and function like a natural wetland. A further 11 sites across the country are currently undergoing feasibility assessments for ICWs. More information is available [here](#).



Case study 5 - EirGrid (impact assessments and on-site actions)

EirGrid operates and develops the electricity grid in Ireland. The company is a signatory to Business for Nature's global Call to Action¹⁴, which advocates for the adoption of policies to reverse nature loss in this decade. EirGrid is also active in the ecological research space and, in 2015-2016, published a series of studies into the ecological effects of the high voltage transmission network. Individual studies were published on bats, habitats, birds, and the water environment combining an extensive literature review, with bespoke field studies¹⁵.

EWIC Biodiversity Project

EirGrid owns and operates the East West Interconnector (EWIC) which is managed in partnership with Hitachi ABB Power Grids. The EWIC asset includes onshore Converter Stations' in Ireland. Four hectares of the 7 hectare site at the *Portan Converter Station* in County Meath comprise of meadow habitat, immature plantation woodland, and intensely managed amenity grassland areas.

EirGrid has committed funding to enhance the biodiversity at the Portan site during a 3 year pilot project from 2019-2022. A 'low intervention' management approach has been advocated by consultees, including the NPWS, the Meath County Heritage Officer, and the local Botanical Society. EirGrid's ecologist has designed an ecological monitoring programme over three seasons from 2020-22. The programme comprises 3 years of botanical surveys to determine the optimal mowing regime to maximise meadow plant diversity. Wetland Surveys Ireland (WSI) were appointed in mid 2020 to refine and implement the monitoring programme. In August 2020, WSI completed baseline vegetation surveys of the meadow, which was found to be species poor and homogenous, with regard to vegetation communities, cover, and height.

One novel aspect of the project, supported by the NPWS, is that biodiversity actions will be evidence-based, and supported by statistical analyses of the effect of management actions. Specifically, the locations of baseline monitoring plots were designed to measure meadow plant diversity under two separate mowing regimes. The data collected provides a baseline against which EirGrid can measure change and set targets.

Hitachi ABB Power Grids (who manage the EWIC asset) are helping to deliver biodiversity actions including a modified mowing regime to favour plant diversity, and retention of unmown areas for overwintering invertebrates. A hole-nesting bird box has also been installed, given the paucity of natural hole nesting opportunities on the site.

Pending ongoing consultee feedback and monitoring results, EirGrid is exploring:

- Trial seeding or planting of yellow rattle *Rhinanthus minor*, outside current monitoring plots, to decrease soil nutrients and grass dominance in favour of plant diversity;
- Localized hedgerow planting to fill gaps in hedgerows for habitat connectivity.

Longer term, EirGrid anticipates developing a monitoring programme for invertebrates, to complement the botanical monitoring programme, and increase the evidence-base in support of decisions on biodiversity action.

¹⁴ <https://www.businessfornature.org/call-to-action#CTA-signatory-list>

¹⁵ <http://www.eirgridgroup.com/site-files/library/EirGrid/EirGrid-Evidence-Based-Environmental-Study-5-Birds.pdf>
<http://www.eirgridgroup.com/site-files/library/EirGrid/EirGrid-Evidence-Based-Environmental-Study-3-Bats.pdf>
<http://www.eirgridgroup.com/site-files/library/EirGrid/EirGrid-Evidence-Based-Study-6-Water-Quality-and-Equatic-Ecology-Main-Report.pdf>
<http://www.eirgridgroup.com/site-files/library/EirGrid/EirGrid-Evidence-Based-Environmental-Study-4-Habitats.pdf>

Methods and approaches for businesses to assess biodiversity

Businesses' accounting for environmental performance has often focused on CO₂ emissions, whereas biodiversity has often been discussed superficially or qualitatively, sometimes as part of an accompanying sustainability report. A review by PwC [6] found that companies were most likely to account for biodiversity where they had an evident high dependence on natural resources.

However, the implications of biodiversity loss to economic systems and human well-being, means that an assessment of biodiversity impacts needs to be a fundamental part of corporate governance. For change to occur, biodiversity and ecosystem services need to be integrated into business's assessment of operations, risk and opportunities, and supply chain management. An integration of biodiversity values is needed in company financial accounting, auditing and reporting [7].

Accounting for biodiversity can inform companies who wish to make environmental or biodiversity commitments with the evidence of the respective costs, opportunities and investment needs.

Corporate Biodiversity Strategies and Biodiversity Action Plans

For individual businesses, the Cambridge Institute for Sustainability Leadership has supplied guidance on *Developing a Corporate Biodiversity Strategy* (2019). The guide describes eight steps to a **Corporate Biodiversity Strategy** which is then populated with a range of actions and accompanying targets. The box below illustrates each of these steps:

Box 4.3: Eight steps towards a Corporate Biodiversity Strategy

Step 1: Identify motives

Are these operational? Namely, where there is a dependence on ecosystem services or natural materials/supplies. Are they related to company reputation or market presence, or is the motivation rather strategic or ethical with synergies with corporate social responsibility? Are there opportunities to align with other company commitments, for example in relation to social wellbeing, health, sustainability or climate, and can relevant actions build on existing activities?

Step 2: Set scope

Is the scope restricted to the business itself? Could it be extended to suppliers? Does the company's influence extend to the wider market / industry? Could the company's action materially impact positively in reversing trends to biodiversity loss?

Step 3: Consider context

Is the strategy intended to be high level, perhaps initially? Or will it impact on decision making across the company? What evidence can be gathered to draw up a list of achievable targets? How can the infrastructure within the business be adapted to conform to the strategy? The guidance proposes an evolving strategy beginning with an identification of the early steps, but with a view to these becoming inherent practice and, ultimately, best practice.

Step 4: Understand impacts and dependencies

Examine the direct and indirect impacts, the pathways through which environmental or biodiversity impacts are realised. Draw up a matrix to illustrate and examine the extent to which different elements of the business, e.g. purchasing, processing, assembly, etc., impact on air, land use, water, etc.

Step 5: Impact mitigation hierarchy

Consider the impact mitigation hierarchy of avoidance, minimising, restore and offsetting. Identify actions for different company operations and levels.

Step 6: Develop a monitoring strategy

Step 7: Draw commitments and actions together

Step 8: Implement, monitor, learn and develop continuously over time.

Corporate Biodiversity Strategies may alternatively be called **Biodiversity Action Plans (BAPs)**. These are much the same, but for a terminology that might better suit small businesses or non-corporates. Moreover, whereas the former can often be seen as focusing on company operations and its supply chain, BAPs typically include specific actions for landholdings or particular sites, sometimes with engagement with the public. Both can be backed by SMART targets¹⁶ and Key Performance Indicators (KPIs). The IUCN has a useful report to assist companies in the choice of biodiversity indicators [8].

As well as the above guidance provided by the Institute for Sustainable Leadership, guidelines are available for specific sectors such as agriculture [9] and oil and gas [10]. BAPs are also commonly drawn by organisations with large landholdings, often local authorities, but also companies such as Bord na Móna [11]. Private peatland horticultural companies may prepare BAPs to mitigate operations by protecting surrounding habitat or watercourses from sediment or to rehabilitate worked bogs. Similarly, a quarrying or aggregates company may work to ensure that biodiversity is protected during existing operations, for which examples were given in Chapter 3, or with the subsequent rehabilitation of works, which may include new open water or grassland habitat. Water utility, gas or power transmission companies are also businesses which may have large landbanks or an interest in the good management of other lands. In the UK, for example, water utilities have made payments for ecosystem services (PES) to local farmers to maintain low input grazing to protect catchments.

BAPs may also be prepared for the management of habitats on individual sites such as the grounds of a business HQ. They provide an opportunity for companies to demonstrate how they can be progressive in advancing their stated environmental credentials. For example, many companies have participated with the All-Ireland Pollinator Plan to minimise mowing or to plant pollinator-friendly plants. Guidance on how businesses can get involved has been provided by the National Biodiversity Data Centre in collaboration with Bord Bia and BITC [2]. BAPs also permit companies to strengthen their engagement with employees. Most companies will have a few individuals who are knowledgeable about wildlife and willing to commit time to a project. In addition, BAPs can be an excellent means to engage local communities and to demonstrate *Corporate Social Responsibility (CSR)*. This could also involve sponsorship of local environmental organisations and conservation works off-site.

In practice, at a landholding or site level, BAPs begin with an assessment of what habitats and species are present, and if appropriate, ecosystem services. Partial evidence of the extent of landholdings occupied by business premises is presented in Appendix 3. For Bord na Móna, an important range of ecosystem services are present on their wider estate including carbon sequestration. By comparison, at site level, ecosystem services may be species habitat, pollination and opportunities for public engagement or amenity. Once the baseline assessment is complete, an action plan can be put into effect to create or manage the habitat. This is supported by a monitoring

¹⁶ Specific, Measurable, Achievable, Relevant and Time-bound.

plan which, as a minimum will provide feedback on just how successful the BAP is in meeting its objectives.

In all these areas, biodiversity measures do not have to be a singular affair as there are synergies with addressing carbon emissions and in conforming with wider social and environmental goals, including the SDGs.

Payments for Ecosystem Services

The principle behind Payments for Ecosystem Services (PES) is that those whose property provides ecosystem services – like any service – should be paid for doing so. Different sectors depend on certain ecosystem services, and these services have an economic value. However, because many ecosystem services are public goods, the beneficiaries do not pay to maintain or restore them. This can also lead to under-investment or lack of protection of these services.

PES are intended to correct this *market failure*. The beneficiaries, or users, of ecosystem services provide payment to the providers of ecosystem services. In practice, PES schemes often provide payment to the managers of land or other natural resources in return for a guaranteed flow of ecosystem services (or, more commonly, for management actions likely to enhance their provision) over-and-above what would otherwise be provided. The relationship requires that beneficiaries recognise the presence of an ecosystem service and understand the relationship between ecosystem management and outcomes. The relationship needs to be quite clear and, for businesses, is likely to be easiest where the outcome is *specific* rather than diffuse. An example of this could be where a specific land management ensures a reduction in pollutants to watercourses that clearly benefits a business that depends on clean water.

PES include a broad range of public and private financing arrangements for the delivery of ecosystem services. Many schemes have emerged around the world over the last few years. According to the OECD, there were already more than 300 such programmes in place by 2010 at national, regional and local levels [12].

Broadly, PES schemes can be characterised in one of two ways: **government-financed schemes**, whereby government finances landholders / natural resource managers to maintain or enhance ecosystem services through direct grants, and **user-financed or market schemes**, whereby businesses or other private beneficiaries contract directly with service providers. There are also examples of public-private schemes that draw on, or leverage, private finance alongside government funding (i.e. blended finance).

In a business context, PES schemes must be mutually beneficial for both buyers and sellers. PES will be positive from a buyer's perspective if the payments are less than those associated with any alternative means of securing the desired service. For example, it may be less expensive for a water utility to pay landowners for improved catchment management than to pay for additional water treatment. PES schemes will be positive from a seller's perspective if the level of payment received at least covers the cost or any income foregone as a result of implementing the agreed management.

The essential elements of a PES scheme can therefore be summarised as being a voluntary transaction whereby;

1. There is a well-defined ecosystem service;
2. Which is 'bought' by a (minimum of one) ecosystem service buyer;
3. From a (minimum of one) ecosystem service provider; if and only if

4. The ecosystem service provider secures ecosystem service provision (conditionality) [13].

Often the impetus behind a transaction will only arise as a result of express regulatory intervention specifically intended to foster economic dealings and relationships. The use of market mechanisms to organise and deliver environmental and conservation outcomes has become an increasingly important policy instrument in many countries over the last fifteen to twenty years. Optimal design of markets, especially those involving goods and services not previously 'supplied' within a market framework, is an issue that has preoccupied policy-makers. The UK Department for Environment, Food and Rural Affairs (Defra) 'Payments for Ecosystem Services: A Best Practice Guide'¹⁷ identifies seven key principles, which should ideally underpin any PES scheme:

- **'Voluntary'**: stakeholders enter into PES agreements on a voluntary basis;
- **Beneficiary pays**: payments are made by the beneficiaries of ecosystem services;
- **Direct payment**: payments are made directly to ecosystem service providers (in practice, often via an intermediary or broker);
- **Additionality**: payments are made for actions over-and-above those which land or resource managers would generally be expected to undertake (note that precisely what constitutes additionality will vary from case-to-case but the actions paid for must at the very least go beyond regulatory compliance);
- **Conditionality**: payments are dependent on the delivery of ecosystem service benefits. In practice, payments are more often based on the implementation of management practices which the contracting parties agree are likely to give rise to these benefits;
- **Ensuring permanence**: management interventions paid for by beneficiaries should not be readily reversible, thus providing continued service provision; and
- **Avoiding leakage**: PES schemes should be set up to avoid *leakage*, i.e. avoiding a situation whereby securing an ecosystem service in one location leads to the loss or degradation of ecosystem services elsewhere' [14].

The OECD published the report 'Paying for biodiversity: enhancing the cost-effectiveness of payments for ecosystem services',¹⁸ which identifies a number of criteria for effective scheme design. These include clearly defined property rights, a robust monitoring and reporting framework, permanence, performance-based payments, and adequate enforcement. The International Union for the Conservation of Nature (IUCN) has also published a report setting out some 'key messages' for good environmental market design, including the need to consider contract design and property rights.

PES schemes are most likely to emerge in situations where:

1. Specific land or resource management actions have the potential to increase the supply of a particular service(s);
2. There is a clear demand for the service(s) in question, and its provision is financially valuable to one or more potential buyers; and
3. It is clear whose actions have the capacity to increase supply (for example, certain land or resource managers may be in a position to enhance supply).

¹⁷ <https://www.cbd.int/financial/pes/unitedkingdom-bestpractice.pdf>

¹⁸ See the Executive Summary of the Report at <https://www.oecd.org/env/paying-for-biodiversity-9789264090279-en.htm>

Water companies have tended to engage with PES schemes more readily than most other businesses. Specific land management actions are known to have an impact on water quality, and there is a demand from water companies for increased water quality at source because of the alternative of treatment costs. There are various schemes across the world, and also a number of examples from the UK which are presented in the box below.

Box 4.4: UK PES Schemes

South West Water's (SWW) **Upstream Thinking** scheme, a partnership with the Wildlife Trust and the Rivers Trust. This has involved joint investments between farmers and the water company aimed at ensuring that land is managed in such a way that potential pollutants do not run into surrounding water courses. It is less costly for SWW to tackle pollution up front than pay to treat it once it has affected the water. As such, the scheme is seen as being a long-term sustainable approach to managing costs by reducing ongoing maintenance and/or deferring large capital investments. It also helps avoid future increases in customers' bills.

Wessex Water's **EnTrade** scheme uses an innovative reverse auction online platform to determine the optimal mix of payments to encourage farmers to grow cover crops to reduce nitrogen run-off in Poole Harbour. As with the SWW scheme, it is a more efficient way of tackling pollution.

Farmers in two river catchments in Somerset have been awarded funds for works to mitigate flooding following a trial of an online auction system, **NaturEtrade**. This system enables farmers in the River Tone and River Parrett catchments to bid for money from the Somerset Rivers Authority (SRA). The best, most competitively priced ideas would then be supported. The scheme aims to pay for natural flood management such as hedge-planting; woody dams - which are leaky structures made from logs and branches to mimic naturally fallen trees; and leaky ponds, which store run-off during periods of heavy rainfall and moderate flows. In total, 16 separate farms submitted 64 bids. Of these, 16 farms won £30,000 of funding. Another auction is being planned for next year. The trial is part of the **Hills to Levels project**, which aims to reduce flood risk by slowing the flow of water, while reducing erosion and improving water quality.

There are other examples of PES schemes in other countries including:

- The US Conservation Reserve Programme - a nationwide land retirement programme which incentivises landowners to change land use on highly erodible and environmentally-sensitive cropland and pasture via inverse auctions.
- The Australian Bush Tender scheme - landholders competitively tender for contracts with Victoria State Government to be paid for protecting and improving the native vegetation on their land. The scheme uses a reverse auction-based approach, in which landowners propose conservation activities and their cost. The scheme aims to facilitate better management of native vegetation on private land.
- The Vittel PES for water quality scheme in France - to address problems relating to the aquifer from which Vittel's bottled water is drawn, principally rising nitrate concentrations from agricultural intensification in the area, Vittel paid above-market prices to purchase land around its water springs and signed contracts with other farmers to use more sustainable dairy farming techniques and to improve farm facilities. The net result of these initiatives has been a reduction in non-point source groundwater pollution.

Biodiversity offsetting

Environmental mitigation is a common step in new development and required for projects subject to environmental impact assessment whenever there are environmental impacts. However, often

residual environmental impacts remain, commonly where there is landtake for new development. Very little attention has been given until recently of the potential for environmental enhancement, without which the incomplete mitigation of development will inevitably lead to a gradual loss of natural capital. Indeed, the more familiar problem has been one of inadequate mitigation and poor post development monitoring [15].

The *mitigation hierarchy* is a well-established, stepwise process by which impacts on biodiversity or the environment are first, avoided where possible; second, minimised; and third, corrected through the restoration or repair. If residual impacts remain at the end of the process, the fourth solution would be to compensate for the impacts by *offsetting* – i.e. restoring or creating biodiversity elsewhere.

While the concept of carbon offsetting is familiar, ‘biodiversity offsetting’ is less intuitive, but is based on the same principle. At its most straightforward, on-site impacts could be offset by simply investing in the creation of new habitat elsewhere on site or on another company landholding. Very often new development results in the loss of meadow, mature trees or hedgerows, but new plantings can be on-site, with biodiversity benefits in mind rather than just aesthetic value. The All-Ireland Pollinator plan has been very successful in encouraging businesses to sow lawns with wildflowers or to plant shrubs of value to bees. This offsetting is informal, but can be effective. However, specialist input might be needed to identify a mix of new habitat that has a higher biodiversity value than that which was replaced. Some high value plant species such as whitethorn, bramble or nettle could be unwelcome in a new housing estate.

More sophisticated is a ‘baseline and credit’ market for the trade of biodiversity ‘value’. A market is created which allows businesses to offset biodiversity losses by investing in *credits*, i.e. funds that can be moved to a purpose where they will yield the optimal balance between cost and benefit. Various Governments world have put in place systems to create markets for biodiversity credits. The first schemes emerged in the USA and Germany in the 1970s and 1980s. *Conservation credits* in the USA now have a sales volume of USD\$1.2 – \$2.4 billion a year. However, offsets do not facilitate a market for biodiversity as readily as they do for emissions, mainly because it is so difficult to define reliable measurement units that capture biodiversity - hence the need for proxies such as credits. Rather, biodiversity offsets are used to price certain negative environmental externalities into development projects or business operations. Perhaps this is why the term has taken longer to gain traction.

The most widely cited definition of biodiversity offsetting is given by the **Business and Biodiversity Offset Programme (BBOP)**, an international collaboration of more than 75 government agencies, companies, financial institutions and civil society organisations which are developing offset methodologies. The Programme defines biodiversity offsets as:

*‘measurable conservation outcomes resulting from actions designed to compensate for significant residual adverse biodiversity impacts arising from project development after appropriate prevention and mitigation measures have been taken. The goal of biodiversity offsets is to achieve **no net loss** and preferably a **net gain** of biodiversity on the ground with respect to species composition, habitat structure, ecosystem function and people’s use and cultural values associated with biodiversity’¹⁹.*

Put simply, biodiversity offsetting is a measurable way of ensuring we make good any residual damage to biodiversity caused by development (or business operations) which cannot be avoided or mitigated. Offsetting can be voluntary, but resembles the definition of complementary remediation under the Environmental Liability Directive (2005/34/EC) required in instances where environmental

¹⁹ http://bbop.forest-trends.org/pages/biodiversity_offsets

damage has been caused by the unauthorised removal of protected species or impacts such as pollution [16]. An increased use of voluntary or regulatory offsetting can potentially emerge as a requirement for an organisation that undertakes natural capital accounting (see below).

The BBOP sets out the following principles for designing and implementing biodiversity offsets and verifying their success:

1. **No net loss:** *A biodiversity offset should be designed and implemented to achieve in situ, measurable conservation outcomes that can reasonably be expected to result in no net loss and, preferably, a net gain of biodiversity.*
2. **Additional conservation outcomes:** *A biodiversity offset should achieve conservation outcomes above and beyond results that would have occurred if the offset had not taken place. Offset design and implementation should avoid displacing activities harmful to biodiversity to other locations.*
3. **Adherence to the mitigation hierarchy:** *A biodiversity offset is a commitment to compensate for significant residual adverse impacts on biodiversity identified after appropriate avoidance, minimisation and on-site rehabilitation measures have been taken according to the mitigation hierarchy.*
4. **Limits to what can be offset:** *There are situations where residual impacts cannot be fully compensated for by a biodiversity offset because of the irreplaceability or vulnerability of the biodiversity affected.*
5. **Landscape context:** *A biodiversity offset should be designed and implemented in a landscape context to achieve the expected measurable conservation outcomes taking into account available information on the full range of biological, social and cultural values of biodiversity and supporting an ecosystem approach.*
6. **Stakeholder participation:** *In areas affected by the project and by the biodiversity offset, the effective participation of stakeholders should be ensured in decision-making about biodiversity offsets, including their evaluation, selection, design, implementation and monitoring.*
7. **Equity:** *A biodiversity offset should be designed and implemented in an equitable manner, which means the sharing among stakeholders of the rights and responsibilities, risks and rewards associated with a project and offset in a fair and balanced way, respecting legal and customary arrangements*
8. **Long-term outcomes:** *The design and implementation of a biodiversity offset should be based on an adaptive management approach, incorporating monitoring and evaluation, with the objective of securing outcomes that last at least as long as the project's impacts and preferably in perpetuity.*
9. **Transparency:** *The design and implementation of a biodiversity offset, and communication of its results to the public, should be undertaken in a transparent and timely manner.*
10. **Science and knowledge:** *The design and implementation of a biodiversity offset should be a documented process informed by sound science, including an appropriate consideration of local knowledge.*

These international best practice principles have been incorporated into national and local offsetting programmes, including in Australia and the UK. Both countries share a great deal in common with Ireland, making the lessons learnt here readily transferable.

All of Australia's states have offset programmes of one form or another, but those operating in Victoria and New South Wales are the most mature (with market-based mechanisms used to deliver biodiversity outcomes since 1987, when compliance-driven offsets first arose under Victoria's native vegetation clearing regulations).

In the UK, offsetting has been used in relation to certain protected species and habitats under Article 6(4) of the Habitats Directive. These same provisions have been transposed into Irish legislation by the European Communities (Natural Habitats) Regulations 1997 and amended in 1998, 2005 and 2011. Where there are Imperative Reasons of Overriding Public Interest (IROPI), development that impacts on the *Natura 2000* network can only be authorised if suitable compensatory measures are secured. The compensation must be sufficient to offset the harm. Since 2012 the UK government has looked to extend this approach most widely, and overtime the principle of biodiversity offsetting has been mainstreamed and embedded in the planning system.

The evolution from No Net Loss to Net Gain can be traced in the UK approach to offsetting, and it is gaining traction elsewhere, including in International Finance Corporation's Performance Standards. The emphasis has changed from biodiversity offsetting, which critics argue is an example of 'green washing' or a 'licence to trash', to the delivery of measurable net gains. Initially the UK government expressed preference for a fully permissive approach, giving local planning authorities (LPAs) freedom to calculate and assess 'measurable gains' in their own way. This resulted in inconsistencies, even between adjacent LPAs. Added to this is the variable uptake of best practice approaches to delivering net gain across industry. A number of housing developers – for example Barratt Homes, Berkeley Group, and Redrow Homes – have all adopted biodiversity net gain approaches. Infrastructure programmes too have taken a net gain approach, including Crossrail, the East-West Rail Alliance and the Greater West Programme, while utilities and land managers, such as National Grid, Thames Water and Yorkshire Water, are increasingly working towards biodiversity enhancement targets and commitments. Professional and industry bodies have supported the adoption of biodiversity net gain approaches through the provision of good practice principles and guidance based on established international best practice. Biodiversity net gain is already recognised in sustainable building standards (from BREEAM) which incorporates the Defra metric, and work is underway to incorporate net gain into the BRE Global CEEQUAL quality assurance scheme for infrastructure. A British Standard for biodiversity net gain is currently being developed.

Problems have arisen due to the absence of a mandatory commitment to biodiversity net gain and the increasing, but patchy uptake of net gain. The use of voluntary approaches to fully deliver on the objective of national policy, leads to a market for developable land that is uneven. Developers who do not plan to include any habitats in or around their development can outbid those who want to deliver more. This means that the costs of habitat mitigation are borne by the developer instead of being factored into the land price at the outset to reflect the biodiversity value of the land.

Accordingly, in December 2018, the UK Government published draft proposals to mandate net gain for biodiversity across England. The hope was that a standardised requirement for biodiversity net gain, applied equally to all development, would reduce inconsistency, create a level-playing field for developers, mainstream best practice approaches, and provide a more efficient means for LPAs to implement national planning policy whilst addressing local environmental priorities.

Alongside these proposals, Defra and the non-departmental public body, Natural England, began working on a new *Biodiversity Metric*. This is intended to address some of the known shortcomings with the original metric, 'Defra Metric 2.0' and incorporates a number of new features, including a downloadable tool which simplifies the calculation process by automating the metric calculations. It allows for on-site biodiversity net gain calculations as well as calculations to determine the contribution of *compensatory habitat* off-site. The updated metric retains habitat measures, but also incorporates rivers and green infrastructure features (such as green roofs and street trees). It allows for greater sensitivity of habitat condition and distinctiveness scoring. It also includes measures to take better account of spatial factors, including an updated ecological connectivity component (connectivity is provided by continuous or linear features that allow for the movement of animals and flora).

Most of these proposals have made their way into the Environment Bill. The Bill will introduce a *mandatory* 10% biodiversity net gain requirement for planning approval. The three options below set out how biodiversity net gain can be achieved under the policy proposals:

- a. The developer can avoid harm by mitigating and enhancing on site;
- b. If the developer is unable to avoid harm, mitigate or compensate all impacts on site, they can purchase credits for local compensatory habitat creation;
- c. If unable to avoid harm, mitigate and compensate on site and unable to find local compensatory habitat, a tariff would be imposed to fund cost effective habitat creation projects according to local and national conservation and natural capital priorities.

The UK Government will require net gain outcomes to be maintained for a minimum of 30 years and encourage longer term protection beyond this term if it is acceptable to the landowner.

Natural capital accounting

Overview

Accepted metrics are now available for natural capital accounting to measure environmental and biodiversity impacts as debits or credits along with their cost or value. Public scrutiny and emerging regulations are encouraging businesses to look also at *inputs* (e.g. water, materials) *and outputs* (e.g. emissions to air, water, waste) as well as indirect or secondary impacts. These require that accounting extends also to an assessment of impacts on all aspects of biodiversity and biological processes throughout the supply chain, product life cycle and value chain. The supply of quantitative data on changes in these impacts between financial years may require improved monitoring.

Natural capital accounting can provide for a public disclosure of biodiversity impacts that will contribute to a business's public profile. Its real value, though, is realised by allowing companies to identify ecological risks and opportunities. This could provide businesses with competitive advantages by indicating where to achieve efficiencies, reduce input costs, reduce the ecological footprint, provide for adaptation, or develop new products, for example products certified to be environmentally friendly or organic. Strong environmental credentials may also attract preferential review when tendering for public contracts or be used to argue for policy supports or incentives.

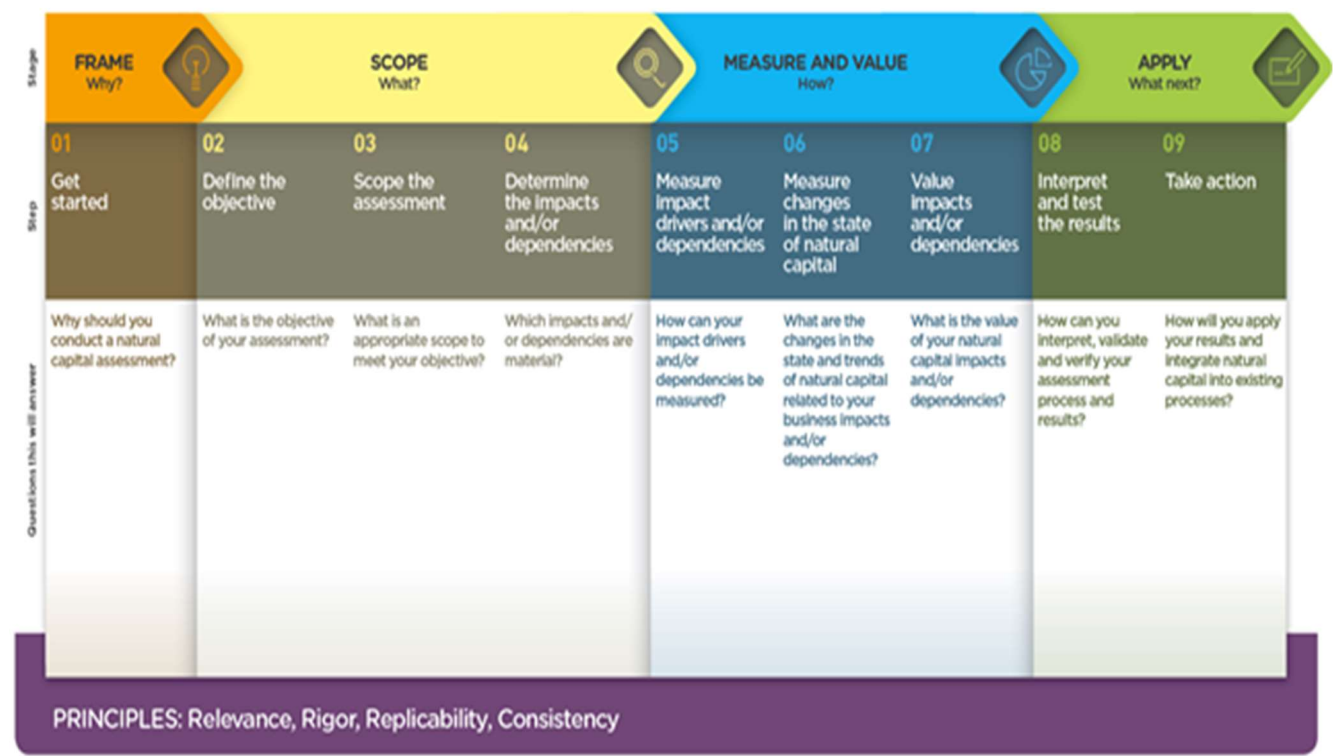
Procedure

The concept of natural capital recognises the environment as a stock of assets that combine to yield a flow of benefits (ecosystem services). In this sense, natural capital accounting is being applied by

various organisations to demonstrate their interaction with the environment, the extent to which they rely on it, environmental impacts and beneficial outputs.

There are different frameworks available for organisations to consider their impacts and dependencies on natural capital. The Natural Capital Protocol is one such framework, which was developed by the Natural Capital Coalition (NCC) [17]. Figure 4.2 presents the stages (why? What? How? & What next?) of the Natural Capital Protocol which provides a standardised 9-step approach to assessing the direct and indirect material impacts (i.e. beneficial or adverse effects) of an organisation or industry’s activities and its dependencies (i.e. use or reliance) on natural capital with respect to operations and management. Generally, the stages and steps are intended to be applied in a flexible way based on the objectives of an application and the level of information available. The guidance aims to enable organisations to identify, measure, manage and report on their impacts on biodiversity in a standardised, comparable, credible and unbiased manner.

Figure 4.2: Natural Capital Protocol assessment stages²⁰



Source: Natural Capital Coalition (2016; 2018)

The International Union for Conservation of Nature (IUCN) has also been active in the area of business and biodiversity and has published various guidance for investors, renewable energy, No Net Loss initiatives, and Nature Based Solutions. New guidance for businesses from the IUCN is expected this year, but is proposed to be complementary to that provided by the NCC.

There are, in addition, other approaches to assessing natural capital, including:

- The UK Natural Capital Committee’s Corporate Natural Capital Accounting framework – this framework is generally aimed at land-owning organisations;
- The UK Natural Capital Committee’s ‘How to do it’ workbook which provides a more general

²⁰ <https://naturalcapitalcoalition.org/natural-capital-protocol/>

set of steps to undertake a Natural Capital Assessment;

- Accounting for Sustainability's (A4S) guide to natural and social capital accounting; and
- UK Water Industry Research natural and social capital approach aimed at water companies.

In Ireland, the on-going EPA funded INCASE study²¹ on natural capital accounting is applying the approach to pilot river catchments. The project is examining the data sources available to support quantitative assessment of the stock (extent) and status (condition) of habitats and value of ecosystem service flows. A feasibility report has been produced [18], but ultimately the study will provide a template to natural capital accounting in Ireland. All of these approaches are broadly aligned with the steps of the Natural Capital Protocol, and aim to answer some or all of the following broad questions:

1. What natural capital assets does the organisation own, manage, impact and/or depend on?
2. What flows of benefits do these natural capital assets deliver e.g. biodiversity, air quality, water environment quality, crops, livestock?
3. What is the value of these benefits?
4. What does it cost to maintain these assets and flows of benefits?

In this context, natural capital can be broken down into a *stock* of assets, characterised by their extent and condition (quantity and quality), which in turn determine their capacity to deliver *flows* of ecosystem services. When combined with other inputs (e.g. machinery, labour, human ingenuity, etc.), these ecosystem services deliver benefits both to the organisation and wider society. A Natural Capital Approach is also consistent with the Ecosystem Approach, which is a framework for analysing how people depend on the condition of the natural environment and which explicitly recognises that ecosystems and their biological diversity contribute to individual and social well-being.

Generally, the use of a Natural Capital Approach aims to augment conventional environmental assessments by (i) focusing on both impacts and dependencies; (ii) endeavouring to measure and value these impacts and dependencies, (iii) considering a broader range of issues; and (iv) looking at a study area as an interrelated system [17, 19].

The use of a Natural Capital Approach has the added benefit of supporting all stages of the policy and project cycle from planning and options appraisal, through to delivery and implementation, and on to monitoring and enforcement. It does this by:

- Informing project design and options appraisal;
- Scoping investable opportunities including those associated with payments for ecosystem services (PES);
- Demonstrating social, economic and environmental returns on investment in natural capital;
- Providing a monitoring framework and lessons learnt for future interventions;
- Determining an organisation's baseline impacts and dependencies on natural capital; and
- Providing a basis for engaging with stakeholders about impacts and dependencies on natural capital.

Examples of Natural Capital Accounts

Globally, several organisations have undertaken some form of Natural Capital Assessment or Accounts with respect to understanding part of their business and supply chain. This includes

²¹ <https://www.incaseproject.com/about-the-project>

organisations that took part in pilots for the Natural Capital Protocol during its development, such as Dow, Coca Cola, Nestle, Philips, Novartis and others.

Some detailed examples of Natural Capital Accounts have been undertaken in the UK. For example, Forestry England was the first organisation to develop an organisational account in 2015/16, which has since been updated annually.²² The Duchy of Cornwall developed an initial and partial account that covered its diverse estate, and was ultimately the first account to be reported in an organisation's annual report and accounts.²³ In the public sector, some local authorities have developed natural capital accounts including the London Borough of Barnet,²⁴ the London Borough of Barking and Dagenham²⁵ and the City of Sheffield who assessed their public green spaces and parklands.²⁶ Recently the Greater Manchester Combined Authority (GMCA) developed its natural capital investment plan²⁷ which looks at the roles for different types of potential investors within the wider social, economic and governance structure of the city region, and of local and national environmental policies and regulations.

Some water companies have also engaged with the concept of natural capital. Water companies in the UK are privatised and regulated by Ofwat, the Water Services Regulation Authority, whose most recent methodology (for the Price Review 2019 (PR19)), references natural capital and the need for it to be considered within water companies' business plans.²⁸ In 2017, UKWIR (UK Water Industry Research) commissioned the development of a natural and social capital tool to help focus on the long-term management of assets and facilitate better investment cases for options that enhance natural and social capital in the water sector.²⁹ Since then, Yorkshire Water has been a pioneer in the industry, by considering a six capitals approach (natural capital, social capital, human capital, intellectual capital, manufactured capital, financial capital). In addition, United Utilities was the first organisation to develop an organisational Natural Capital Account. More recently, water companies have begun to consider natural and social capital in Water Resource Management Plan options which aim to define their strategies to achieve a long-term, best value and sustainable plan for water supplies in their service areas.

In Ireland, in addition to the on-going INCASE study, Coillte developed the first corporate Natural Capital Account [20]. The assessment demonstrated that Coillte is the largest natural resource company in Ireland and identified the value of the various ecosystem services benefits of its estate to be approximately €150m per year. Carbon sequestration and recreation contribute most of the three quarters of this amount which is represented as 'external' public goods, while the remaining one quarter is realised as private income by the company itself mainly as timber. Some of these public goods will require estimation through 'non-market valuation methods. The cost to the company of maintaining this natural capital value is estimated at €9m per year. Bord Iascaigh Mhara

²² <https://www.forestryengland.uk/article/natural-capital-accounts>

²³ <https://duchyofcornwall.org/assets/images/Duchy%20ARA%202016.pdf>

²⁴ <https://barnet.moderngov.co.uk/documents/s40941/Appendix%202%20Natural%20Capital%20Account%20for%20Barnet.pdf>

²⁵ https://www.london.gov.uk/sites/default/files/beam_parklands_natural_capital_account_final_report_eftec_november_2015.pdf

²⁶ https://ecosystemsknowledge.net/sites/default/files/wp-content/uploads/2016/EKN_27Sep16_jeis_sheffield-natural-capital-account.pdf

²⁷ <https://naturegreatermanchester.co.uk/project/greater-manchester-natural-capital-investment-plan/>

²⁸ <https://www.ofwat.gov.uk/regulated-companies/price-review/2019-price-review/pr19-final-methodology/>

²⁹ <https://ukwir.org/eng/implementing-ecosystem-service-and-natural-and-social-capital-accounting-approaches-phase-1-0>

(BIM) has also been active in exploring the natural capital values of the marine environment it helps to manage.³⁰

These examples demonstrate that businesses and governments can develop a baseline understanding and assessment of their impacts and dependencies on their land or wider natural capital assets. This allows them to understand the stock of natural capital assets in terms of the extent and condition (quantity and quality) of assets that they own, manage, impact or depend on. Some of these indicators capture components of biodiversity, including the presence of important species, protected habitats and designations.

In general, Natural Capital Accounts at different levels are still developing in terms of their ability to adequately capture the components of biodiversity in terms of stocks and flows. The Defra Biodiversity Metric in the UK, covered earlier in this chapter, is a good example of a measure of the stock (extent and condition) of biodiversity which can be estimated at regular points to convey changes over time.

A note on the System of Environmental Economic Accounting (SEEA)

The on-going INCASE Project (Irish Natural Capital for Sustainable Environments) is funded by the EPA and supported by the Irish Forum for Natural Capital.³¹ The project is taking an approach based on the UN's System of Environmental Economic Accounting (SEEA) and is specifically combining data on the extent, ecological condition and ecosystem services value of river catchments in Ireland.

The SEEA is typically applied by State statistical bodies in addition to measures of natural income flows such as GDP. These accounts bring together economic and environmental information into a common framework to measure:

- The condition of the environment;
- The contribution of the environment to the economy; and
- The impact of the economy on the environment.

The SEEA framework contains an internationally agreed set of standard concepts, definitions, classifications, accounting rules and tables to produce internationally comparable statistics. In 2017, the UN Committee of Experts on Environmental Economic Accounting (UNCEE) reported on the use of the SEEA framework based on data collected via a survey. The survey concluded that nearly 70 countries have programmes on environmental-economic accounting. There were an additional 22 countries that indicated they were planning a programme on environmental-economic accounting, which would take place throughout 2020.

There has also been some work within the EU focused on designing and implementing integrated accounting system for ecosystems and their services. The initiative aims to connect relevant existing projects and data collection exercises to build up a shared platform of geo-referenced information on ecosystems and their services. This system would be used to derive indicators and assess the economic importance and value of ecosystems and their services, in a manner that is consistent with UN standards on environmental accounting. An innovative outcome of the project is that bio-physical and economic data related to the extent and condition of ecosystems can be integrated in a systematic way, so that they can be aggregated and disaggregated at the required scale, including at national level, to complement figures of economic performance.

³⁰ <http://www.bim.ie/our-work/projects/exploring-natural-capital-solution-seminar/>

³¹ <https://www.incaseproject.com/about-the-project>

Chapter 5: Survey and interview analysis

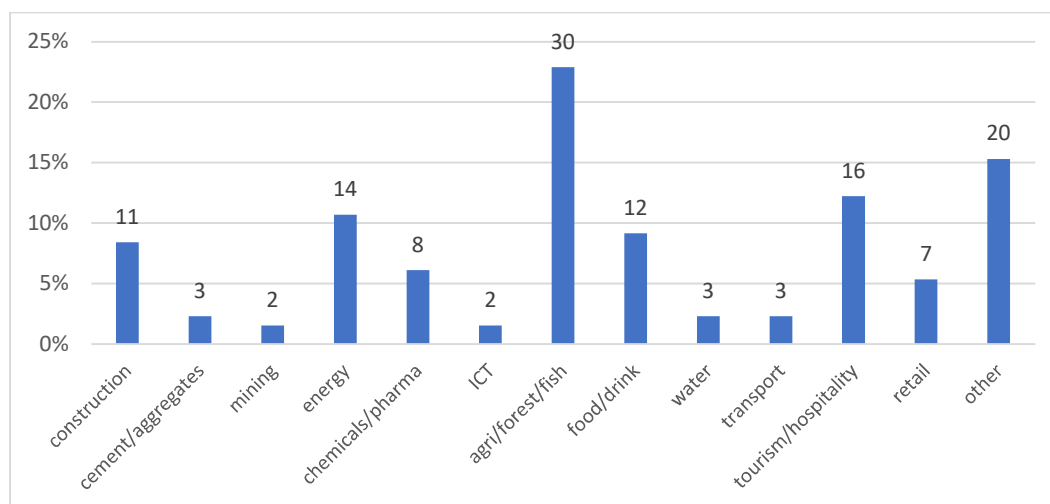
Introduction

This chapter provides an analysis of the online survey responses and a review of the interviews. The analysis reveals the level of actual or perceived reliance on natural capital, perceptions of environmental risks, and the actions and strategies taken or planned by businesses which are relevant to the natural environment or biodiversity. The survey and interviews also provide feedback on businesses' thoughts on the set up, role and benefits of a business and biodiversity platform.

Survey Responses

A total of 122 complete responses were received from the online survey with the breakdown by sector presented in Figure 5.1.³²

Figure 5.1 Sectoral breakdown of survey responses (n=131)



Of the 122 replies, 12 noted that they were involved in more than one sector to a significant degree. The total of 122 included 19 returns from types of businesses belonging to a variety of sectors that were not listed among the named sectors in Figure 5.1 and which are instead contained in the "other" category. These included 8 responses from consultancies dealing mostly with sustainability issues or specialising in climate change strategies or carbon emissions. In addition, there were 3

³² The figure includes businesses which operate in more than one sector.

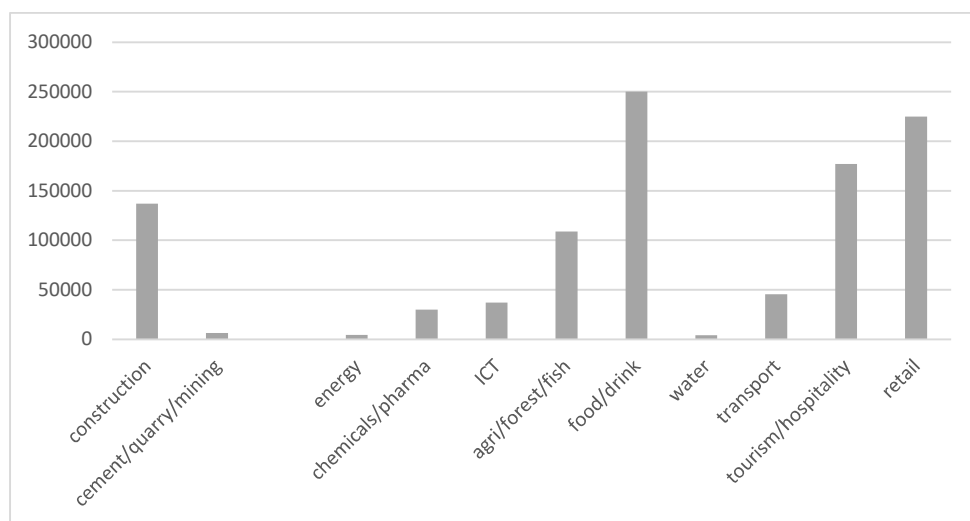
replies from charitable or non-profit organisations, 3 from semi-state businesses, one from a local authority and 4 from government agencies or departments. Ten of these organisations have not been included in some of the analysis on the basis that they were not the principal target group for the study objectives or are not fully private companies. This makes for a relevant total for the analysis of 112. Nevertheless, these organisations’ responses are still helpful for understanding the relationship that organisations have with biodiversity in various sectors.

Figure 5.1 shows that the largest proportion of responses (30) came from businesses in the agriculture, forestry and fisheries sector. These responses consisted of 19 agricultural companies/organisations, 5 forestry companies/organisations and 6 fisheries businesses/organisations. Four of these agricultural businesses are represented by individual farms or similar small single-operation businesses. In addition, most of the food and beverage businesses (12) who replied are large companies which have both primary, secondary and even tertiary activities that could fall into more than one sector. Three companies from the food and beverage sector also defined themselves as belonging to the agricultural sector, while other sectors in which companies had an interest included energy, hospitality, construction, food and beverage, retail and ICT (information and communication technology).

National context

Figure 5.2 shows the approximate number employed in Ireland by each of the surveyed sectors. The number is not quite comparable to the total number of businesses as, for example, many people are employed in small agricultural or transport businesses. The survey was aimed at a range of sectors, but attracted businesses, and targeted sectors, which are more likely to have a biodiversity impact, for example businesses in the agriculture/forestry and fisheries sector, businesses purchasing inputs with a natural capital content, and businesses with larger landholdings. Rather, the Figure does show how the types and numbers of businesses responding to the survey compare with the national picture .

Figure 5.2 Total employment by the same sectors in Ireland

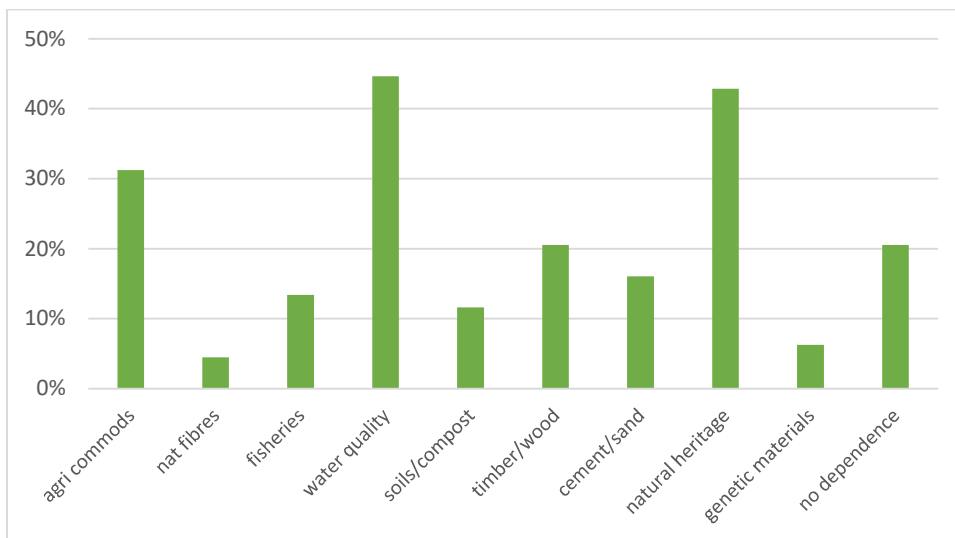


Business dependence on natural capital inputs

Figure 5.3 shows businesses’ stated dependence on, or effect on, products with a natural capital input. The highest proportion (50) of companies indicated that they had a dependence on or

relationship with natural heritage. Understandably, these companies included a notable number (11) from the tourism and hospitality sector, including hotels and specialist activity businesses for whom the landscape, and often wildlife, would be a major factor. However, 10 companies in the agriculture, forestry and fisheries sector also reported a high dependence on natural capital, and this can be assumed to be related to the resources used and also to ecosystem services such as pollination or soil fertility. Although businesses who included *organic* in their description were often inclined to make this connection, it can be noted that other companies in this sector, as well as in the food and beverage sector, would have a high dependence on natural capital, and several did indeed note their dependence on soil fertility.

Figure 5.3 Dependence on natural products (n=112)



Many other businesses (45%, 50) acknowledged a dependence on, or relationship with, water quality. Businesses in the agriculture, forestry and fisheries sector would have an obvious dependence on water quality from streams or groundwater. Around 30% (9) of businesses operating in this sector, indicated in the subsequent question on environmental risks, that their dependence on clean water is high. Over half businesses in the tourism and hospitality sector (56%, 9) reported a dependence on water quality, while a high proportion from the food and beverage sector (45%, 5) also reported a dependence.

Numerous companies (14%, 34) reported being dependent on agricultural commodities. These businesses belong mainly to the food and beverage sector, but also to the hospitality sector. Aquaculture and some food companies also acknowledged a dependence on fisheries (6%, 15). At 14%, many businesses (23) reported a dependence on timber, including of course forestry companies, but also businesses in the construction sector.

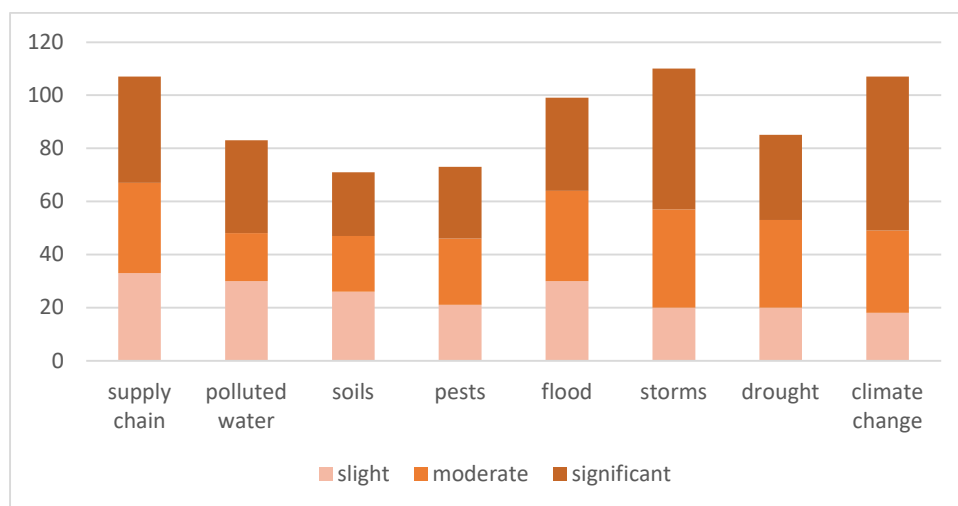
It is understandable that 9% (23) companies could not see a direct dependence on the natural materials listed. These companies included many of those in the ICT, transport and mining sectors who would, of course, have a dependence on other natural materials such as minerals or petrochemicals, or perhaps an indirect dependence by virtue of the sectors they interacted with, for example the transport of agricultural commodities. Chemical and pharmaceutical companies could at first be thought of as being distinct from the natural environment and biodiversity, but all of these companies who responded to the survey indicated a dependence on one or more of genetic

materials, agricultural commodities or clean water. Some organisations also reported that their own activities were highly important to sectors such as agriculture, fisheries or water quality.

Biodiversity and related risks to businesses

Businesses were asked what they perceived to be the main risks with respect to biodiversity and the wider environment. Of the total of all replies, 88% (107) reported that they believed their business was at risk from *climate change* (Figure 5.4). Almost half of all businesses (46%, 58) considered this risk to be significant. A risk from *severe storms* was specifically reported by 90% (110) of businesses. *Flooding* was mentioned by 81% (99) of businesses, and *drought* by 70% (85) of businesses. These risks were felt most keenly by businesses in the agriculture, forestry and fishing sectors, by companies in tourism and hospitality, and those engaged with water supply or distribution.

Figure 5.4 Business perceptions of environmental risks (n=122)

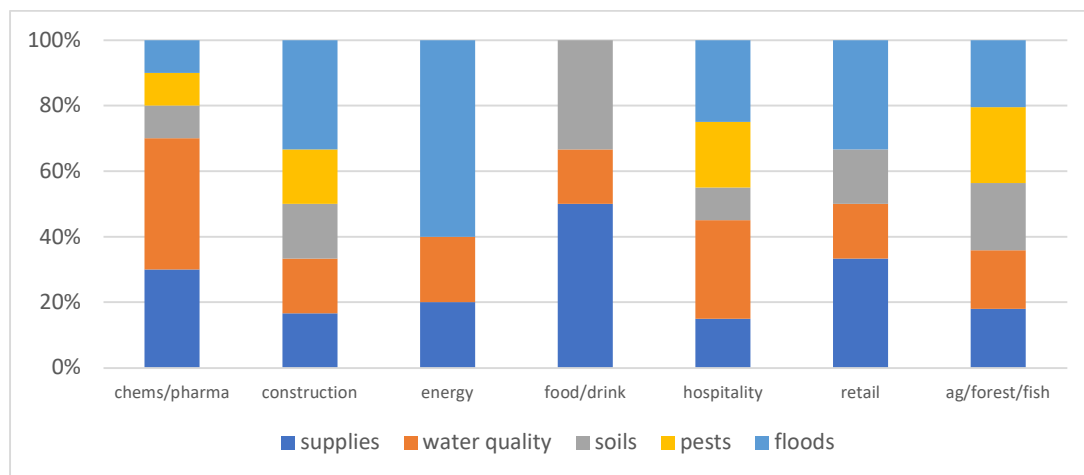


Although climate change was listed separately in the question, more severe and frequent storms, flooding and drought are all outcomes that are forecast for Ireland in future climate change scenarios. Ecosystems have a role in mitigating these risks, but biodiversity will also be significantly impacted by such events. These types of events will impact on *soils* through erosion and by potentially changing soil microfauna - and so soil fertility - in ways that we little understand. They will also impact on water supply and water quality, potentially making surface water more vulnerable to *pollution*. They could also impact on *supply chains*, particularly for many agricultural commodities or harvests of fish. Potentially, higher temperatures and environmental or climate pressures in general could invite more problems with plant or animal *pests* or diseases and reduce their resilience. With respect to these areas of prospective impact, a majority of businesses (64%, 78) reported potential problems with interruptions to the supply chains for natural products. A higher proportion still (68%, 83) reported potential risks due to poor water quality or pollution, and relatively more thought this to be a significant risk rather than a moderate risk. Around 60% (73) envisaged risks from pests or diseases, while 58% (71) perceived risks from soil degradation. Typically, most companies foresaw more than one potential environmental risk, several of which could be related as discussed already with respect to climate change. Insurance companies were not surveyed, but given the huge potential costs, many insurance companies are already paying much attention to climate and environmental risks and, in particular, storms and flooding. These costs are

already being passed onto companies in the form of higher insurance payments. For individual companies, though, significant direct potential costs that cannot be covered by insurance pay-outs are presented by interruptions to supply chains.

Figure 5.5 shows the risks which are perceived to be significant by sector. A *Loss of water quality or polluted water* was felt most keenly by the chemicals and pharmaceutical sector and by tourism and hospitality. Perhaps surprisingly, *flooding* was perceived to be a significant risk in the energy sector, while *soil degradation* has an effect on the agriculture and forestry, but also on the food and beverage sector. The risk of *interruptions to supply chains* were reported by the food and beverage sector, by the retail sector and to only a slightly lower extent by chemicals and pharmaceuticals.

Figure 5.5 Perceptions of significant environmental risk by sector (n=122)



A very similar sectoral pattern applies to risks which are perceived to be of *moderate* significance. However, *pests and diseases* were now perceived as a moderate risk by the food and beverage sector along with *flooding*. Greater concern with poor *water quality* in the retail sector was also evident at this level.

Interviews

The interviews confirmed these same perceptions of risk. In some cases, these risks are already being realised. Aquaculture businesses, for example, remarked on the impact that severe storms are already having on their marine infrastructure and on the threat of algae blooms due to higher temperatures. Forestry businesses commented on the threat presented by pests and fungal diseases and also on higher levels of windthrow damage following a combination of high rainfall and storms, requiring a need to cut wider or deeper drains to remove surface water. These risks are apparently already contributing to rising insurance costs. The energy sector emphasised the severity of the risk posed by climate change and acknowledged that this has driven action within the sector. Similarly, in the water sector, climate change has put pressure on infrastructure and resilience.

Actions taken on biodiversity

Respondents were asked about the actions they had taken on biodiversity (Figure 5.6). Of the commercial and non-consultancy businesses who responded, 11% (13) were at the *beginning of the process* having begun to consider biodiversity in their respective activities, while 36% (44) had commenced *some actions* and 27% (33) had *well-developed* biodiversity actions. Over one third of companies across most sectors have *not yet undertaken* any actions on biodiversity.

Some self-selection bias is likely to have been present in the decision by companies to respond to the survey. As such, it is possible that a higher proportion of all businesses in the sample have commenced actions on biodiversity compared with the national situation. International evidence of the level of consideration given by companies to biodiversity is sparse. Most articles report on positive moves or declarations by global corporations. A survey by Ricoh Europe (2019)³³ reports that 59% of Irish companies regard sustainability as an important success factor, but that 60% argued that, though worthy, sustainability was not a critical aspect of their business.

Figure 5.6 Actions taken on biodiversity (n=112)

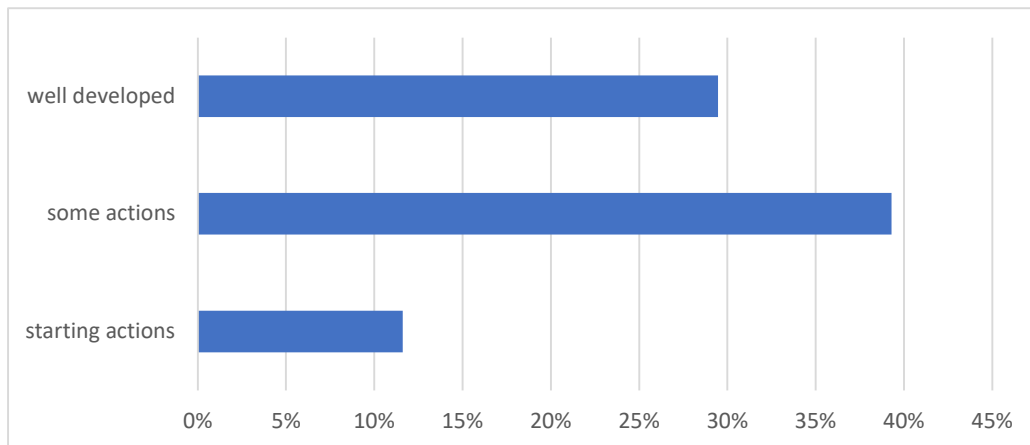


Figure 5.7 Biodiversity actions by sector

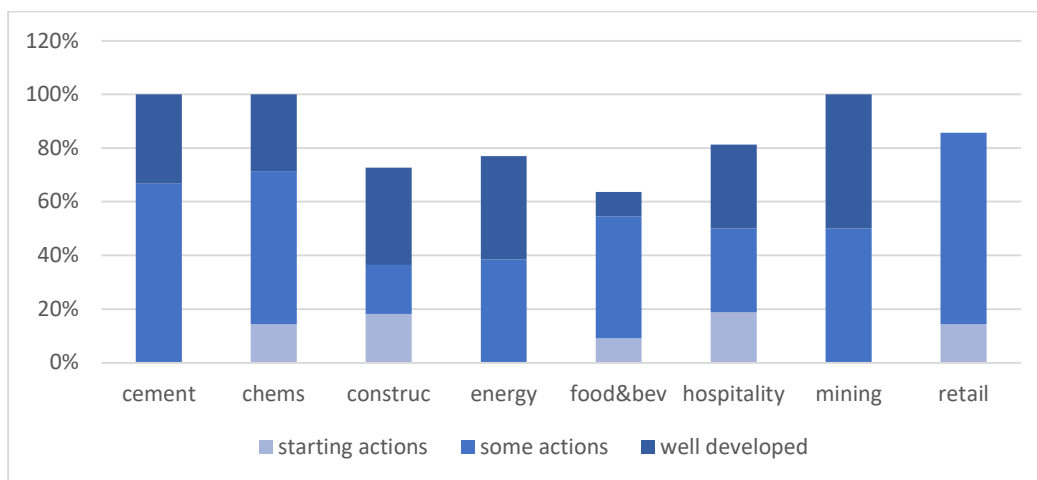


Figure 5.7 shows how these actions break down by sector. The figure reveals that companies who report biodiversity actions to be most advanced are found in the construction, energy and hospitality sectors. Actions are also advanced for some mining, cement and aggregate companies, although the number of companies who responded from this sector is small (5). Environmental mitigation measures would be a requirement for company environmental licensing in this and some other sectors, although some companies have gone beyond these minimum requirements. In the construction sector, some businesses have adopted industry certifications as a means to

³³ <https://irishtechnews.ie/ireland-ranks-lowest-in-europe-for-realising-benefits-of-sustainable-business-practices-says-survey/>

demonstrate their overall environmental credentials so as to appeal to planning authorities, investors or clients, and to distinguish themselves from competitors. A high proportion of businesses in the cement and aggregates sector and the chemicals and pharmaceutical sector have adopted *some actions*, with around one third of companies having *well developed* biodiversity actions. Most companies in the transport, retail, food and beverage sectors report having taken *some actions*.

Figure 5.8 shows that, of the practical actions taken by businesses, the highest proportions that were *complete* were related to actions for *pollinators* (41%, 45), management or surveys of *existing habitat* (36%, 40), or creation of *new habitat* (36%, 40). Over one third of companies (35%, 39) report having *engaged employees* in staff activities and actions, particularly on site.

Comments by surveyed businesses indicated that the All Ireland Pollinator Plan has been a very successful initiative which many companies have joined and acted on by allowing grass to grow, sowing wildflower areas, ceasing applications of chemicals and, in some cases, installing bee hives. Initiatives for pollinators have often been a good means of engaging employees.

Some companies report having had to survey their landholdings for the purposes of planning applications or environmental impact assessment, often being obliged to monitor or manage these areas subsequently. The proportion who reported having created or restored habitats is encouraging. Among specific actions reported were funding of local conservation projects, funding of national native woodland projects, on-site tree planting, bird and bat boxes and beach cleans.

Figure 5.8 Biodiversity actions taken

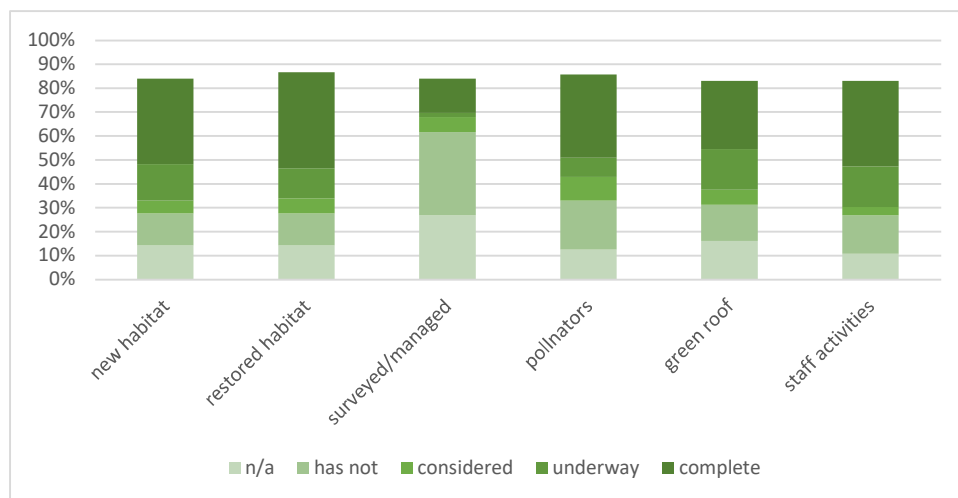


Table 5.1 Progress on actions (by responses to question n=95)

	Created new habitat	Restored habitat	Surveyed or managed habitat	Pollinator initiatives	Installed green roof	Staff activities
complete	36%	29%	36%	41%	14%	35%
underway	14%	17%	17%	12%	2%	7%
considered	5%	6%	4%	6%	6%	10%
has not undertaken	14%	17%	17%	12%	2%	7%
Not applicable	14%	16%	11%	14%	27%	13%

Around one eighth of businesses had either not undertaken any biodiversity actions or been unable to take any actions. Many companies, for instance, would not have large enough premises or landholdings to permit them to undertake any direct actions. However, just under a third (31%) of businesses reported having “significant” landholdings varying between two hectares (on-site) and 440,000 hectares (nationally), but averaging 17,160 hectares (or 10,000 hectares less the two largest landowners).

Among those businesses with landholdings, the proportion who reported having *completed* biodiversity action was much greater. For instance, 82% (28) report having *surveyed or managed habitats* on site, while 65% (22) have mature actions for *pollinators* and another 65% have *created new habitat*. Only 13% of businesses *have not undertaken* any biodiversity actions to date.

Table 5.2 Progress on actions by companies with significant landholdings (by responses to ques)

	Created new habitat	Restored habitat	Surveyed or managed habitat	Pollinator initiatives	Installed green roof	Staff activities
complete	65%	59%	82%	65%	24%	59%
underway	21%	24%	21%	21%	6%	9%
considered	6%	15%	6%	6%	3%	18%
has not undertaken	21%	15%	12%	24%	50%	24%
Don't know/ Not applicable	6%	6%	0%	6%	35%	12%

Interviews

The interviews indicated that many on-site or local biodiversity related activities occur in the realm of CSR with companies wishing to demonstrate community engagement, including through support to local schools or Tidy Towns. In some instances, charitable inputs or donations have been given to local schools and organisations, the latter sometimes involving employees in local river or beach clean-ups. Significant donations were given in some instances where there was perceived to be an adverse impact on the local community from, for example, a new built development. Biodiversity does not always feature high on local community groups’ priorities, but there have been positive outcomes for biodiversity from these activities, such as the removal of rubbish from a river or canal following clean-ups or from donations of bird boxes and alike. However, it is evident that biodiversity itself was often a peripheral beneficiary.

On-site activities have been popular for companies with large grounds. For example, several companies report having created on-site nature areas, wildflower meadows, wooded plots or orchards. These actions contribute positively to local community engagement and are often destinations for school visits. They support an image of sustainable resource use and have attracted awards. Arguably, the relatively high profile of the CSR agenda in Ireland caused some of these initiatives to commence prior to similar actions in the UK or continental Europe. Visiting executives from customer organisations or an overseas parent are often given a tour or presentation. On-site works do appear to have often been sincerely pursued by individual managers, and sometimes CEOs, with an interest in nature. Generally, on-site works have been a useful means to engage with employees and are often enthusiastically maintained by workers with an enthusiasm for wildlife.

On-site works also help to explain many companies’ enthusiasm for the All Ireland Pollinator Plan with the AIPP logo being a welcome addition to a company’s profile. The AIPP interacts with businesses, providing advice on the choice of plants and on wildflower meadows which can be difficult to establish. The relationship has also encouraged some companies to establish beehives on site, and while this may be of only slight benefit for biodiversity in itself, it does promote a positive biodiversity message while also allowing for engagement by employees. For one biogas company, support for pollinators was a headline element of the corporate strategy,

with additional direct benefits to the business given the higher contribution of red clover to anaerobic digestion.

Some other companies whose representatives were interviewed, for example utility companies, own extensive lands. In these cases, businesses may be required to undertake an environmental impact assessment prior to changing land use or building new infrastructure. This is particularly the case for developments such as forest planting or the erection of windfarms in sensitive locations. In situations where a 'community gain' has been sought in exchange for new development, this has sometimes been of benefit to biodiversity, albeit again often as a co-benefit along with initiatives such as the provision of amenity facilities such as trails. Tree planting has been popular, both for aesthetic and biodiversity purposes and for demonstrating voluntary carbon offsetting. However, a number of companies appear to have gone beyond these baseline social or offsetting initiatives to create wild areas or restore habitats on site with the distinct aim of providing for biodiversity. One mining company has, for example, sculptured pits to provide habitats for biodiversity rather than simply allowing the site to flood. One respondent did though refer to a lack of overall policy or a sustained coordinated approach, while another noted the absence of spatial environmental data within the company that could be used to support more effective biodiversity strategies. Overall, there is evidence that companies are transitioning away from purely CSR activities towards a greater emphasis of encompassing sustainability in their operations, of which activities on-site or on larger landholding are just one element.

Strategies adopted for biodiversity or the environment

Figure 5.9 shows the strategies that have been taken by businesses in relation to environmental and social objectives. None of these strategies are exclusive to biodiversity, but each can contain elements relevant to biodiversity. The figure reveals that the strategy most likely to have been either *underway* or *complete* has been to *reduce water use*, an activity that had been adopted by just over half (51%, 60) of companies. Another 5% of companies were *considering action* in relation to water use, whereas for another 21% of companies this had not been considered or was simply thought *not to be relevant* to the business.

Almost as many companies are either *undertaking* or have *completed* a review of their *environmental footprint* (48%, 57). The interviews revealed that either sustainability or carbon emissions were often at the fore of most companies' reviews, along with social considerations, e.g. fair trade. A good proportion of companies (40%, 46) had either *completed* or were *in the process* of ensuring their business addresses the *UN Sustainable Development Goals*. As discussed in the previous chapter, the SDGs include distinct biodiversity goals in relation to marine/aquatic and terrestrial life (SDGs 14 & 15), but also goals which have an indirect bearing such as Clean Water and Sanitation (SDG 6) and Climate Action (SDG 13). Around 40% (46) of companies are in the process of, or have developed, environmental products, including products which can be demonstrated to have low environmental impacts or low emissions, or which are labelled as traceable or organic. Just under one third (31%, 36) had ceased the use of potentially *hazardous chemicals*, typically pesticides or herbicides that are toxic to biodiversity. These businesses included construction and chemical/pharmaceutical companies as well as businesses in the agriculture, forestry or aquaculture sector.

For biodiversity, we were especially interested in companies which had *reviewed their supply chain*. For example, retail companies may adopt measures on-site, but given their influence on suppliers, any such measures are only a fraction of what they could achieve to ensure biodiversity protection. One third of businesses were either *in the process of* (20%, 23), or had *completed* (13%, 15), an examination of environmental impacts in the supply chain. These companies came from most sectors including Agricultural/Forestry/Fisheries, Retail, Energy, Water, Hospitality, Construction,

Cement, and Transport, and in roughly that order allowing for the different relative proportion of responses. However, in this sample at least, the Food and Beverage sector appeared to be under-represented with only two businesses having completed such a review despite the sector’s significance in ensuring environmentally-friendly product inputs.

Finally, only a minority (21%, 27) of businesses had purchased *carbon offsets* or engaged in other direct carbon offsetting measures such as tree planting. Offsetting is, of course, of relevance for all companies, but especially those with high emissions. In part, this outcome is due to the fact that offsetting measures for most companies is voluntary with the exception of certain high emission sectors such as cement. It is usually undertaken to support the company’s sustainability policy and is reported as such in company reports. In addition, there has until recently been very little opportunity for Irish companies to engage in voluntary carbon offsetting. This offsetting can be achieved through the purchase of international offsets which could include investment in alternative sustainable energies. Offsetting through the planting of trees, especially native trees, or investment in peatland restoration, has much potential to benefit biodiversity. Several companies had planted large numbers of trees to provide environmental, aesthetic or CSR benefits without any intention of carbon offsetting.

Figure 5.9 Environmental strategies either underway or complete (n=112)

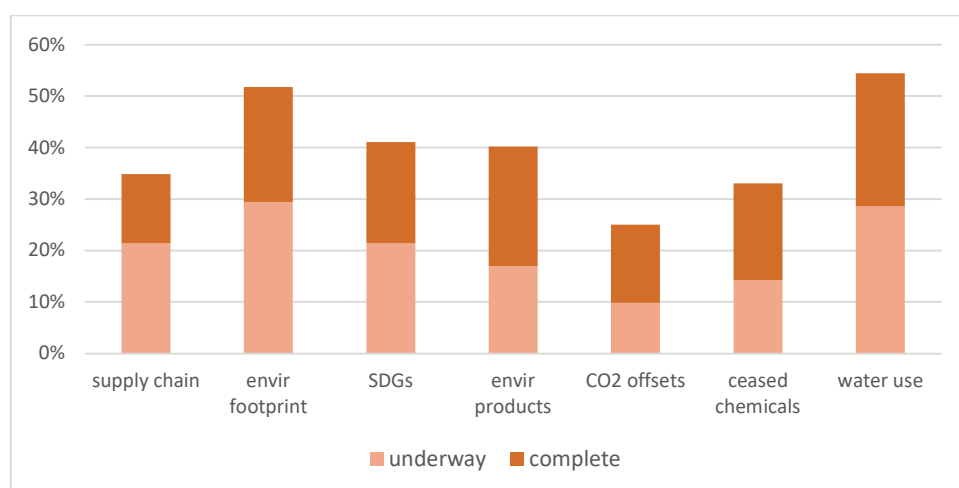


Table 5.32 Progress on actions by companies (by responses to question)

	Review of supply chain	Review of enviro footprint	Addressing SDGs	Enviro/organic products	CO2 offsets	Ceased chemicals	Reduced water
complete	13%	22%	20%	23%	15%	19%	26%
underway	21%	29%	21%	17%	10%	14%	29%
considered	13%	12%	12%	4%	13%	12%	5%
has not undertaken	25%	18%	21%	17%	29%	16%	13%
Don't know/ Not applicable	10%	4%	4%	28%	13%	24%	10%

Interviews

The interviews indicated that companies who had taken the step of reviewing their environmental footprint had often responded by taking further initiatives to assess their supply chain or to directly support biodiversity. One interviewee recognised that these types of activities had helped senior management become more

comfortable with the idea of developing specific Biodiversity Action Plans, as they began to recognise the impacts and relevance they have to business practices. As noted above, tree planting has been popular, especially for carbon offsetting, but also to demonstrate a company's environmental credentials. The Woodland Environmental Fund is an initiative of the DAFM whereby companies can support native tree planting through the provision of supplementary payment top-ups to encourage more private landowners to plant. As the Department itself puts it, the initiative allows companies, and their customers, to "feel part of a collective effort to restore this important piece of Ireland's natural heritage" along with the environmental and social benefits this provides.³⁴

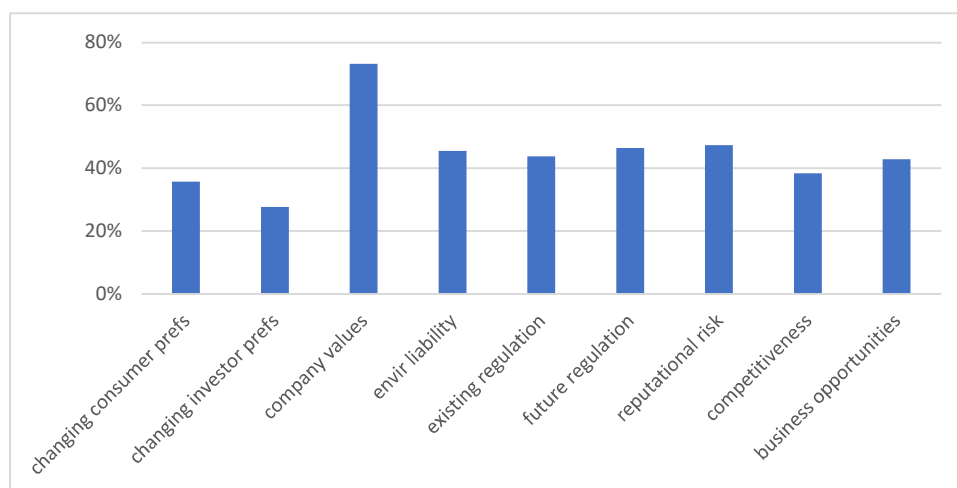
One interviewee remarked that initiatives such as tree planting and carbon offsetting can form part of a company's wider *asset management* strategy for which sustainability objectives provide a rationale. One interviewee was sceptical, however, about conflating carbon offsetting through tree planting with the delivery of biodiversity benefits. They argued that taking collective action on the issues may just confuse or dilute the action. Sometimes operational objectives and beneficial outcomes for biodiversity can coincide, as with the example of pollinators and the biofuel company noted above. Another example was given by a water supply company for whom source protection is a major objective. Allowing areas to go wild permits polluting nutrients to be absorbed by plants before they can reach the water source. On occasions this has challenged traditional attitudes towards on-site maintenance. However, the coincidence of benefits has facilitated the company's imminent adoption of a Biodiversity Action Plan with further positive outcomes for promotion of the company's reputation. Source protection provides for direct benefits in terms of savings on treatment. A reliable supply of clean water can also be vital to companies using this resource for processing operations. Losses of water quality can present considerable costs in terms of lost production. Consequently, one company reported having become more proactive in engaging with the EPA's catchment management.

Drivers to considering biodiversity

Respondents were asked about the main drivers for them to consider biodiversity in their activities. The principal driver reported was *company values* at 73% (92). Some companies mentioned their relationship with employees in this regard. Most other drivers were reported by a similar level of respondents, including *reputational risk* at 47% (53) of businesses, the prospect of *future regulation* that could require companies to take more action on biodiversity at 46% (52), *existing regulation* at 44% (49) and risk of *environmental liability* at 46% (51). A good proportion at 43% (48) of businesses foresaw potential *opportunities* in addressing biodiversity while 38% (43) thought it necessary for reasons of *maintaining competitiveness*. Only a minority of businesses at 36% (40) identified changing *consumer preferences* as a factor, or *investor preferences* at 28% (31). Examples of the influence of customer or investor preferences were, though, mentioned by businesses in the subsequent interviews, particularly where a company is listed on the stock exchange and might depend on investment by major funds whose clients could be anxious to avoid any risk of climate or biodiversity impacts. Consumer preferences appear to be more relevant to the energy sector, the hospitality sector, food and beverage, and retail.

³⁴ DAFM Woodland Environmental Fund. Pamphlet.

Figure 5.10 Drivers for considering biodiversity



Interviews

The interviews provided a good deal of context to understanding drivers for the consideration of biodiversity. For example, forestry companies acknowledged how they had responded to applications for native tree planting by moving away from the singular provision of planting and harvesting services for commercial species. Instead, they are offering lifetime management services to address the alternative requirements of standing native broad-leaf trees intended to provide private or public amenity or biodiversity benefits. This diversification has helped deliver a competitive advantage and these companies' customers often now include corporate investors.

At present, the carbon storage benefits of native trees are not realised in a tangible way except as an example of voluntary carbon offsetting. Nevertheless, companies may be keen to demonstrate evidence of action on this front. It was argued that carbon emissions and sustainability have been headline issues for longer than biodiversity. In particular, actions on carbon emissions have risen to the top of the corporate environmental agenda since the Paris Agreement of 2016. Public awareness of the threat of climate change has become more embedded and companies have responded with their own targets to reduce emissions or achieve carbon neutrality. One interviewee noted that there is a significant concern of reputational damage if there is biodiversity inaction, but noted that while momentum is growing around biodiversity action it is a long way behind climate change action. Reputation considerations attached to good environmental practice may also be more of an issue for larger companies than smaller ones.

Companies pointed to various standards through which they can demonstrate positive actions on carbon emissions, including the Carbon Disclosures Project and the Task Force on Carbon-related Financial Disclosures (TCFD). For listed companies this type of evidence can be very important for attracting investment from private investors, pension funds, community investment funds and state investment funds. These institutions often have criteria for investment choices including the avoidance of fossil fuel interests, or evidence of environmental sustainability, adherence to SDGs, etc. To inform these decisions, consultancies such as Vigeo Eiris provide services in relation to the selection of ethical or responsible investment. Major investors were argued to be wary of activities that could provoke future risks in relation to, for example public acceptability, or environmental liability. Cement and mining companies pointed out that the significant long-term investment they need for major activities was dependent on an ability to demonstrate adherence to environmental standards and, therefore, stable long-term performance.

Three interviewees from different sectors highlighted that it is individuals within the company that are driving action, from small scale, site specific actions being pushed by employees and site managers, to larger strategic changes such as the development of Biodiversity Action Plans.

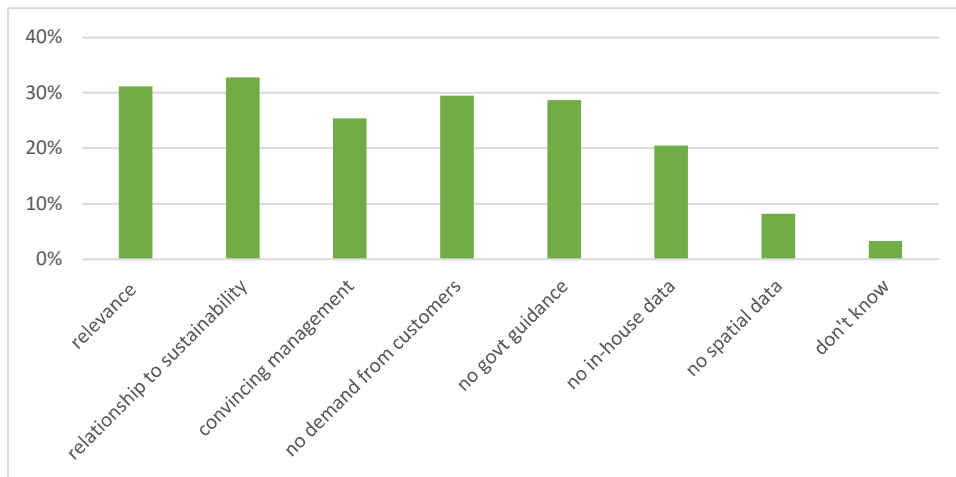
Challenges to considering biodiversity

As a follow-on question, respondents were also asked about the challenges they perceived for businesses to consider biodiversity in their activities. The highest proportion at 38% (46) perceived a problem in demonstrating the *relationship between biodiversity and sustainability*. This is an interesting response in that many companies already have a sustainability strategy. One fifth (21%) of companies responded that they have already examined their *environmental footprint*, and while sustainability extends beyond just natural environment considerations, 18% had completed an examination of their activities in relation to the UN SDGs.

Similarly, 33% (40) respondents argued that it was difficult to understand the *relevance* of biodiversity to their business. Indeed, while the activities of many businesses may be divorced from the natural environment, 24% of businesses in the survey are active in the agriculture, forestry and fisheries sector, to which biodiversity is highly relevant, while a further 10% belong to the food and beverage sector. Some businesses were evidently more engaged with biodiversity for purposes of company values or CSR. Consequently, the finding also indicates a need to strengthen messages on biodiversity, especially when it is accepted that there would have been some bias towards more biodiversity-aware companies in the sample of returns. In this regard, it is noticeable that 31% (38) of organisations have reported that they were *not receiving any guidance* from government. Some mentioned in the comments section that they did not see much evidence of government interest in biodiversity or of any supports that could encourage them to take actions. In these circumstances, it is also relevant that 29% of respondents referred to challenges in *convincing management* of the importance of biodiversity. In some cases, it was reported that pressure for sustainability and biodiversity actions or reporting was coming from the overseas parent company. Sometimes sustainability officer may be located abroad. It appears that overseas parent companies may set standards which local subsidiaries are expected to meet, e.g. in relation to environmental performance, emissions, or water stewardship.

Supporting the outcome of the previous question, almost a third, or 31% of companies, reported that there was *no demand* for biodiversity actions from customers (customers can include public sector or private corporate clients as well as private consumers). Several companies mentioned that there were no prevalent biodiversity measures by which they could gauge or monitor their performance. The *absence of in-house data* was mentioned by 22% of companies and an *absence of spatial data* by 12% of companies. Some respondents noted in their comments that there was either no official data available or that it is in the hands of government agencies or difficult to locate. Spatial data clearly becomes of relevance for companies undertaking an environmental impact assessment of new activities or built development. However, an absence of spatial data was reported by just six of the 34 companies who reported having significant landholdings.

Figure 5.11 Challenges to considering biodiversity (n=112)



Interviews

The interviews did confirm that customer expectations in relation to biodiversity were often not evident or limited. Rather, other environmental factors again seem to have a greater profile. In particular, it was argued that there is a high customer awareness of the problem of plastic waste and of CO₂ emissions. As has already been noted, initiatives on these fronts do have benefits for biodiversity too, but this is not their primary intention. Plastic waste has attracted much public attention following media revelations of the extent of the problem, but it also has a direct appeal as a reminder of human negligence and policy failures.

The marketing of food products has a relationship with biodiversity through a demonstration of food quality. Large retailers often sell premium own brand labels that provide an assurance for food shoppers concerned with health and animal welfare, but also an expectation of more environmentally sensitive farming. Although premium payments are not standard across the food sector, some retailers do provide a higher payment to farmers in return for adhering to higher standards of production. Retailers argued that a demonstration of high company standards influences customer sentiment. For example, Lidl referred to its CSR strategy, “A Better Tomorrow”, which is backed by Global Reporting Initiative (GRI) standards that include protection of the environment through an assessment of carbon emissions, energy efficiency, uptake of renewable energy, improved waste management and an investment in biodiversity focused on tree planting. As a retail company, they argue that their continuing assessment of environmental impacts through the supply chain is important to providing credibility.

“Customers” also come in different forms. Some interviewees noted that overseas buyers can require evidence of environmental standards. Although these standards may not include biodiversity, they can nevertheless be relevant to biodiversity, for instance with respect to the relationship between water quality and food quality. Many companies referred to ISO certifications, such as ISO 14001 for environmental management, or ISO 50001 for energy management. Among companies keen to provide evidence of compliance have been construction companies for whom energy efficiency and environmental sustainability can be very relevant to the requirements of corporate clients in particular. Construction companies have also adopted certifications such as BREEAM, LEED (Leadership in Energy and Environmental Design) to demonstrate environmental performance. BREEAM certification provides a measure of sustainability through a credit score rating of a building’s sustainability based on various categories such as energy efficiency, materials, waste and water. Although lower down the profile, positive actions on ecology and biodiversity are included as category LE-05 and require evidence of ecological input and landscape and habitat management for at least five years following building completion. Biodiversity could emerge more over time given that other criteria, such as energy efficiency, have become more standard in building regulations. The CEEQUAL certification scheme includes Ecology and Biodiversity among its nine criteria. However, consideration of biodiversity is not yet

universal in the sector and appears not to have been addressed by representative organisations. Nevertheless, there were reports that biodiversity has been raised at company board level, sometimes by representatives of overseas subsidiaries or parent companies. A couple of interviewees remarked on colleagues' experience of the UK construction sector for which No Net Loss and Biodiversity Gain requirements are becoming standard in public contracts. It was noted that these questions are not yet being asked by most public sector clients or planning authorities in Ireland, but that some Dublin authorities were looking favourably on evidence of creative actions in terms of native plant species and habitat retention or creation. Some of these actions can be regarded as nature-based solutions. For instance, reference was made to sustainable urban drainage (SUDs) given that this provides planning authorities with evidence of climate resilience and reduces pressure on the public drainage infrastructure. SUDs innovations such as swales and tree pits can have coincident biodiversity benefits.



Lidl Ireland achieved a BREEAM Excellent rating for its Regional Distribution Centre at Newbridge. BREEAM is a leading international sustainability assessment for buildings. As well as Ireland's largest rooftop array of solar panels, the assessment recognised the installation of 45 bird boxes and bat boxes, the planting of a wildlife corridor of nearly 6,000 native trees and the establishment of a wildflower meadow habitat to support pollinators and other species.

A couple of interviewees noted that, at times, regulations can stifle innovative initiatives that could benefit biodiversity. Strict performance requirements in relation to integrated constructed wetlands were mentioned in this regard. Some similar arguments were made in relation to standards designed to ensure food quality. On the other hand, it was also acknowledged that environmental impact regulations had resulted in many companies, for example in the quarrying and aggregates sector, employing an ecologist. These companies are required to have a Closure, Restoration and Aftercare Management Plan (CRAMP) that can include the restoration of habitats or creation of new habitats such as lakes. Some extractive companies, though more usually larger companies, have gone further and drawn up a Biodiversity Action Plan.

One disincentive mentioned was the lack of tangible supports for biodiversity. In this respect, there was reference to the Sustainable Energy Authority of Ireland (SEAI) which is proactive in promoting Nearly Zero Energy Building Standards, but which also backs up its campaigns with grants and advice. A common complaint was that there was no environmental data to support biodiversity assessment or monitoring. Databases are improving and this situation will also improve further once higher resolution land cover data becomes available. However, a reasonable comment was that there are often no agreed measures to measure or demonstrate environmental performance due to an absence of key performance indicators (KPIs). It was argued that engineers, auditors and senior managers favoured quantitative evidence of performance and that, if presented with standard targets, businesses would respond by including these in their sustainability or environmental reporting.

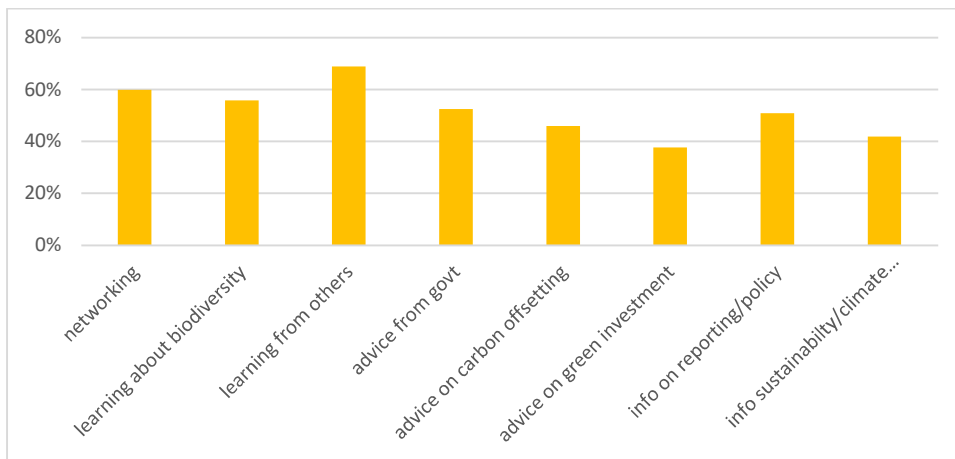
Benefits of a biodiversity platform or forum for information

Finally, businesses were asked about what they thought as being the benefits of a business and biodiversity platform or forum to provide information on biodiversity issues, policy and legislation, and how to avoid, mitigate or offset biodiversity impacts. A hub would be relevant to overcoming

some of the challenges noted in the preceding question, particularly as regards the need to understand the relevance of biodiversity to a business, the relationship with sustainability or climate change, and for convincing management of the benefits. It would also be relevant to identifying and raising awareness of biodiversity indicators and of providing advice on what type of data, including spatial data is available and where to find it.

The businesses themselves reported that they would find a biodiversity hub to be most useful as a means of *learning from others*, including other businesses, on the actions that have or could be taken. Over two thirds, or 69% (84) of respondents thought that this would be the most valuable service. Some businesses ticked most or even all of the other suggestions, but it is interesting that 60% of respondents thought that such a hub would be useful for *networking*, with similar businesses, but also businesses from sectors in which they were not operating. *Learning more about biodiversity* was mentioned by 56% of respondents, but 52% wanted the hub to support *them advice from government*, while 51% wanted to receive information on *existing or future policy*, including environmental accounting and *reporting*. Information on *carbon offsetting* was mentioned by 46% of respondents while 42% wanted to learn more about the relationship between *biodiversity and sustainability or climate change*. Information could include opportunities to link carbon offsetting with biodiversity benefits. This could also be relevant to the 38% of respondents who wanted to learn more about the opportunities provided by *green investment*. Green investment would potentially be of value to listed companies or possibly businesses with large landholdings.

Figure 5.12 Perceived benefits of a biodiversity “hub” (n=122)



Interviews

Interviewees had mixed, but positive views on the merits of a biodiversity hub and what form it should take. Some saw it as a working group and made reference to the DETE’s CSR forum. Interestingly, some companies referred to the value of networking, both to learn more about initiatives taken on biodiversity, but also as a means of making new business connections. New connections could include people from outside of their own sector or introductions to large clients willing to pay more for projects with a biodiversity dimension. Some respondents were keen to see how their own business fared in comparison to other companies, or to learn what actions had worked or been less successful. One respondent referred to the hub offering a cumulative gain rather than simply a competitive advantage, noting that there could be particular benefits for smaller businesses. Similarly, another interviewee noted that it could provide an opportunity for businesses to take collective action, particularly if their impacts are similar in scale and type.

Some interviewees agreed that they would like to learn more about biodiversity data and current trends in biodiversity. However, it was argued that there was a need for leadership from within the business community and that any hub would need to be supported by adequate resources if it is to have meaningful influence. Interviewees were anxious that the hub did not become a talking shop. They wanted it to provide tangible information, data sharing or advice on where relevant data could be found. Strategic advice was thought to be needed on how to undertake biodiversity assessments of a business or of its supply chain, and on how to prepare a BAP. Even practical advice, for example, on how to establish wildflower meadows was welcomed.

It was argued that a hub should aim to help businesses realise tangible ends or reduce costs. There was also a wish to learn if new legislation, regulations or grants were in the pipeline. In this context, information on evolving EU directives was also acknowledged. A couple of businesses remarked that they would like the opportunity to help inform government legislation rather than being just recipients of the same.

Some interviewees argued that they found workshops to be useful and that these could be a means of developing KPIs which can then be measured, monitored and assessed. It was acknowledged that providing the means whereby businesses can measure and demonstrate performance on biodiversity could be a key output of a hub. The hub could support certification and back this with supports and training. Using performance indicators to communicate positive outcomes was also thought to be good for business, including making evidence available to demonstrate performance to customers and clients.

As to who should run a hub there were varying views. Reference was made to the Natural Capital Ireland and to BITC, but other companies wanted to see leadership from within the business community or from relevant Government Departments or Agencies including the DETE.

Summary

The overall message from the online survey and subsequent interviews is that many businesses are responding to the CSR, sustainability and climate change agendas with positive actions. Biodiversity itself would appear to have a low profile among companies, but benefits at a secondary level from these other agendas. However, the responses do provide useful feedback on how a higher profile, and a greater range of actions for biodiversity can be achieved.

Environmental risk

In the first instance, many companies are already conscious of environmental risks to their business. Highest among these risks is climate change and associated risks from storms, flooding, drought and higher temperatures. Biodiversity loss was, perhaps understandably, not mentioned as a direct risk for most businesses, but many did express their concern at the risk of poor quality or polluted water or their vulnerability to associated risks such as soil degradation or pests and diseases, including through their supply chain. There does, however, seem to be a low awareness of the role of biodiversity in delivering ecosystem services that contribute to product quality or the mitigation of environmental risks. Consequently, this is an area that could be highlighted further outside of the policy, planning and academic spheres.

Biodiversity or environmental actions and strategies

Although it is important to note that the survey may have been subject to self-selection bias (i.e. companies that are already engaged in this area were more likely to respond), it is reassuring that the largest proportion of surveyed businesses were taking some actions on biodiversity and a sizeable proportion had a well-developed policy in this regard. Many businesses have taken positive actions on-site or in the community, for example through the creation of new habitat such as

wildflower meadows or by providing support to local Tidy Towns or environmental clean-ups. Admittedly, many of these actions seem to have been initiated in response to the motivations of CSR and reputational benefits, but these actions are still having a positive outcome for biodiversity. On-site projects are popular and have helped organisations to engage with their employees who may otherwise have little opportunity to contribute to biodiversity directly. On-site actions can communicate environmental considerations and biodiversity to the work force and to the local community, including school children. The All Ireland Pollinator Plan has been particularly successful in this respect. The AIPP provides advice to businesses and the benefits have high visibility providing public awareness returns and rewarding the companies too through association with the AIPP and use of its logo.

Some companies with larger landholdings have taken more extensive actions which benefit biodiversity. It was stated that they understood their responsibilities in relation to these landholdings, were keen to understand what habitats they have and to demonstrate responsible actions. In some instances, actions will also have been in response to planning or licensing requirements or the need to undertake measures in response to environmental impact assessment. In other cases, it has been for the purpose of community engagement or community gain, for example for wind farm acceptance and for major urban built developments. In all cases, though, these actions provide opportunities for wider environmental enhancement or restoration.

Encouragingly, there is evidence that the environmental agenda has been moving away from mainly CSR considerations and transitioning to a sustainability or climate change agenda, which implicitly touches on biodiversity. Some companies have environmental or sustainability officers and many have a policy on reducing carbon emissions. Almost half of the companies who responded have examined their environmental footprint, 40% have examined their performance in relation to the UN SDGs, and around one third are either in the process, or have already, completed a review of the environmental or social impact of their supply chain. Although positive outcomes for biodiversity are not assured by these strategic actions, there is the prospect of higher environmental performance and this should benefit biodiversity in turn.

Carbon and biodiversity offsetting

A minority of companies reported that they have invested in carbon offsets. At present, these offsets are only voluntary for those sectors which are not emission intensive such as cement and concrete. The voluntary offsets can be certified and this allows companies to demonstrate their performance to customers and shareholders in their annual reports. This would seem to present a major opportunity for synergy between carbon offsetting and biodiversity through the planting of trees. Many companies have already demonstrated an enthusiasm for tree planting as evidence of their environmental credentials and for CSR, as well as to offset CO₂ emissions. By offering options for companies to invest in native woodlands through schemes such as the Forest Service's Woodland Environmental Fund (WEF), there is also an opportunity for biodiversity gain. At present, these investments are not certified and so the WEF publicity rather promotes the corporate responsibility that is demonstrated by supporting the fund. By comparison, in the UK, the Woodland Carbon Code is a voluntary standard which provides independent validation of the carbon sequestered by forestry projects. There also seems to be a significant opportunity to draw on companies' wish to demonstrate carbon reductions through the use of offsets associated with peatland restoration, especially now that Bord na Móna is withdrawing from peat extraction.

The majority of interviews did not include mention of *biodiversity offsetting*. However, while there is no formal policy in Ireland, this has essentially been a feature of some energy developments where

habitat restoration has occurred. Mining, quarrying and peat horticulture companies are required to have a CRAMP (Closure, Restoration and Aftercare Management Plan) in place or other plans for the rehabilitation of their holding. The cost of adding specific biodiversity measures to general rehabilitation and landscaping may be relatively insignificant. Licensing and regulation in the mining sector internationally has encouraged larger companies to comprehensively assess impacts and some BAPs have been in place since 2008. In addition, some construction companies were aware of the potential of positive biodiversity measures on site. Some of these companies also had UK or overseas divisions through which engineers and other employees had become familiar with the concept of biodiversity offsetting or of Not Net Loss or Net Gain. There was an awareness of nature-based solutions, if not necessarily by name, most especially in relation to drainage, including SUDs. Some building companies have employed “biodiversity” as a means of underpinning the benefits of planting trees or shrubs, for example in areas of challenging topography that are difficult to maintain under grass. Nevertheless, it was evident that awareness of the practical benefits or such solutions, and of biodiversity, does not extend to the entire construction sector and that more initiatives could be taken to promote awareness, including by representative organisations and state transport bodies.

Private clients, especially international corporations, usually included environmental criteria in their specifications and this has stimulated a range of environmental certifications focused on various criteria, most especially energy efficiency and sustainability, but including also biodiversity. One forestry company noted that the market for Forest Stewardship Council certified timber was more assured than that for non-certified product. Some Irish local authorities are understood to be beginning to look favourably on developments which show evidence of environmental gain. It is evident though that more could also be done to encourage public sector organisations and local authorities to expect positive biodiversity actions when publishing tenders or agreeing to planning permission.

In other sectors, water providers are very conscious of the potential value of nature-based solutions, including the use of native species or of allowing areas to rewild as a means to protect water quality, an input that was acknowledged as being significant to a high proportion of businesses. There is also an awareness of the potential of integrated constructed wetlands to manage wastewater with a potential dividend too for biodiversity.

Drivers to taking action on biodiversity

Most company representatives stated that their willingness to adopt environmental or biodiversity initiatives arose from company values. Here again, it must be acknowledged that respondents to the survey are not likely to be typical of the wider private sector. Evidently, though, company values are important to many businesses, especially familiar retailers. Other drivers included a concern to pre-emptively satisfy existing and future environmental policy and regulations or a wish to avoid environmental liability. Customer and investor preferences did not appear high on the list of drivers in the survey responses. However, the influence of customer and investor preferences did emerge in some of the interviews. For consumers, climate change and plastic waste were perceived as being more prominent issues and clearly there is a need to raise the profile of biodiversity loss in this regard. The term “customer” is not, however, limited to the public alone and includes also major buyers, including the public sector and overseas entities or corporations. Some buyers have strict requirements in terms of food quality or environmental standards.

Food quality is an issue for consumers and food producers and retailers are very conscious of this. There are associated benefits for biodiversity. Bord Bia is charged with advancing Ireland’s

reputation for high quality food and has a quality assurance mark to underpin this which includes also social, economic and environmental sustainability criteria. Of course, good quality depends on many factors including the inputs used and processing, but also factors which influence biodiversity such as soil health, pollution control and carbon emissions. Actions on biodiversity (i.e. participation in Agri-Environment Schemes, hedgerow management, pro-active management of field margins, soils and habitats) have been added as a criterion under Bord Bia's Origin Green sustainability assurance scheme. At least one dairy company has rewarded suppliers with a biodiversity payment, although at present rather few buyers pay specific premia coupled to products produced to a higher farm environmental standard.

In contrast to responses from the online survey, the interviews did reveal that investors' preferences are thought to potentially have a significant influence on company activities. This was particularly the case where investors wished to demonstrate that their financing was tied to high environmental standards. Such investors include state investment funds and pension funds, as well as a multitude of international funds which wish to demonstrate to their own private investors that their activities do not have adverse environmental impacts on the planet. An adherence to commitments, be they environmental or social, backed by an evidence base, provides a demonstration of trust to investors. In this respect, companies noted the importance of being able to disclose evidence of their performance in relation to biodiversity, including the importance of certification which, at present, was more evident for carbon emissions and sustainability than for actions with regard to biodiversity.

Benefits of a biodiversity platform

Finally, respondents were positive about the potential benefits of a biodiversity forum, platform or hub. Interestingly, one attraction of such a hub would be to provide businesses with an additional forum for networking, including with companies inside and outside their particular sector, and with prospective clients. Although of evident competitive benefit to the companies which participate, it was thought that a hub would also provide a cumulative competitive gain to industry as a whole, including small businesses. It was thought this could be of particular value for providing practical advice on biodiversity actions and sources of data, but also guidance on forthcoming policy or legislation. This value was argued to extend to SMEs who would not have the capacity or resources to understand where to begin in terms of their biodiversity impact. It was argued that this advice should be coordinated and integrated across Government Departments so as to provide clarity on the direction and priority of actions. One area where biodiversity actions clearly fall short of similar actions on sustainability and carbon emissions, is the absence of performance measures, or Key Performance Indicators (KPIs). Many businesses noted that they were anxious to take positive actions with regard to biodiversity, but lacked the means by which to demonstrate effectively, to the public, clients or shareholders, what outcomes they had achieved. This and other potential activities for a biodiversity hub are explored in more detail in the next chapter.

Chapter 6 – Conclusions and recommendations

Key findings: Evidence review, online survey, interviews and the requirements for a Business and Biodiversity platform

This project conducted a review of the current level of biodiversity awareness within the business community in Ireland and the degree to which businesses have adopted a range of biodiversity protection and enhancement actions or initiatives. This helped identify options to further improve the contribution of the business sector to biodiversity. The review also included an evaluation of other national, regional and global business and biodiversity initiatives to provide recommendations for a structure that would be suitable to engage relevant businesses in Ireland. The project relied on the following activities to meet its objectives:

1. A **review** of business impacts and dependencies on biodiversity, as well as examples of good practice by businesses who have taken action with respect to biodiversity, the environment or climate change;
2. An **online survey** covering **122** respondents from 12 sectors including: agriculture and forestry, aggregates and mining, chemicals/pharmaceuticals, construction, energy, food and drink, ICT, marine and fisheries, retail, tourism and hospitality, transport, and water;
3. A series of **20 semi-structured interviews** with a selection of survey respondents, to examine certain topics in more detail.

The review revealed that business impacts on the environment and biodiversity are varied and include the influence that food processors, manufacturers and retailers have on environmental management within farming, the type of management of forests by forestry companies and their choice of tree species, the environmental protection controls - or rehabilitation of - areas mined for peat, aggregates or minerals, the adoption of sustainable fishing practices, the carbon intensity of energy production, and the direct and indirect activities of the hospitality and tourism sectors.

The online survey and interviews provided an understanding of the extent of engagement of businesses with biodiversity, and their current and future planned activities in this respect. They allowed us to examine the range of dependencies that businesses have on biodiversity. For instance, businesses reported a higher vulnerability to risks associated with climate change than for biodiversity-related factors, although their answers indicated areas in which ecosystems could play a part in mitigating these risks, including through the deployment of nature-based solutions to manage risks from storms, flooding or threats to water quality. Many businesses did indeed acknowledge a dependence on good water quality which, in turn, depends on good catchment management for which the protection of ecosystems is a key element.

The survey and interviews revealed a wide variation in the extent to which different sectors recognised and took action to manage their impacts and dependencies on biodiversity. It found that:

- The main **drivers** related to the overriding values of individual companies, reputational risk, existing regulation, the prospect of future regulation that could require companies to take actions, avoidance of environmental liability risk, and consumer or investor preferences.

These drivers include both endogenous and exogenous factors, and the value of measures to nudge, incentivise and, in some instances, prescribe, appropriate measures.

- The main **barriers** related to challenges in demonstrating the relationship between biodiversity and sustainability, difficulty in understanding the relevance of biodiversity, a lack of guidance from Government, challenges in convincing management of the importance of biodiversity, and a lack of metrics and data to measure performance with respect to biodiversity

The project reviewed good practice examples, actions and initiatives that Irish businesses have taken to mitigate biodiversity impacts and enhance and restore biodiversity. Of these, a sizeable proportion have been on-site. On-site actions are popular and have been useful for engaging employees and for demonstrating to visitors and local communities the positive effects of, for example, wildflower meadows and pollination. These actions have often been motivated by CSR, and, while biodiversity may not have been a primary objective, the results have been positive for local wildlife or pollination. It is evident, however, that there is a lesser awareness of the relationship between biodiversity and environmental quality, and of the relationship between these factors and product quality or environmental risk. This is not surprising given that businesses operate in a competitive environment and have many priorities. Nevertheless, there is a need to raise awareness of biodiversity as *natural capital* and a source of *ecosystem services*, or at least, of biodiversity's relevance to environmental sustainability.

On-site options are not available for all businesses. At the other extreme are some businesses with large landholdings who have the capacity to take actions that could provide profound benefits for biodiversity. In these respects, it is encouraging that there would appear to be a transitioning away from local CSR activity towards more company-wide sustainability or climate related strategies. One way in which this could be pursued is by encouraging more companies to undertake environmental or sustainability reviews of their activities and of their supply chain, but also by supporting business with advice to ensure that biodiversity is addressed in these reviews. These initiatives would demonstrate to more businesses where they have a direct, or more often, an indirect, dependence on natural capital and on ecosystem services relating to food production and quality, natural materials supply, water quality, disaster risk reduction, and wider aspects of environmental quality than they might at first realise. Some sectors, for example retailing, hospitality and tourism, have a dependence on natural capital, but also considerable influence on the environmental and biodiversity standards adopted by businesses supplying inputs such as food and materials.

There is also an urgent need - and an opportunity - to pursue synergies between sustainability or climate initiatives and biodiversity. One example of this would be by supporting voluntary carbon offsetting with forestry or land use schemes that certify carbon benefits. More proactive support for these initiatives by relevant Government Departments could provide a double dividend by mitigating carbon emissions while extending the area of native tree species or of restored peatlands.

The review included international examples of good practice that could be relevant in Ireland. This included the uptake of business strategies for biodiversity, natural capital assessments and accounting, payments for ecosystem service (PES) schemes, and biodiversity offsets. It was evident that a few businesses, for example in the construction sector, are already aware of some of these

opportunities from their experience in other countries. For example, some businesses are familiar with forthcoming policies in the UK whereby new developments will be required to go further than conventional mitigation measures and demonstrate No Net Loss of biodiversity. Some businesses surveyed saw a competitive advantage in adopting these or similar strategies. Such actions have the capacity to subdue the relentless national trend towards biodiversity loss. In some cases, evidence of such actions is being requested by clients or international investors. As the public sector is an important client or customer for many businesses it was apparent that government and local authorities could be more active in this area by looking for evidence of pro-biodiversity actions when publishing tenders or deciding on planning permissions. There are already some certification schemes which can provide information on sustainability, but a need to develop key performance indicators (KPIs) specific to biodiversity was identified by some businesses along with a more proactive role by sectoral representative organisations and by government.

The project also prepared case studies on different Irish businesses to highlight actions they have taken or plan to take with respect to biodiversity:

1. **Mowi**, the leading producer of farmed organic salmon in Ireland. The company sources its raw feed material from sustainable vegetable protein sources or use of trimmings from fish already caught for human consumption. To minimize the impact of sea lice, Mowi uses a range of biological treatments, including the use of wrasse and lumpfish.
2. **SSE Renewables**, a leading developer and operator of renewable energy in the UK and Ireland. The company is developing tools to optimise land management and deliver biodiversity benefits from onshore wind farms.
3. **Veon**, an Irish forestry company that manages around 20,000 ha of woodland for various clients. Recently, Veon has been managing a number of afforestation projects which focus on native woodland planting to maximise biodiversity benefits.
4. **Irish Water** is developing a Biodiversity Action Plan (BAP) which will set out objectives and measures for its 4,000 sites. The company is exploring the use of nature-based solutions for water protection and wastewater treatment, for example through integrated constructed wetlands (ICWs) or the use of afforestation at some of its larger sites to protect water sources.
5. **Eirgrid** has undertaken a range of studies to examine potential environmental impacts of its power grid infrastructure. The company is transforming intensively managed grassland at one of its converter stations to diverse meadow.

Recommendations

Four **high-level recommendations** follow from the findings of the project:

1. Increase awareness and understanding of biodiversity as a component of natural capital, its value to human well-being, to product quality and the stability of business operations, and of its relationship with sustainability and climate change mitigation;
2. Businesses that have land holdings and/or potential impacts on the biodiversity should be encouraged to undertake a biodiversity audit or natural capital accounting to identify their dependence on, and their impact, on biodiversity;
3. Key state agencies/authorities (including NPWS, EPA and local authorities) have important roles to play in creating an “enabling environment”, i.e. policy frameworks and guidance by which business can take action on biodiversity.

In addition, it is proposed that:

4. Lead Departments, through a coordinated strategy, should progress the recommendation of the current National Biodiversity Action Plan to set up and develop the **Business and Biodiversity Platform**.

The platform would need to recognise and stay aligned with key *policies* including those likely to emerge from the EU Green Deal and outcome of the review of the Non-financial Reporting Directive (2014/95/EU). In addition, several policies which affect the governance of biodiversity in Ireland are due for renewal or review, including:

- National Biodiversity Action Plan (2017 to 2021).³⁵ It contains plans and associated targets to protect and enhance biodiversity, including through improved engagement with the private sector.
- Sustainable Development Goals (SDGs) National Implementation Plan extends from 2018 to 2020, and is therefore potentially up for review.³⁶ The Plan aims to nominate national ‘SDG Champions’ and provide examples of best practice that highlight stakeholder contributions to achieving the SDGs including those of direct and indirect relevance to biodiversity.³⁷
- National Plan on Corporate Social Responsibility extends from 2017 to 2020, and is also potentially up for review.³⁸ The National Plan aims to build on the achievements to date supporting businesses to create sustainable jobs; embed responsible practices in the work and market place; embrace diversity, *and* consider their impacts on the environment.

³⁵<https://www.npws.ie/sites/default/files/publications/pdf/National%20Biodiversity%20Action%20Plan%20English.pdf>

³⁶<https://assets.gov.ie/19344/32f9bdd2aae2464caae37760edd1da04.pdf>

³⁷ The platform is available here: <https://irelandsdg.geohive.ie/>

³⁸<https://DETE.gov.ie/en/Publications/Publication-files/Towards-Responsible-Business-Ireland%E2%80%99s-National-Plan-CSR-2017-2020.pdf>

Options for a Business and Biodiversity Platform

Options for a Business and Biodiversity Platform were explored through the online survey and interviews with representatives from Irish businesses. Almost all survey respondents commented on the positive outputs of such a platform and its potential to:

1. Provide a forum to highlight the *relevance of biodiversity* to business and to provide advice on actions which they can take;
2. Provide an environment for businesses to *network*, to understand progress and actions within their sector, and to seek opportunities for collaboration with other companies;
3. Act as a platform to *share data*, case studies of *good practice*, and sectoral *guidance* and tools regarding actions to manage businesses' impacts and dependencies on biodiversity; and
4. Understand the current and future direction of government *policies* relating to biodiversity, and take actions to pre-empt, and possibly influence, future legislation, policies and regulation;
5. Explore the benefits to business sustainability and competitiveness of *actions* such as corporate biodiversity strategies, sustainability reviews of supply chains, carbon and biodiversity offsetting, and natural capital accounting.
6. Provide a forum to discuss and agree *key performance indicators* (KPIs) for businesses to monitor and report their actions and progress with respect to biodiversity.

Interviewees recognised the value of a cross-sectoral approach and that the functions of a platform could be particularly helpful for small and medium-sized enterprises (SMEs) which find it more challenging to take action with respect to biodiversity.

The Business and Biodiversity platform would build on lessons learnt from existing structures, e.g. BITC, DETE CSR Forum, SDG Stakeholder Forum, but have a particular focus on biodiversity and the promotion of relevant actions including corporate biodiversity reviews, natural capital accounting and nature-based solutions. The following **options** are set out as possible alternative specifications for a platform. Each option aims to facilitate additional public and private sector support to ensure businesses can make the optimum contribution to Ireland's biodiversity policy objectives. It is assumed these options would fulfil some or all of the functions set out above.

Option 1
<ul style="list-style-type: none"> ● In-house Government-led platform.
Advantages
<ul style="list-style-type: none"> ● Could spark cross-departmental collaboration on biodiversity that is focused on the business environment. Ensuring involvement by all departments with a link to biodiversity and business growth are involved, rather than only those historically linked with biodiversity (e.g. NPWS, Agriculture). ● Could draw on the wide range of networks and organisations with which different departments engage, e.g. trade bodies, to achieve a wider reach across all business sectors. ● Would benefit from a clear agenda and having the weight and backing of Government departments, which can encourage senior management within businesses to take the biodiversity emergency seriously. ● Allow businesses to input to future legislation. This is particularly important given upcoming changes that are expected for key policies and plans.
Disadvantages
<ul style="list-style-type: none"> ● Higher cost to Government.

- Bottlenecks due to departments having multiple functions.
- Could be affected by restructuring of Government departments
- Role of platform manager with respect to the skillset or performance criteria for civil servants, working within highly structured departments.
- Risk that businesses may perceive a Government-led platform as less relevant to their needs.

Option 2

- **An external platform which is coordinated by trade bodies via representatives, and supported by a secretariat which may or may not be Government-led.**

Advantages

- Businesses may trust in the credibility of their trade bodies, encouraging uptake and buy-in.
- Could help with identifying SMEs which lack the resources to engage with the concept of biodiversity and taking action.

Disadvantages

- Potential barrier to access for SMEs as several trade bodies have membership fees.
- Progress may not be uniform at the beginning as trade bodies are not all at the same stage in their biodiversity journey and their recognition of the biodiversity emergency.
- Trade bodies would vary in size depending on the sector. Some may free-ride on the efforts of others, especially if their resources are diverted by pressing needs such as Brexit or COVID-19.
- Trade bodies may not be as close to the topic of biodiversity as their individual members, which may hamper progress.

Option 3

- **External, collaborative and multi-lateral platform that involves Government, but builds on existing networks such as the Irish Forum on Natural Capital, Business in the Community Ireland, or Sustainable Nation.**

Advantages

- Lower cost to Government and can benefit from blended finance from the parties involved.
- Continued momentum in the event that Government Departments become distracted by other priorities, e.g. Brexit or Covid-19.
- Builds on the business-facing experience and lessons learnt from other initiatives and networks i.e. not starting from scratch.
- Recognises trade-offs between different agendas including sustainability, climate change, and biodiversity. As such, this option can promote a holistic approach. It can help shift the paradigm from regulation and mitigation to consideration of No Net Loss or environmental Net Gain.
- Provides the best of both worlds: (i) Government involvement to prepare businesses for legislation; and (ii) business-led approach which recognises business motivations and drivers for action.

Disadvantages

- May be difficult to coordinate logistics, given number of parties with different mandates and programmes. This can be mitigated by the choice of joint lead organisations from the areas of heritage and business/economy.
- Funding can be less predictable given the number of parties and their potentially shifting agendas. This can be mitigated, if lead Departments provide 3+ year seed funding.

In light of the advantages and disadvantages set out above, **Option 3** may be the most suitable initial specification for a Business and Biodiversity platform.

Given the potential impact of the impending changes in the biodiversity policy landscape, it is recommended that any platform should be founded on further feasibility analysis. This would take stock of updates across the biodiversity policy landscape, as well as considering other relevant policies that may merge and initiatives to which the platform could link. This would help address the feedback received throughout the survey and interviews including that businesses find it challenging to determine regulatory and policy requirements and desired outcomes with respect to biodiversity.

In terms of the specific actions in setting up the platform, it is expected that the following steps would be taken in the first one to two years.

Step 1 - Inception

- **What:** Set up the governance and structure for the platform, including a **Platform Secretariat** and a wider **Steering Group**.
- **How:** Government representatives, for example leads from DHLGH, DETE, DECC, and other public bodies to prepare a tender for the hosting of a Business and Biodiversity Platform to deliver the functions as set out in Step 2 below. In parallel with this tender, secure core funding for the first two years from the key Departments. Once selected via the tender process, the Platform lead should invite representatives from other networks to join a **Steering Group**. This could include the IFNC, BITC, Sustainable Nation and others as relevant. Following this, the Steering Group could put out a call to other sectoral and trade bodies, professionals and business representatives who may want to join. The size of the Steering Group should be sufficient to provide representation and diversity from various sectors (public, private, third, academic).
- Based on other platforms, adequate **financial** resources will be essential in the first few years without which the platform would have insufficient profile or momentum. These resources would need to support one person to work directly with companies and trade / sectoral bodies, to liaise with other national fora and European or international business and biodiversity networks, and to keep abreast of policy, and manage meetings and webinars. A second person would provide support with administration, membership and outreach. Once the platform is established it will be possible to explore the potential for annual membership fees.
- By when: As soon as practicable.

Step 2 – Terms of reference

- **What:** Develop the terms of reference for the Steering Group and the platform.
- **How:** Initial research is undertaken by the Secretariat to determine the vision, mission and main objectives. This preliminary study is essential to ensure the role of the Platform is clear, especially in relation to other fora. The Secretariat would engage with the EU Business and Biodiversity Platform to understand different models for national platforms across Europe and what would be most appropriate for the Irish context. There are a range of potential options, for example, platforms can be business-driven (e.g. Orée in France), funded by membership fees from business, or consultancy-led (e.g. EcoAcsa in Spain).³⁹
- An inception meeting with the Steering Group to brainstorm functions identified by this study, such as (i) to raise awareness of natural capital and ecosystem services and of business dependence on biodiversity and the potential contribution that businesses can make; (ii) to provide a facility to disseminate up to date information on relevant current/future Government and EU policies; (iii) to provide for the discussion of these with other representatives on the forum, including officials from founding Government

³⁹ Examples are provided by the IUCN paper Advancing action on nature through business platforms [4].

Departments; (iv) provide for collaboration and networking; (v) to create a repository for examples of good practice case studies and guidance; (vi) to strive to develop robust indicators to measure action and progress regarding biodiversity; (vii) to provide for training within the platform and direct to businesses, (viii) to agree the balance of action and policy focus, and develop relevant metrics for success.

- By when: Within 2 months of starting Step 1.

Step 3 – Website

- **What:** Develop a “Business & Biodiversity” website for the platform, to be hosted on the host network’s website.
- **How:** Secretariat to develop the website, which will include space for the outputs of subsequent steps below. Include a page/link for members to sign up to the platform and links to related sources of guidance for Irish businesses, e.g. the ***European Business & Biodiversity*** initiatives.
- By when: Within 3-4 months of starting Step 1.

Step 4 – Membership

- **What:** Secretariat to set up a mailing list of interested businesses and individuals.
- **How:** Use existing networks such as IFNC, BITC, and respondents to the online survey for this study. Request that each member should provide a key contact. List member organisations on the platform website along with one key contact per organisation to facilitate networking between members. Promote expanded membership through existing members, trade bodies, webinars/talks, and media. Examine potential for membership fee after inception period.
- By when: Within 3-4 months of starting Step 1.

Step 5 – Webinars

- **What:** Create a programme of webinars to raise awareness and provide training to members.
- **How:** Within the first year of the platform, organise one webinar per quarter. Prioritise online events to minimise costs. Key topics to start with could include: (i) Government policies on biodiversity relevant to business; (ii) Government and EU incentives for taking action including sources of funding; (iii) good practice case studies of businesses that have taken action on biodiversity; (iv) delivering biodiversity and environmental net gain; (v) quantifying and valuing the benefits of taking action regarding biodiversity, etc. Each webinar should focus on the current state of play, what this means for members of the platform, and what comes next. The webinars can be delivered with the input of Government representatives (e.g. for topic (i) and (ii)), as well as other experts and practitioners (e.g. for (iv) and (v)). Their involvement can be promoted via the platform mailing list where they can be listed as technical experts on the platform website and available for the provision of bespoke training for individual companies.
- By when: First webinar within 6 months of starting Step 1, and every quarter thereafter for a minimum of one year.

Step 6 – Case study repository

- **What:** Put out a call for case studies and guidance

- **How:** Develop a template for case studies, potentially utilising the format of case studies in this study. Circulate a call for case studies to members. Collate and check the quality of case studies. Publish the case studies online.
- **By when:** Within 9 months of starting Step 1, and every six months thereafter.

Step 7 - Actionable commitments

- **What:** To provide for purpose and avoid accusations of greenwashing.
- **How:** Develop actionable commitments, but on a graduated basis to which most prospective members can agree, e.g. the BITC Biodiversity Framework for Business (p33), combined with development of robust indicators (see Step 2). Develop a transparent verification system to track commitments.
- Once established in the first year.

Step 8 – Feedback

- **What:** Gather regular feedback from members and event participants.
- **How:** Regular online survey to gauge members' satisfaction with the activities and functions of the platform. The survey can help identify members' needs including opportunities for dedicated working groups regarding specific topics. To be disseminated after each webinar and at the end of each year, to gather views on what the platform achieved, what members want to see next and whether they could fund its continuity.
- **By when:** Within 3 months of completing Step 1, and continuously thereafter.

It is recommended that the priority businesses to engage in the selection platform would be:

- Pioneer organisations with an existing interest or track record with respect to biodiversity, for example businesses who expressed an interest in becoming part of a forum at the National Biodiversity Conference in 2019 or some of the businesses interviewed for the project or who agreed to be case studies;
- Companies that have already signed up to existing networks such as members of BITC or the IFNC;
- Businesses with large land holdings including agriculture, forestry, peatlands, energy, larger scale tourism ventures, industrial parks, etc.; and/or
- Businesses with value chains that incorporate biodiversity or ecosystem services including food/drink, retail, tourism/hospitality;
- Business sector representative organisations and also bodies representing SMEs.
- Financial businesses active in the areas of environmental risk/insurance, chartered accounting and climate financing.

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Appendices

Appendix 1: Project terms of reference

Review of Options to Enhance Business Contribution to National Biodiversity Policy Objectives

Biodiversity loss is among the top risks to society. Business impacts and dependencies on biodiversity translate into risks to business and financial organisations, including ecological risks to operations; liability risks; and regulatory, reputational, market and financial risks (OECD, 2019). Comprehending these dependencies and impacts on biodiversity can help businesses and financial organisations manage and prevent biodiversity-related risks, while harnessing new business opportunities.

Business and financial organisations increasingly need to understand how to integrate biodiversity factors across key dimensions of business and investment decision-making, including strategy; governance; impact assessment and risk management; due diligence; disclosure and external reporting; industry standards, labels and certification schemes; and communication.

Action 1.1.12 of Ireland’s National Biodiversity Action Plan 2017-2021 sets out to “Establish a national Business and Biodiversity Platform under the UN Convention on Biological Diversity’s Global Business Partnership”. The establishment of the Platform is further supported by the 2019 Government policy on Future Jobs.

As outlined in the UN Convention on Biological Diversity COP X decision on business engagement, the mandate of national initiatives is to “...encourage dialogue amongst stakeholders...and to help raise awareness of biodiversity and sustainability issues amongst the business community. They should also work to assist companies in understanding and mainstreaming the goals of the Convention and the Aichi Targets and future Goals delivered through the post 2020 Global Biodiversity Framework.

In Ireland, there are many examples of how businesses are actively seeking to enhance and restore biodiversity and ensure continual improvement by embedding biodiversity in company business policies, management systems, Corporate Social Responsibility (CSR) strategies and through partnerships with communities and support for employees etc. There are also several voluntary networks in the business sector focused on biodiversity protection, enhancement, restoration and habitat creation including the Business in the Community Ireland (BITCI) Biodiversity Learning Network and the Biodiversity Framework for Business. There are also certification schemes available to business with a specific focus on biodiversity such as the Business Working Responsibly Mark and Environmental Management Systems.

The Department of Culture, Heritage and Gaeltacht (DCHG), in co-operation with the Department of Enterprise, Trade and Employment (DETE) is seeking to commission a review of the current range of biodiversity protection and enhancement actions and initiatives being taken by business in Ireland and to identify options to further improve the contribution of the business sector to biodiversity. The review includes an evaluation of other national, regional and global business and biodiversity initiatives to provide recommendations for a structure that would be suitable to engage relevant businesses in Ireland.

The objectives of the review and main areas of research are as follows:

- (i) To set out the range of impacts of the business sector on biodiversity in Ireland. This should include a sub-sectoral analysis and quantification of relevant land area by sector or by large enterprises where appropriate.
- (ii) Draw up a review of good practices, actions and initiatives that Irish businesses have taken to mitigate biodiversity impacts and enhance and restore biodiversity. Provide international examples of good practice that could be relevant in Ireland. Consider where possible in the

- review potential technological, environmental management and regulatory developments that may be beneficial.
- (iii) To identify the extent of engagement in Ireland by business in the areas of biodiversity and the current and future planned activities of business, and other public and private sector bodies working with business on biodiversity. This should also review the structures available to businesses that facilitate engagement.
 - (iv) To set out options for additional public and private sector engagement and support to ensure the business sector can make the optimum contribution to Ireland's biodiversity policy objectives including relevant Sustainable Development Goals. This should also review national, regional and global initiatives on business and biodiversity.
 - (v) To recommend a suite of companies that would have the best potential to maximise the contribution of business to the biodiversity agenda.

OECD (2019), Biodiversity: Finance and the Economic and Business Case for Action, report prepared for the G7 Environment Ministers' Meeting, 5-6 May 2019.

Appendix 2: Certification: Making biodiversity their business

Business drivers, benefits and barriers of a corporate biodiversity certification scheme

Recent research by Hannah Hamilton (formerly of IFNC) has sought to understand the business drivers, benefits and barriers to using a voluntary certification scheme to assess on-site biodiversity management systems. The study focused on a group of companies that used the Biodiversity Benchmark, a scheme administered across the UK by The Wildlife Trusts.

Through analysis of employee perceptions of the scheme and semi-structured interviews with The Wildlife Trusts' Biodiversity Benchmark assessors, the study firstly explored the **drivers** for using a formal certification scheme. These included:

- The scheme is endorsed by a recognised environmental group (The Wildlife Trusts) and has an award at the end. This formality guarantees that the company is doing 'proper' conservation and ensures legislative compliance.
- The process is similar to other management systems businesses use, and is target-driven.
- The scheme helps to meet CSR objectives and keep up with competitors.

There were also clear **business benefits** of undertaking the scheme. These included:

- Improved reputation and relationships with local communities and regulators;
- Enhanced risk management in terms of access to licences and permissions; and compliance with legislation;
- Stronger employee engagement – especially in terms of health and wellbeing, staff morale and a sense of pride;
- Reputational benefits around businesses being seen as leaders by external stakeholders for striving for best practice.

However, as with any business initiative, there were **barriers to action**, including difficulty, expense, time commitment and lack of senior management support.

There are some key elements that help to drive positive outcomes for biodiversity, employee engagement, business reputation, community relationships and risk management.:

- A passionate and highly motivated employee
- An enabling corporate culture
- A business-relevant management framework
- Embedding biodiversity in management systems to ensure continual improvement.
- Recognition and validation of efforts by a trusted third party (in this case, a well-known environmental charity).

Ireland does not currently have an equivalent biodiversity benchmark for business, but the findings above could inform the creation of something similar.

Appendix 3: Corine Land Cover (CLC) classes showing urban and industrial sites

CLC Description	CLC 2018	Percent land area
Continuous urban fabric ⁴⁰	3,753	0.05%
Discontinuous urban fabric	106,248	1.50%
Industrial or commercial units ⁴¹	14,448	0.20%
Road and rail networks and associated land	6,830	0.10%
Port areas	825	0.01%
Airports	2,383	0.03%
Mineral extraction sites	9,121	0.13%
Dump sites	1,096	0.02%
Construction sites	1,101	0.02%
Green urban areas	3,197	0.05%
Sport and leisure facilities	20,378	0.29%
Non-irrigated arable land	320,329	4.53%
Fruit trees and berry plantations	295	0.00%
Pastures	3,893,873	55.09%
Complex cultivation patterns	58,212	0.82%
Land principally occupied by agriculture, with significant areas of natural vegetation	487,440	6.90%
Broad-leaved forest	53,639	0.76%
Coniferous forest	325,422	4.60%
Mixed forest	75,666	1.07%
Natural grasslands	48,567	0.69%
Moors and heathland	126,088	1.78%
Transitional woodland-shrub	217,359	3.08%
Beaches, dunes, sands	12,108	0.17%
Bare rocks	19,431	0.27%
Sparsely vegetated areas	56,013	0.79%
Burnt areas	7,932	0.11%
Inland marshes	24,753	0.35%
Peat bogs	968,808	13.71%
Salt marshes	5,329	0.08%
Intertidal flats	48,933	0.69%
Water courses	6,764	0.10%
Water bodies	112,387	1.59%
Coastal lagoons	2,099	0.03%
Estuaries	27,004	0.38%

⁴⁰ Includes all urban development including smaller commercial, industrial and retail units

⁴¹ Includes commercial and industrial estates (building and landscaping)

Appendix 4: Online survey

SURVEY INTRODUCTION

Thank you for your participation in this Irish Business and Biodiversity survey, which should take no more than 10 minutes to complete. You will find background information about the project below, and our GDPR policy on the next page.

Background

This survey is part of the Irish Business and Biodiversity Project, which is examining how we can enhance business contribution to Ireland's national biodiversity objectives. The project is funded by the **Department of Business, Enterprise and Innovation (DBEI)** and the **Department of Culture, Heritage and the Gaeltacht (DCHG)**. The project team includes experts from Ireland (**Optimize** and **Natural Capital Ireland**) and UK consultants **AECOM**, and will run until September 2020.

Project aim

Irish companies are already taking measures to protect and enhance our natural environment and biodiversity. For example, companies have planted wildflower meadows, engaged employees in environmental days, and examined their supply chains to minimise negative impacts on the environment. This project seeks to understand actions taken to date and what more can be done. In particular, DETE and DCHG are exploring the possibility of establishing a Business and Biodiversity Hub to support businesses in taking actions to protect and enhance biodiversity and natural environment.

Glossary of terms

Biodiversity: The world is currently facing both a climate and a biodiversity crisis. The UN judges that 1 million of the 8 million species on Earth could be extinct within decades. 'Biodiversity' is the diversity of all species and ecosystems found on Earth. Our survival, and all economic activity, ultimately depend on biodiversity for supplies of water, food, natural fibres, many fuels and building materials. Biodiversity helps to regulate our climate and protects us from extremes of weather. It contributes to our quality of life through contact with nature, the Irish landscape, and our use of the outdoors for amenity and tourism. It benefits our health by supporting physical activity, providing us with clean water and quality foods, and by mitigating the risk of infectious disease.

GDPR

- The project team and Smart Survey are the only entities with access to all responses from this survey.
- We will not use your personal information, responses to this survey and/or information from interviews for any other purpose than this project;
- We will respond to your requests to be sent a copy of, edit or delete your responses during the course of this project.

If you have any questions about the survey or the study more generally, please contact Craig Bullock at Optimize1@indigo.ie

1. **Please provide your name and email address. This will allow the project team to follow up with you, if necessary.** We will not use your personal information for any other purpose than this project.

FREE TEXT BOX

2. Please enter the name of your organisation:

OPEN TEXT BOX

3. In which of the following sectors does your organisation best fit?

Agriculture, Forestry And Fishing
Cement Manufacturing
Chemical and Pharmaceuticals Manufacturing
Construction
Energy
Food & Beverage Manufacturing
Hospitality and Tourism
ICT
Mining, Quarrying and Peat
Retail
Transportation And Storage
Water
Wood & paper products
Other, please specify

4. My organisation is (please tick one):

A private sector organisation
A public sector organisation, including semi-states
An NGO
Other, please specify

5. I am responding to this survey on behalf of

Myself
My organisation
Other, please specify

Impacts and dependencies on biodiversity

6. Does your organisation have significant land or marine holdings in Ireland?

“Significant holdings” are those that are essential to business operations and/or to the production of your organisation's goods or services. For example, green space surrounding office buildings would not be considered significant, whereas a forestry company's land holdings would.

Yes

No

Don't know

7. Please indicate whether your business *depends* on or *uses* any of the following items.

(tick whichever boxes apply)

	<i>Yes, in our direct operations</i>	<i>Yes, in our supply chain</i>	<i>Yes, in both direct operations and supply chain</i>	<i>Our business does not depend on this item</i>
Agricultural commodities (e.g. wheat, barley, soy, palm oil etc.)				
Natural fibres e.g. cotton, wool, etc.				
Fisheries				
High water quality				
Peat or compost				
Timber/wood-based biomass				
Cement or sand				
Attractive landscapes and natural heritage				
Genetic material				
Other natural products, please specify				

8. Please indicate whether any of the following represent an environmental risk to your normal business operations.

	<i>Significant risk</i>	<i>Moderate risk</i>	<i>Slight risk</i>	<i>No risk</i>	<i>Not sure</i>	<i>Does not apply</i>
Interruptions to supply chains for natural products						
Flooding						
Severe storms						
Drought						
Polluted waters						
Pests, including invasive and non-native species						
Soil degradation						
Habitat loss						
Climate change						

Intensive agricultural practices						
Declining fish catches						

Business action on biodiversity

9. Thinking about your business and its actions to date on biodiversity, which of the following best describes your situation:

Our business is at the beginning of our understanding and action on biodiversity

Our business has taken some action, but could do more

Our biodiversity strategy is well developed and in train

Other, please specify

10. Has your business implemented any of the following actions relating to biodiversity? For each action, please indicate the current status of the action (i.e. it is being formally considered, it is underway, or complete).

	<i>Formally considered</i>	<i>Under way</i>	<i>Complete</i>	<i>Has not undertaken</i>	<i>Does not apply</i>
Surveyed or managed existing wildlife habitat					
Restored or enhanced former habitat					
Created new habitat					
Grown bee/pollinator friendly plants or installed beehives					
Installed green roof					
Organised activities for staff activities e.g. wildlife walks/information days					

Other, please specify [OPEN TEXT BOX]

11. Has your business implemented any of the following *strategic* actions relating to biodiversity? For each action, please indicate the current status of the action (i.e. it is being formally considered, it is underway, or complete).

	<i>Formally considered</i>	<i>Under way</i>	<i>Complete</i>	<i>Have not undertaken</i>	<i>Does not apply</i>
A review of environmental impacts in the supply chain					

A review of the company's environmental footprint					
A policy to address the UN Sustainable Development Goals (e.g. Climate action SDG 13, Clean water and sanitation SDG 6, etc.)					
Developed products that can be marketed as organic, biodiversity or environmentally-friendly					
Offset CO2 emissions by purchasing carbon credits or similar					
Ceased applications of pesticide/herbicide (where applicable)					

Other, please specify.....

Drivers and challenges

12. What are the main drivers for your business to take action to protect biodiversity? Please tick all that apply.

- Existing regulation e.g. National Biodiversity Action Plan, EU regulations such as Natura 2000, the Water Framework Directive
- Expected future regulation e.g. arising from the forthcoming EU Green Deal, the EU Biodiversity Strategy 2030, corporate reporting obligations
- Changing consumer preferences
- Changing investor preferences (e.g. demands from investors and financial institutions regarding biodiversity or the natural environment)
Reputational risk Company values (e.g. corporate social responsibility)
- Business opportunities e.g. increasing resilience, securing supply chain, new products and services, demonstrating sustainability to stakeholders, e.g. investors and customers
- Environmental liability

Please comment on these or other drivers- OPEN TEXT BOX

13. What are the main challenges for your business in taking action on biodiversity? For each area, please indicate which are relevant/not relevant.

	<i>Relevant (tick)</i>	<i>Not relevant (tick)</i>

Understanding the relevance of biodiversity to our business		
Understanding relevance of biodiversity to other sustainability issues, e.g. reducing carbon emissions		
Making the case for biodiversity action within the business e.g. to senior management		
Lack of demand for biodiversity actions from clients or customers		
Lack of guidance from Government		
Lack of in-house information or data		
Lack of spatial data		

Other, please specify.....

Business supports

14. Does your business currently participate in any business networks? Examples include Chambers Ireland, the CSR Forum, SEAI Large Industry Energy Network etc.

Yes, we participate in several business networks - OPEN TEXT FIELD FOR NAMES OF NETWORKS

No, we do not currently participate in any business networks but would be interested in doing so in future

No, we do not currently participate in any business networks and have no plans to do so in the future

15. The Department of Business, Enterprise and Innovation and the Department of Culture, Heritage and the Gaeltacht are considering providing a suite of supports for businesses to protect and enhance biodiversity. Which activities would be most beneficial to your business? Please rank from 1 to 5, with 1 being the most important.

	<i>Please rank 1-5 (1 = most important)</i>
Networking opportunities with peers	
Learning about biodiversity issues e.g. through presentations from experts	
Learning about wider sustainability issues such as climate change	
Learning about other businesses' experiences in taking action on biodiversity e.g. through case studies, presentations	
Advice or guidance from relevant Government departments	
Information on policies and reporting obligations on biodiversity or environment	
Supplementary information on sustainability or climate change	
Other	