Department of Finance | An Roinn Airgeadais

Better Business Cases NI

Incorporating Environmental and Climate Considerations into Business Cases

September 2025

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1 Introduction

This is updated guidance on incorporating Environmental and Climate considerations into business cases.

The original version (V1) of this guidance was published in October 2022 in response to the development of policy at both local and national levels, and to reflect updated information contained in The Green Book. The need for the V1 guidance was further heightened by new legal requirements under the Climate Change Act (Northern Ireland) 2022 and the introduction of ten new Executive commitments under the Draft Green Growth Strategy for NI.

Its purpose was to emphasise the importance of considering environmental and climate impacts, in a proportionate manner, when developing business cases under the Five Case Model (FCM). Ultimately, it provided advice on how this could be done. Given this is a fast-changing area the Department of Finance (DoF) committed to revisiting and developing the guidance iteratively as new requirements, methods, tools, and datasets became available.

Based on experience and developments since then, several fundamental changes are reflected in this updated guidance and the October 2022 guidance is consequently withdrawn - these changes are summarised in Section 2 below. The removal of the word “Supplementary” from its title reflects the need going forward to consider such impacts as a central piece of the business case development process for programmes and projects.

DoF Strategic Policy Division (SPD) is grateful for input and advice received from consultation and discussions with Departments and other public sector organisations as well as colleagues in other DoF divisions in developing this guidance and have sought to reflect their advice in this document.

This has been designed for use across all NI Departments and other public sector organisations, where public sector programmes and projects can vary greatly in terms of their nature, scale, and complexity, and therefore, the term ‘environmental and climate impacts’ is defined broadly to account for this.

Specifically, the following are in its definition's scope – climate change mitigation and adaptation; impacts on emissions, air quality; land; water; biodiversity; natural habitat; the supply of natural raw materials; green jobs and outdoor recreation opportunities - but other aspects may also be relevant. Links to more specific environmental and climate guidance have been provided throughout.

As with all business case guidance, and as outlined in The HM Treasury *Green Book*, this should be applied **proportionately**, where the resources and effort employed should reflect the level of costs, benefits and risks to society and the public sector resulting from the programmes and projects under consideration, whilst giving proper regard to requirements (including statutory) relating to environmental and climate impacts.

As noted, it is necessarily drafted at a level to ensure broad applicability across the public sector. Departments and others may wish to develop more specific guidance reflecting the nature of their business, consistent with the broad guidance contained in this document.

There continues to be a lot of work ongoing in this fast changing/all-encompassing area. The guidance may need to be subsequently updated to reflect new changes as they are further defined and developed. Users should therefore ensure they refer regularly to the Better Business Cases NI website for the latest version of this guidance.

It is important to note that whilst this guidance focusses on the environment and climate, there is also a need to consider other impacts formerly under the umbrella of "sustainable development", such as equality, health, social inclusion and rural, as well as economic impacts of investments in business cases. Guidance on these is contained elsewhere.

2 Summary of Key Steps

This section provides an overview of the key steps that should be undertaken when considering the environment and climate in business cases. More information on each of these steps can be found in the relevant sections below.

For **all** new programme and project business cases appraisers are **required** to undertake Environmental and Climate Screening (or a form of it for minor expenditure) to assess the level of impact that their programme and project is likely to have on the environment and climate.

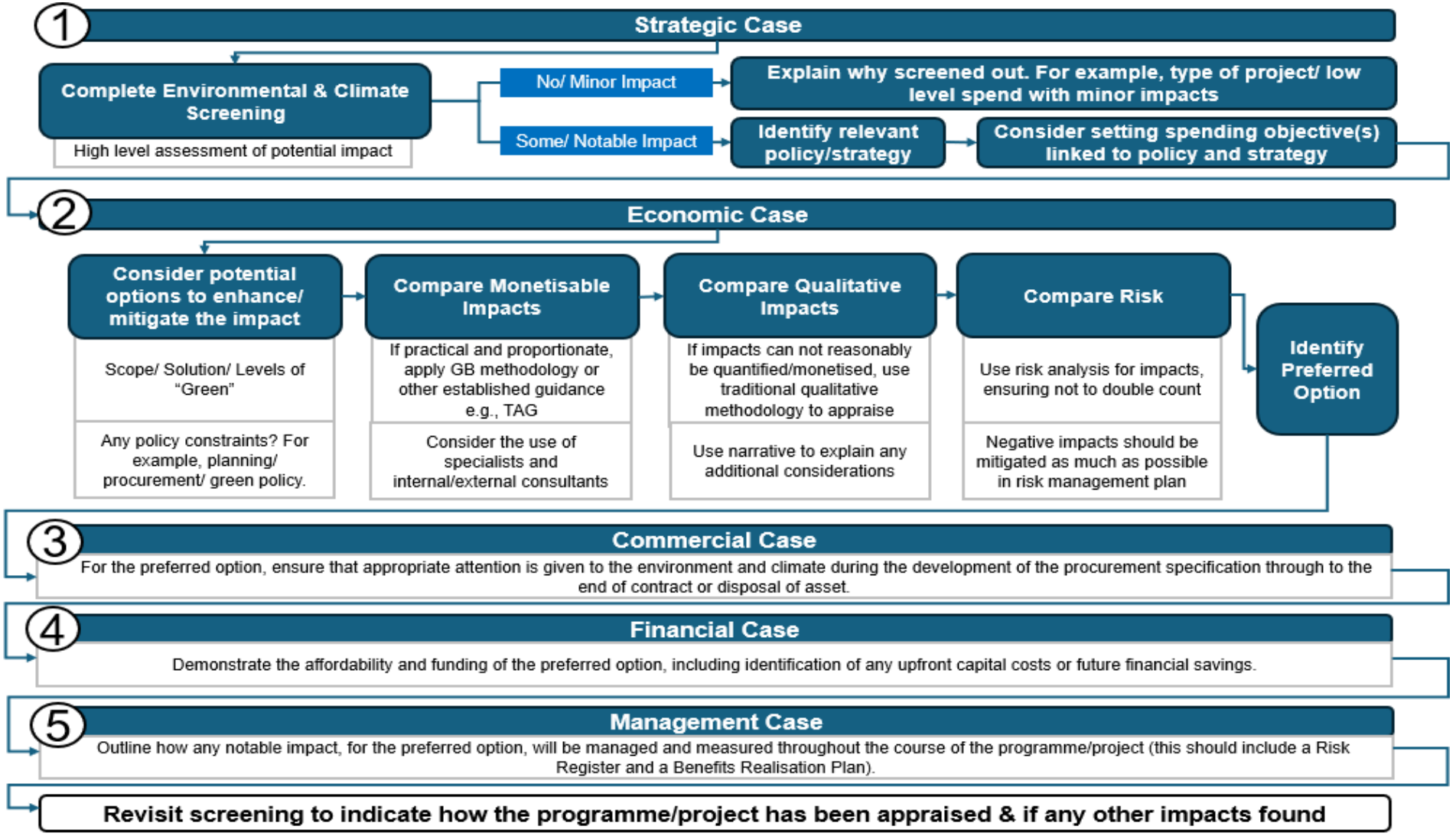
If the screening identifies any **notable impacts**, appraisers are now **required** to:

- Consider including an environmental and climate spending objective to help set appropriate programme and project parameters.
- Consult with the relevant stakeholders to ensure that all possible impacts and options have been identified and considered.
- Consider the inclusion of a Green Solution dimension as part of the options framework which considers different options to avoid/ mitigate negative impacts and/or enhance positive impacts.
- Compare the extent of the impacts across options by accounting for them in the analysis within the Economic Case.
- Ensure that the environment and climate is sufficiently factored into key decisions in the Commercial, Financial and Management cases for the preferred option.

Figure 2.1 below summarises the process that should be followed when considering the potential impact on the environment and climate. Ultimately, it is the responsibility of the Senior Responsible Owner (SRO) to determine, on a case-by-case basis, what advice and input they require from experts/specialists to inform the Environmental and Climate Screening Exercise and the subsequent analyses where notable impacts have been identified.

Users of this guidance may also find DoF's Quick Reference Guide for Incorporating Environmental and Climate Considerations into Business Cases useful, which contains answers to Frequently Asked Questions in this area.

Figure 2.1: Environmental and Climate Guidance Pathway



3 The Strategic Case

The purpose of the Strategic Case is to make the case for change and to demonstrate how the programme or project provides strategic fit with other relevant policies, programmes, and projects. Therefore, reference should be made to all relevant local, regional, and national policies and targets, **and those relating to the environment and climate change should be included**. This will provide the important strategic context for the consideration of environmental and climate impacts of a programme or project and bring early consideration of avoidance, mitigation or enhancement strategies for any potential negative or positive consequences.

3.1 Alignment to Existing Legislation, Policies and Strategies

Some of the key legislation, policies and strategies that are relevant in setting the strategic context for the consideration of environmental and climate impacts are listed below. These are about working towards a long-term vision to ensure we have a healthy environment and climate, healthy economy, and healthy population. This list is not exhaustive and there may be others that can be considered, including departmental or organisational-specific strategies in this field. Indeed, such departmental or organisational strategies should be in place to provide suitable context for programmes and projects.

These are key environmental and climate legislation, policies and strategies that should be appropriately considered by all departments/ public sector organisations when developing programme or project business cases.[1]

Climate Change Act (Northern Ireland) 2022

The Act sets a target of at least 100% lower than baseline for the year 2050 and a requirement to ensure that the net NI emissions for the years 2030 (are at least 48% lower than the baseline) and 2040 (are at least 77% lower than baseline) for the reduction of greenhouse gas emissions; to provide for a system of carbon budgeting; to provide for reporting and statements against those targets and budgets; to confer power to impose

[1] Given the evolving nature of environmental and climate policy, appraisers should ensure to reflect the current policy position.

climate change reporting duties on public bodies; to provide for reports and advice from the Committee on Climate Change; and for connected purposes.

Under this Act, there is a legal requirement to produce a NI Climate Action Plan which will set out the policies and proposals of each Department for meeting each carbon budget (and emissions reduction targets). The first Climate Action Plan will cover the period 2023-2027.

The Act has implications for all departments. Section 32(1) of the Act requires that Climate Action Plans (CAPs) contain targets to be achieved during the relevant carbon budget period for soil quality and biodiversity. Section 32(3) requires CAPs to also include annual targets on Greenhouse Gas (GHG) emissions and air quality. Consideration of any proposal's impact on the requirements of this Act is, therefore, paramount.

Each Northern Ireland department must exercise its own functions, so far as is possible to do so, in a manner that is consistent with the achievement of the objective of the Act and in doing so must draw up and implement such plans, policies and strategies as may be appropriate.

Failure to take account of the statutory duties could potentially bring challenge through judicial review.

Draft Circular Economy Strategy for Northern Ireland

This sets out government's vision to create an innovative, sustainable and regionally balanced economy focused on People, Planet and Prosperity, with responsible production and consumption at its core. It is based on the three key principles of designing out waste, keeping products and materials in use for as long as possible and regenerating natural systems and will help support the legislative target of Net Zero by 2050.

The Department for the Economy (DfE) is currently in the process of finalising the Strategy for Executive approval.

Energy Strategy for Northern Ireland – Path to Net Zero Energy

The Energy Strategy for Northern Ireland - The Path to Net Zero Energy is being delivered in the context of the 2022 Climate Change Act which, as mentioned above, requires government to urgently reduce emissions and achieve net zero by 2050.

This Strategy aims to end the use of fossil fuels and enable Northern Ireland to become self-sufficient in affordable, renewable energy. In doing so, it sets NI's roadmap to 2030 as part of the longer-term pathway to 2050, with a focus on five Energy Strategy Principles to support and guide the pathway towards achieving these reductions.

The latest Path to Net Zero Energy Action Plan (2024) outlines the priority areas across government for delivery.

The Northern Ireland Climate Change Adaptation Programme (NICCAP)

The UK Climate Change Act 2008 places a duty on the relevant NI department to lay before the Assembly a NICCAP setting out the NICS Departments response to the risks and opportunities relevant to Northern Ireland.

A third draft Northern Ireland Climate Change Adaptation Programme (NICCAP3) has been developed as required by section 60 of the Climate Change Act 2008. It provides the NI Executive Departments response to the climate risks which have been identified in the UK's third Climate Change Risk Assessment (CCRA3, and which fall within the devolved area of responsibility.

DAERA is currently in the process of finalising this for Executive approval.

The Environmental Improvement Plan (EIP) for Northern Ireland

Schedule 2 to the Environment Act 2021 (the Act) placed a statutory duty on the DAERA to prepare and publish an EIP which is a plan for significantly improving the natural environment in Northern Ireland.

The first EIP forms the basis for a coherent and effective set of interventions that can collectively deliver real improvements in the quality of the environment. The strategic objectives of the EIP are: Excellent air, water and land quality; A healthy and accessible environment and landscapes. The EIP forms part of the wider green growth agenda and, for the most part, is intended to be a high-level, Executive-endorsed Plan that will sit alongside both new and existing strategies.

Draft Environmental Principles Policy Statement (EPPS) for NI

As of 2022, DAERA has a statutory duty to publish a policy statement on environmental principles.

The five environmental principles (integration, prevention, rectification at source, polluter pays and precautionary principle) are not new. They already apply in many international laws, including the EU Treaties and they continue to underpin the UK's domestic implementation of many of the UK's international obligations.

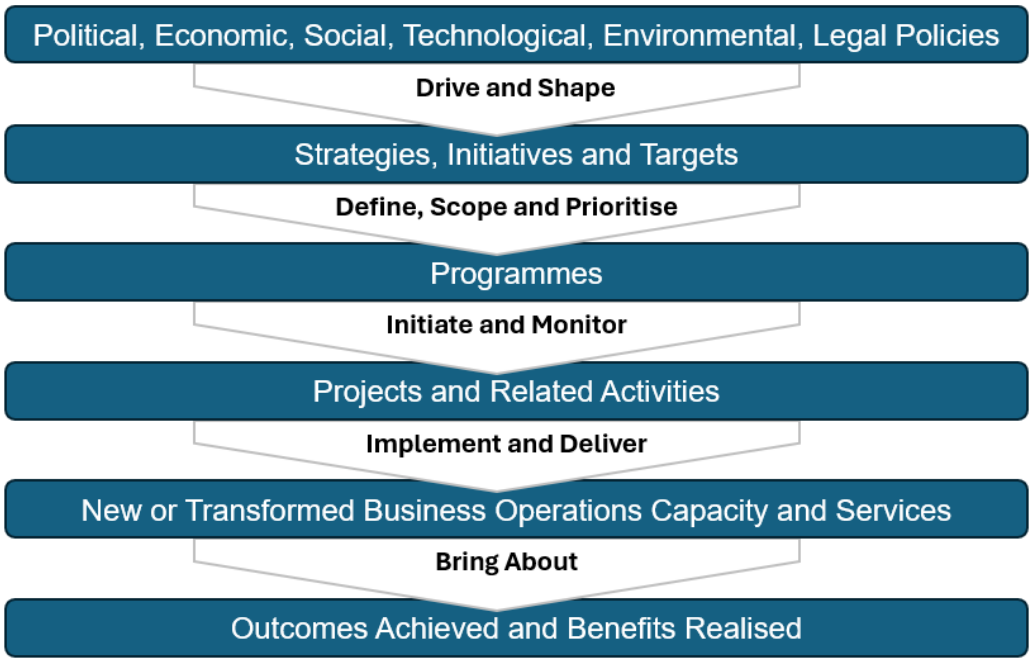
All NI departments and Ministers have a duty to have 'due regard' to the EPPS in their policy-making process. The statement explains how the principles should be interpreted and proportionately applied by relevant policymakers, with a view to ensuring they are equipped to meet their statutory duties, and with greater practical effect. All of which should help when developing measures to meet the Executive's climate change, environmental and overarching green growth agendas.

A list of other potentially relevant legislation, policies and strategies can be found at Annex A.

3.2 The Role of Policy and Strategy

The Climate Change Act (NI) 2022 states that when developing policies each department must ensure they are consistent with the targets set out in the carbon budget[2]. As shown in Figure 3.1 below, projects are essentially vehicles used to deliver activities to help implement policy. Policy objectives cascade down into strategies, programmes and then projects.

Figure 3.1: Policy Hierarchy



There are likely to be varying ways departments can deliver on environmental and climate policy commitments, with trade-offs to be made, as not all programme and projects can meet all these objectives, and some will remain detrimental to the environment. Strategies need to be put in place at a departmental level to meet these commitments, which then feed down into the business case process for programmes and projects.

Business case guidance cannot direct projects to drive policies and strategies in this area; rather, it is an assessment framework to inform delivery of programmes and projects, and business cases require robust and clear policies/

[2] Section 29 (4) Climate Change Act (Northern Ireland) 2022 (legislation.gov.uk)

strategies to be in place to help ensure that decisions are made on a Value for Money (VfM) basis that match the Executive's priorities.

The risk is that there could be instances whereby green solutions may not be viewed as VfM in the absence of specific strategies e.g. based on cost and affordability. Green strategies enable an appraiser to effectively rule out more traditional solutions at an early stage where this reflects a department's policy position. Furthermore, tackling these issues in a piecemeal manner at project level could lead to inconsistencies within departments.

The High Court ruling of 23rd June 2025 in relation to the A5 Western Transport Corridor[3] may have far-reaching implications for proposals with significant greenhouse gas (GHG) emissions. While work is ongoing to assess the full impact of this decision, it is currently too early to determine its broader consequences. The Department for Infrastructure (DfI) has lodged a notice of appeal against the ruling.

Where a proposal is likely to result in notable emissions, appraisers should remain aware of the latest developments regarding this case and be cautious of undertaking **any action** as a result of this ruling that would potentially get in the way of, or undermine, the grounds for appeal, taking legal advice as necessary.

Early engagement with relevant departments is advised to ensure alignment with current and emerging Climate Action Plans and carbon budgets. Where appropriate, legal advice should be sought to ensure compliance with climate legislation and planning obligations. Appraisers should also consider mitigation strategies. Ongoing monitoring of legal and policy developments is recommended to ensure assessments remain current and robust.

Therefore, it is important that Ministers, their departments and arm's length bodies (ALB's) consider their own policies/strategies, programmes and projects in the context of environmental and climate policy (such as the Climate Change Act (Northern Ireland 2022)) and make decisions at that level as to how they can best meet commitments. This will enable

[3] [2025] NIKB 42 | Judiciary NI

decisions on expenditure to be made that best achieve environmental policy objectives.

3.3 Environmental and Climate Screening Process

The October 2022 guidance introduced an environmental and climate screening exercise to determine whether environmental and climate impacts are a relevant consideration in the business case at an early stage. This has been developed to reflect in a proportionate way the latest thinking on this. It is intended to ensure that adverse impacts are identified and appropriately avoided/mitigated/managed as required - reflecting work between DoF and others.

The screening is a basic exercise to ensure that potential environmental impacts are considered at the earliest stage, with the aim of minimising or mitigating negative impacts where possible whilst still delivering VfM. This requires appraisers to identify whether impacts are likely to be notable and, if so, quantifiable, monetisable or qualitative in the business case. Appraisers must also identify if impacts should be considered further in risk analysis.

For any potential impacts of note, appraisers must include details of quantifiable data and sources (in cost and benefit assumptions); describe actions to maximise positive impacts (part of benefits realisation); and describe actions to avoid/ mitigate negative impacts (risk analysis). Where impacts exist, this should be done for each of the shortlisted options.

Consideration was also given in discussions with the Department for the Economy (DfE) as to how the draft Circular Economy Strategy could best be reflected in the business case process. While there are currently no specific references to circular economy, some of the screening questions do reflect circularity. The circular economy principles of designing out waste, keeping products and materials in use for as long as possible, and regenerating natural systems should be considerations when assessing objectives and options. Once the Circular Economy Strategy has been published, there will be further opportunities to consider implications in future iterations of this guidance.

The screening process is set out below, along with explanatory notes, and **must** be included in the Strategic Case for every programme or project when the Five Case Model (FCM) is being used to seek approval for expenditure.

For low-level, low-risk or routine expenditure, where the decision being taken is relatively straightforward, it is unlikely that the FCM will be used to approve expenditure. In those instances, appraisers do not need to undertake the screening exercise but should still consider if there are any environmental impacts of note to manage or mitigate. See DoF's minor expenditure pro forma for an example of how this might be addressed.

Environmental and Climate Screening for Business Cases

Appraisers should consider the following screening questions, complete the screening template below them and include it in the business case.

Screening Question - Is the programme/ project likely to have any effects on:	
A change in the use or management of land?	Land is the basis for natural assets and the various 'broad habitats' that occupy land: woodland, moorland, enclosed farmland, urban, semi-natural grassland, coastal margins. Any programme or project that potentially affects management, development, use or appearance of the land, including through changing incentives such as refurbishment or retrofitting, will be in scope.
GHG Emissions and Climate Change Mitigation	This relates to the impact on (and mitigation of) GHG emissions such as carbon dioxide, methane, nitrous oxide and certain synthetic chemicals. Climate change mitigation is achieved by limiting or preventing greenhouse gas emissions and by enhancing activities that remove these gases from the atmosphere.
Climate Change Adaptation	This relates to all climate change adaptation activities, where an adjustment is made to deal with the effects of climate change. These adjustments can be to address current effects or expected effects. Adaptation aims to moderate or avoid harm.
Air Quality	This primarily relates to potential effects, positive or negative, on air quality or its composition. It also includes effects on levels of noise or tranquillity.
Any type of inland, coastal, or marine water body and water quality?	The water cycle cuts across natural assets and includes non-tidal rivers, lakes, ponds, wetlands, floodplains as well as coastal estuaries and the marine environment. It also includes groundwater where water is stored beneath or within soil and rocks. Water quality can be affected by changes in point source pollution from specific industrial locations, or changes in diffuse pollution from a variety of sources such as transport routes, agriculture, or housing.

Screening Question - Is the programme/ project likely to have any effects on:	
Wildlife, wild vegetation and/or soil quality	Wildlife is an indicator of biodiversity, as too is wild vegetation. Biodiversity is core to natural capital and can also be a final cultural service in its own right. Wildlife can be affected not only by direct changes to protected sites (for example, because of building development) but also by disrupting or creating connections between sites caused by changes in transport systems or tourist activities.
The supply of raw materials from natural sources	A programme or project may not affect land or natural assets directly, but it may have strong indirect effects through significant changes to a certain type of raw material which comes directly from a natural source, particularly non-renewable sources. This may have implications both for the sustainable supply of that material or for the wider environment from which it is extracted.
Green Jobs	This relates to employment in an activity that contributes to protecting or restoring the environment, including those that mitigate or adapt to climate change.
Opportunities for outdoor recreation?	Nature-based outdoor recreation is a major source of non-market value provided by the environment. This includes very high values provided by green spaces in and close to urban areas, for example: urban and country parks, local woodlands, riverside paths. Changes in the quantity, quality or access of such sites can have significant welfare effects.

ENVIRONMENTAL AND CLIMATE SCREENING FORM						
Environmental and Climate Consideration	**PART 1** **What is the likely level of impact expected? (None/Minor or Notable)**	**PART 2:** **If a notable impact is expected, is this likely to be Positive or Negative?**	**If the impact is notable, indicate how this will be appraised in the business case in the relevant boxes below.**			
			Monetisable	**Quantifiable**	**Qualitative**	**Risk**
A change in land use or management						
GHG Emissions and Climate Change Mitigation						
Climate Change Adaptation						
Air Quality						
Water body and water quality						
Wildlife, wild vegetation and/or soil quality						
The supply of raw materials						
Green Jobs						
Outdoor recreation						
Relevant section of the Economic Case			**Monetary Appraisal**	**Non-monetary analysis**		**Risk Appraisal**

Explanatory Notes

- The appraiser must broadly assess the level of impact expected at this stage. To help with this, it may be useful to consider the scale of the programme or project in terms of both expenditure and physical footprint.
- This screening stage should help to provide a high-level indication of the potential level of the impact. Appraisers may consider it necessary to seek specialist advice when completing the screening exercise for larger scale/higher risk proposals when there is uncertainty around potential impacts. Early consultation with specialists is encouraged, but it is also important to recognise that the screening exercise is an initial high-level indication of potential impacts and use of resources to complete this should be minimal, with time and resources better applied to the actual appraisal of impacts itself. Screening can then be revisited after the economic appraisal has been completed to make sure all impacts have been identified and are reasonably reflected in the form.
- For larger scale procurement programmes and projects that follow a Strategic Outline (SOC)- Outline Business Case (OBC)- Full Business Case (FBC) approach, initial screening should be undertaken at SOC stage. This should be developed further at OBC stage, when fuller details of the options are known. Screening should be completed by OBC stage, so it is not generally relevant at FBC stage. However, if there are any significant changes after OBC completion, these should be reported in the FBC.
- If there is no/minor impact expected, then appraisers should explain why this is the case below the form e.g. not applicable, small project, low-level expenditure and/or minor footprint. When no/minor impact has been selected for each of the individual considerations, then there is no need to complete part 2 of the screening exercise (i.e. this only needs to be completed when a notable impact is expected for one or more of the considerations).
- Put simply, a notable impact is one which is not considered negligible or minor. Notable means it is relevant to the decision-making process, and it will be addressed within the appraisal. If in doubt, screen in and appraise the impact.

- In many cases the level of impact is likely to be proportionate to the level of spend and/or footprint; however, where impacts are considered disproportionately negative, even for relatively low-level expenditure, then this should be considered a potential notable impact.
- Identifying impacts and deciding whether to appraise is not a new concept – economic appraisal guidance has always required the impacts (economic, social and environmental) of a proposal to be identified and appraised with proportionate effort. Whilst this guidance focusses on the environment and climate, appraisers should also continue to pay attention to social and economic impacts, such as equality, health, social inclusion and rural etc. when undertaking business cases. The resources and effort employed should be related to costs, benefits and risks involved to society and to the public sector resulting from the proposals under consideration.

Screening-in/out specific types of proposals:

- The use of land is likely to be an aspect of many programmes and projects and appraisers may consider it more worthwhile to screen in if a programme or project has negative land-use impacts, rather than like-for-like or positive impacts, based on proportionate effort.
- Where there is likely to be an impact on raw materials, appraisers should consider objectives in the circular economy strategy and develop proposals accordingly e.g. potential to use recyclable materials.
- Like-for-like IT Equipment might be screened out, with more modern versions being more energy efficient. However, in some cases IT proposals can have a notable impact e.g. data centres. Business cases justifying the purchase of new IT equipment should consider refurbishment where possible, and how redundant equipment is disposed of responsibly.
- In terms of green jobs, most business cases for capital and resource projects do not appraise jobs created e.g. up-front construction employment. This will likely remain the case (screen-out), unless it can be demonstrated that green jobs would be created that have higher levels of productivity than would

otherwise be the case. Where screening-in might apply would be proposals specifically targeting employment, such as those providing financial assistance to the voluntary, private and community sectors, where there will be greater opportunity to target specific growth areas such as green jobs.

- Other projects that are likely to be screened out include those involving, for example, use of consultants/professional services; employment or redeployment of staff; some (but not necessarily all) revenue projects.
- If an objective of a programme or project is to target a change in the environment and climate then obviously this has the potential to have a notable impact and would be in scope. Projects involving new infrastructure, large buildings, change of land use and public transport are likely to have a notable impact and would, therefore, be considered in scope.

3.4 Determining Spending Objectives

Setting robust spending or investment objectives, which focus on the key outcomes and benefits that will help achieve wider Government commitments/ strategic aims, is essential in terms of making a coherent case for change. The setting of clear, concise, and meaningful SMART spending objectives is an iterative process and will depend upon the nature and focus of the proposal.

If a programme or project is considered to have the potential to notably impact the environment and climate, as identified in the initial screening process, then appraisers should consider adding a related spending objective to ensure this is factored into options development. Annex B includes potential examples.

As objectives contribute to the development and shortlisting of options, it is important to be realistic and ensure these are not defined too narrowly as to be detrimental to appraisal. However, it is also essential that environmental and climate objectives are not dismissed because of perceived cost or additional effort to appraise. For example, a low emissions solution may have high up-front capital costs and, naturally, affordability is a key concern of any business case; however, the benefits over the lifetime[4] of an appraisal may result in that solution

[4] See Table 4.2 below and section 2.4 of HMT's Green Book for more information on suitable appraisal time periods.

being better VfM than traditional solutions. At the very least appraisers should provide Accounting Officers with complete evidence to make an informed decision, including the implications of achieving environmental and climate objectives or not.

3.5 Constraints

Appraisers should consider any constraints specific to the environment and climate, for example including (but not limited to):

- regulations which impact modern construction methods.
- lack of specialist knowledge or expertise.
- financial constraints.
- legal constraints.
- procurement constraints; and
- planning constraints.

3.6 Dependencies

Project teams should consider if their project has environmental and climate interdependencies with other programmes or projects. Using and sharing existing data is important in this and useful sources of information include local development plans, transportation plans, community plans etc. For example:

- a localised solution to flooding may be dependent on the success of a programme or project elsewhere in a river basin; or
- providing a park for public use may be dependent on access roads being built.

4 The Economic Case

The purpose of the Economic Case is to identify and appraise the options for the delivery of the programme or project and to recommend the option that is most likely to offer best VfM to society, incorporating wider social and environmental and climate impacts into economic valuations.

Environmental and climate change impacts must be given appropriate regard in the appraisal of options, although the detail and content of their assessment may vary by the type, nature and scale of the programme or project. Appraisers must bear in mind environmental and climate policy/strategy and legal requirements in deciding how much effort/resource to put into analysis - the screening exercise in the Strategic Case (outlined in the previous section) should aid this consideration. If the environmental and climate impact in the Strategic Case has been screened out as not being material, then there is likely to be no merit in considering it further in the Economic Case.

The principle of proportionate effort should be applied so that any programme or project with a notable environmental and climate impact is likely to require more detailed analysis than a programme or project with a minor impact.

For larger scale programmes or projects, if unsure about the approach to the economic appraisal of options after completing the screening exercise in the Strategic Case, consult your organisation's Economists for advice.

DEFRA Enabling a Natural Capital Approach (ENCA) has provided case studies for reference which may be useful when assessing environmental and climate impacts, and these can be found on the ENCA website[5].

4.1 Agree Critical Success Factors (CSFs)

Page 27 of HMT's guide to a project business case outlines the five basic CSFs that should inform the initial assessment of options in all business cases.

If the aim of a programme or project is to directly target changes in the environment and climate then an additional CSF should be developed to reflect

[5] https://www.data.gov.uk/dataset/3930b9ca-26c3-489f-900f-6b9eec2602c6/enabling-a-natural-capital-approach

this e.g. restoration of an area of land to protect biodiversity, increase energy efficiency and/or reduce level of emissions of public sector assets.

4.2 Determine the Long List of Options

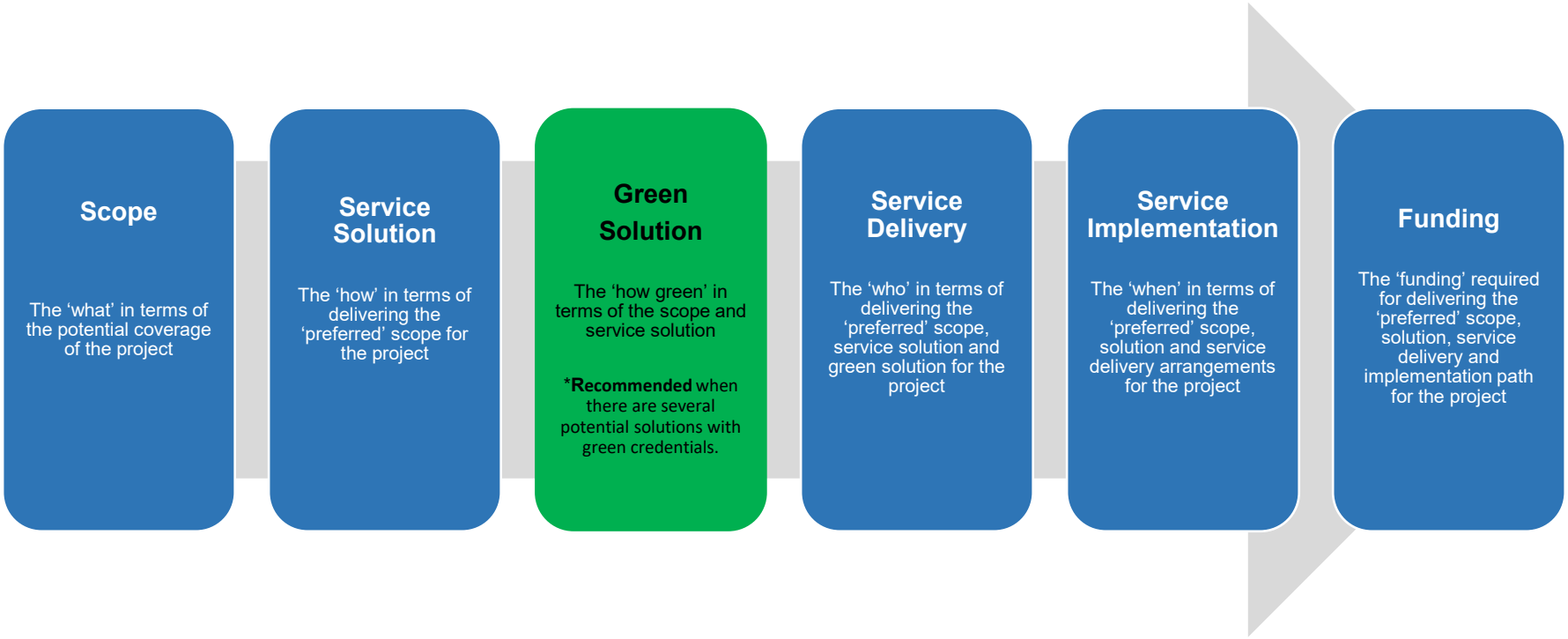
At this stage of the Economic Case, HM Treasury recommends holding a workshop with key stakeholders, including those with specialist knowledge to inform the business case. For those proposals expected to have a notable impact on the environment and climate, appraisers should consider seeking specialist support when developing options. This could be a construction expert with knowledge of likely emissions of a new build, or an expert on flood alleviation, or a member of the Ministerial Advisory Group (MAG) for Architecture and the Built Environment, or a university research team, for example.

Pages 5-6 of DoF's Technical Guidance for the Economic Case provides general guidance on how to use the Options Framework recommended by Treasury to identify a wide range of realistic and possible options. An options framework template, which includes the Green Solution filter discussed below, can be found on the Better Business Cases NI Website.

As a minimum requirement, if a programme or project is expected to have a notable impact on the climate and environment, then appraisers **must** consider how to avoid or mitigate negative impacts and/or enhance positive impacts when developing each of the five standard option dimensions. This is explained in Annex C, where each option choice is considered in sequence (as outlined in business case guidance).

In situations where there are several potential solutions, ranging from standard to those with the biggest green credentials, it is recommended that an additional layer of consideration is added to the Options Framework, as illustrated below.

Figure 4.1: Options Framework Dimensions



The purpose of this is to enable appraisers to consider a broad range of solutions that could be more eco-friendly than those traditionally appraised.

Table 4.1 provides some examples on what this could include (note that this list is not definitive/exhaustive).

Table 4.1: Examples of the Green Solution Dimension and potential actions for carbon offsetting

Type of Programme or project	Nature of the notable Impact	Potential Option Range Examples	
		Example of Service Solution	Example of additional Green Solution
Standard Building	A change in the use or management of land	Refurbish-Retrofit- New Build (In the case of capital build programme or project, retrofitting existing buildings should always be considered before any new build option is undertaken).	Building standards e.g. BREEAM targets/ PAS2080/RICS accreditation/LETI etc.[6]
Transport Project	GHG Emissions and Climate Change Mitigation	Size/type of vehicle	Hybrid vs Electric vs Hydrogen
Rivers/ Waterway Project	Any type of inland, coastal, or marine water body and water quality	Solutions to improve water quality	Scale of solutions to meet varying levels of water quality
Roads Project	Wildlife, wild vegetation and/or soil quality	Options around how the road is built	Levels of environmental mitigation
IT/ Equipment Replacement	The supply of raw materials from natural sources.	Options around the types of technology used	Restore vs lease used vs buy new
Conservation Designation of Land e.g. Areas of Natural Beauty	Opportunities for outdoor recreation	Options around the type of designation (e.g. National Park vs AONB).	Varying levels of zoning or land use
Various	GHG Emissions	Options re the solution to meet the need/case for change	Standard project, 'Nearly Zero' or 'Net Zero'.

[6] These are just a few examples of building standards. The list is not exhaustive and if there is uncertainty over which building standard to select, we advise checking this with CPD or their equivalent.

In addition to the above, appraisers should consider the use of nature-based solutions.[7] These solutions deliver for both nature and emission reduction. For example, peatland restoration, hedge and tree planting and composting all help to create thriving habitats which reduce emissions but also provide a landscape which is more resilient to the impacts of climate change.

Specific to environment and climate change, it is important to consider the impact on whole life carbon costs whenever possible and proportionate when developing options. For example, for buildings this could include options to reduce operational carbon emissions from day-to-day energy use and embodied carbon emissions such as material sourcing, fabrication of components, transport, construction, maintenance, repair and replacement, demolition, dismantling and disposal. Designing options with this in mind should help to reduce any negative impacts over the entire asset lifecycle. It is accepted that this can be difficult and is likely to require specialist input, therefore it may only be appropriate for very large programmes and projects until a tried and tested methodology becomes available and is user-friendly for non-specialists. If it is the case that this has not been considered, due to a lack of expertise, then appraisers should be transparent about this in the business case.

4.3 Shortlisted Options

The business case should normally identify a minimum of four shortlisted options for further appraisal. Any environmental and climate impacts associated with these options should be clear and, where possible and proportionate, costed. Part 2 of the Screening Exercise completed in the Strategic Case, should help to keep appraisers focused and enable better informed VfM decisions for the benefit of society. Shortlisted options should include the following:

Business As Usual (benchmark/baseline option). For those programmes and projects likely to have a notable environmental and climate impact, appraisers should consider if the environmental and climate aspect of the business-as-usual option is likely to naturally change over time, in either a negative or positive manner. In terms of measuring the environmental and climate impact of this

[7] It is a legal requirement of Climate Change Act (Northern Ireland) 2022, that, where practicable, the policies and proposals within the Climate Action Plan (CAP) should support and use nature-based projects, whether alone or as part of other types of action.

option, there is no standardised methodology currently, so this must be done on a case-by-case basis. Historical trends and statistically supported projections are the most used.

Do minimum (a realistic way forward that also acts as a further benchmark for VfM). Depending on the programme or project, this option may not have a positive or neutral environmental and climate impact; however, it could have the most detrimental impact to the environment and climate (e.g., continuing with a fleet which uses fossil fuels).

Recommended (the preferred way forward at this stage). The extent of the environmental and climate impact under this option must be clear and, where both possible and proportionate, costed. The following sections provide further advice on this.

One or more other possible options (based on realistic 'more ambitious' and 'less ambitious' choices that were not discounted at the long-list stage). Where there is the potential to be more ambitious in terms of avoiding, mitigating or promoting environmental and climate impacts, appraisers may also consider shortlisting a specific 'Green Option'. The aim of this is to provide decision-makers with the information on additional costs, benefits, and risks to implement a greener solution.

4.4 Principles of Monetary Cost and Benefit Measurement

Section 3 of DoF's Technical Guidance for the Economic Case provides guidance on the general principles of monetary cost and benefit measurement which has not been fully repeated here. However, Table 4.2 below outlines those principles which are particularly important for programmes and projects expected to have a notable impact on the environment and climate and users of this guidance should familiarise themselves with these.

Table 4.2: Important appraisal principles for programmes and projects with a notable environmental and climate impact

Principle	Relevance to environmental and climate impacts
Social Cost Benefit Analysis (CBA)	Social CEA is a variant of Social CBA which compares the social costs of alternative ways of producing the

Principle	Relevance to environmental and climate impacts
and Social Cost-Effectiveness Analysis (CEA)	same or similar outputs. This approach is useful when there is an inability to monetise benefits and is likely to be more appropriate for decisions linked to policy objectives, where the desired outcome is known and there is a requirement to conclude on the most cost-effective course of action e.g., a specific reduction in emissions or the repurposing, re-use and redevelopment of certain materials etc. The key difference being it is not necessary to monetise/quantify all benefits, as required in a CBA.
Appraisal Time Period	It is important to ensure that all options are appraised over the same time-period to ensure a like-for-like comparison of whole life costs. Where long-term notable environmental and climate effects are expected to occur, the appraisal may involve longer timescales. Generally, the maximum life span of an intervention is assumed to be up to 60 years. This may be extended where there is evidence that a longer period is required for the full effects of an intervention to materialise. However, the high level of uncertainty beyond 30 years should be recognised, and discounting may mean the influence of impacts that are far into the future on the choice of preferred option often become negligible. It will also be important to consider replacement, maintenance and operational needs over the appraisal lifetime as well as the impact of degradation over time. For example, often cheaper, less durable materials will require replacement throughout a building's life cycle compared to more robust materials or energy efficiency interventions may have less of an impact as time goes on.
Discount Rate	Where programmes and projects have notable intergenerational impacts, a lower discount rate can apply. The effects of environmental damage and climate change have substantial and often irreversible impacts on future generations. In this case, the Green Book advises that a lower discount rate (of 3%, or 1% for health impacts) be used to conduct a sensitivity analysis. The resulting difference between the two Net Present Social Value/Costs (NPSV/Cs) provides an estimate of the wealth transfer between generations.
Double Counting	When measuring the costs and benefits of any programme or project, it is important to ensure that

Principle	Relevance to environmental and climate impacts
	double counting is avoided. This is especially true for programmes and projects with an environmental aspect, where benefits could easily already have been recorded as cost savings e.g. reduction in energy cost. Appraisers should also ensure not to double count environmental and climate impacts across the options appraisal when selecting a preferred option. Impacts should be appraised in the monetary, qualitative or risk assessments; there is no need to appraise in multiple assessments thereby further influencing the choice of preferred option. However, negative impacts need to be mitigated or managed, and this should be documented as part of the risk management strategy.

4.5 Estimating Monetary Costs and Benefits for Economic Appraisal

For those programmes and projects that are expected to have a notable environmental and climate impact that is not easily costed, the HM Treasury Green Book recommends that appraisers consider use of the tools set out in Annex D of this guidance[8]. Depending on the programme or project, these tools could be used as a way of measuring costs (if there is likely to be a negative effect on the environment and climate) or benefits (if there is likely to be a positive effect on the environment and climate).

The HM Treasury Green Book provides guidance on the appraisal of public value. This includes many values for costs and benefits that occur frequently in public spending proposals, such as the value of energy savings and, related to that, the value of reduced GHG emissions. A worked example of this and an easy-to-use template, which explains some of the common requirements for using this tool, can be found on the Better Business Cases NI website. DoF will consider publishing further examples, covering various aspects of this guidance, in due course.

[8] Before using these sources, refer to Annex 1 of the Green Book for further guidance. If appraisers decide to use more than one of these tools to measure the environmental and climate impact for the same programme or project, then they should take care to avoid double counting of costs/benefits.

4.6 Non-Monetary Impact Appraisal

Every reasonable attempt should be made to quantify costs and benefits, even if they cannot be expressed in monetary equivalent terms. Where quantification is particularly challenging, because the evidence base is spurious or the research costs would be disproportionate to the expenditure, it may be acceptable to express a cost or benefit in qualitative terms; but even then, it should be possible to provide evidence on the likely order of the magnitude of the cost/benefit across options and indicate when it is likely to accrue.

The quantifiable (non-monetised) and qualitative costs/benefits must be recorded in the Benefits Register with their sources and assumptions.

For those programmes and projects expected to result in a notable environmental and climate impact, it is important to recognise that the valuation of such impacts in monetary terms may only ever be partial (as is also the case for economic and social value impacts), i.e. those that relate to future generations are difficult, if not impossible, to value. However, these non-monetary impacts are often important and should be factored into the comparison of options where applicable. For example, public health benefits associated with decarbonisation were reported on in 2020 by the UK Committee on Climate Change and include reduced outdoor air pollution, improved housing conditions, healthier diets, and active travel.[9] DAERA's Air Pollution in NI Report 2023[10], concludes that air pollutants can worsen the symptoms of people who already have lung problems or asthma.

The Climate Change Committee has indicated that the costs of delaying action will increase costs in the longer term and that there will be net benefits of reaching net zero once the avoided climate change impacts and the co-benefits of net zero policies are fully accounted for. These macro-level considerations would be difficult to appraise at the programme and project level but may form part of the narrative when making decisions on green solutions/technology.

[9] Sustainable-Health-Equity-Achieving-a-Net-Zero-UK-report-FINAL.pdf
[10] Air Pollution in Northern Ireland 2023 report (Screen version).pdf

4.7 Undertake Risk Appraisal

Appraising risk is important because it allows appraisers to identify potential ranges and impacts of varying outcomes/scenarios and to make a judgement on what level of risk is acceptable for the associated costs and benefits of the options.

This is particularly important for programmes and projects with a notable environmental and climate impact, where the cost of implementing a solution could be high and the uncertainty around this great. However, by not undertaking the intervention, there could be a greater risk in terms of legal challenge or the health and wellbeing of others. If a programme or project is likely to have a notable environmental and climate impact, it will be important for appraisers to adapt a tailored risk assessment that reflects the importance of protecting the environment and climate.

Unknown Risks- Optimism Bias

If using the Mott McDonald calculator to adjust for Optimism Bias, the unknown environmental and climate risk of a programme or project can be considered as part of it. For example, the calculator includes unknowns such as those highlighted in the table below. Appraisers should consider how much each of these factors can be mitigated when applying optimism bias.

Table 4.3: OB and Unknown Risks

Environmental Unknowns	Description
Public relations	➢ Is the programme or project likely to face any opposition from the local community (with regards to traffic and construction noise and other environmental and climate impact)? ➢ Is there likely to be any Environmental and climate protests because of the programme or project?
Site Characteristics	➢ Is the site likely to have any environmental and climate characteristics such as the presence of protected species, underground streams, archaeological findings etc.?

Permits / Consents / Approval	➢ For capital builds, is there likely to be any initiation difficulties in obtaining planning permission, possibly resulting in appeals?
Other	➢ Are there any other unknown environmental and climate risks that could impact on the delivery of the programme or project? For example, risk of legal challenge or climate change/extreme weather events?

Whilst the above factors are directly related to the environment and climate, it is important to consider the environment and climate across all mitigation factors.

For example, for any programme or project expected to have a notable impact on the environment and climate, consideration of the unknowns under legislation and external influences is likely to be just as important as the factors above. Appraisers should always explain the rationale behind each mitigation factor.

Treatment of Known Risks

Any known risks must also be identified and, where possible, their costs estimated and built into the business case, along with an indication of how risks will be mitigated.

The table below includes a selection of common environmental and climate risks that should be considered for all shortlisted options where there is expected to be a notable environmental and climate impact. It is important to remember that this list is not exhaustive and the need to expand on this should be reviewed on a case-by-case basis.

For more information on generic types of risks that are likely to be encountered, please see page 54 of the Guide to developing the Project Business Case.

Table 4.4: Examples of Environmental Risks

Environmental and Climate Risk	Description
Bigger Picture	Monetary environmental and climate valuation will often be partial, particularly where multiple effects are expected. This can become an issue where ecosystem services would be lost from an intervention (e.g., through infrastructure) and valuation of those losses are exceeded by the non-environmental and climate benefits of the intervention. This could lead to perverse outcomes if there would be greater environmental and climate loss than that which had been monetised. Appraisers should make sure that any known risks like this are clearly stated and fully considered for all short-listed options.
Lack of information	Monetary valuation assumes we know what is to be valued. However, in the case of complex ecosystems, ecological processes and their interdependencies are not fully understood and outcomes from loss or enhancement are uncertain. In these cases, valuation of individual ecosystem services will be inadequate. Reasoned or evidence-based arguments for action or inaction may be more appropriate.
Economic/ Local Impact	Presentation and positioning of results is also critical. Although monetised non-market values signify real effects on wellbeing, they may not imply actual cash savings or benefits, nor increases in economic activity. At a local level, there may be more interest in accounting measures of Gross Value Added and employment than in economic welfare. Where this may be the case, it is important to be transparent.
Irreversibility	Given uncertainty over the future environment and climate, decisions that would be difficult or expensive to revise in future should receive additional scrutiny and the risks of this should be considered. However, it is also important to consider the potential costs of inaction as delaying actions could increase costs in the longer term.
Stakeholder Buy in	Programmes and projects which have an environmental and climate impact are likely to involve several stakeholders. Appraisers should know who the relevant stakeholders are and the risk of not obtaining buy in should be made clear in the business case.

Environmental and Climate Risk	Description
Legislation/ Regulations	Environmental and climate legislation/ regulations are often subject to change. Appraisers should document if there is likely to be any risk that the programme or project will not meet requirements.

4.8 Undertake sensitivity analysis

Pages 57-59 of Better Business Case Guidance for Projects outline the importance of undertaking sensitivity analysis to test the vulnerability of options. This includes information on switching values and scenario analysis.

Virtually all non-market valuation evidence is subject to uncertainty. In many cases, this is because the scientific effects are uncertain or based on modelling. Uncertainties and methodological limitations should be presented transparently. Making use of appropriate uncertainty ranges and providing appropriate caveats and undertaking sensitivity analysis and quality assurance is therefore essential.

Sensitivity analysis should be undertaken in two stages: switching values and scenario analysis based on the best and worst possible outcomes.

Scenario analysis is particularly important for environmental and climate costs and benefits which often tend to represent a high degree of uncertainty. However, it is likely to only be necessary for those programmes and projects that have notable environmental and climate costs or benefits and where different realistic scenarios could have major implications in terms of outcomes. Recognising this, the Department for Energy, Security & Net Zero's (DESNZ's) Carbon value assumptions for the traded and non-traded sectors referred to earlier in this guidance are available for three different scenarios (low, central, and high)[11].

DEFRA and Ministry of Housing, Communities and Local Government (MHCLG) also recommend carrying out sensitivity analysis based on ranges when measuring impacts on natural capital and land values.

[11] For further guidance, background, rationale and relevant data tables see Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal - GOV.UK.

Where ranges are not available from the one source, it may be appropriate to conduct this analysis using estimates from other studies if there is a high degree of uncertainty over the robustness of a particular valuation. This advice can be applied to all programmes and projects that are expected to have a notable environmental and climate impact. It will not always be necessary to carry out this analysis and appraisers should use their judgement when deciding how much detail is needed.

4.9 Select a Preferred Option

The preferred option should be a balanced judgement based on the Net Present Social Value/Cost (NPSV/C)[12], the estimated risks associated with the options and the non-monetary impacts.

Ensuring impacts on the environment and climate form an integral part of the Economic Case will give Ministers and Accounting Officers more evidence upon which they can take their programme or project to consultation with stakeholders, where appropriate, to inform their decisions.

[12] and the Benefit Cost Ratio (BCR) where applicable.

5 The Commercial Case

The purpose of the commercial dimension of the business case is to demonstrate that the preferred option will result in a viable procurement and a well-structured deal between the public sector and its service providers. It is extremely important that environmental and climate considerations are given due attention during the development of the specification through to the end of contract or disposal of asset. CPDs Construction Toolkit provides a good starting point for this.

PPN 01/21 – Social Value in Procurement[13] also provides advice on the Executive's policy which mandates that tenders must include a minimum of 10% of the total award criteria to social value[14]. Amongst other aspects, this includes delivering climate action benefits in the performance of the contract including working towards net zero greenhouse gas emissions and/or contributing to climate adaptation measures.

For construction projects the project should typically meet the relevant standards (e.g. BREEAM (Building Research Establishment Environmental Assessment Method), adhere to Building Regulations, and use the RIBA Plan of Work to design and build, planning requirements, etc.). It is recognised that these standards/requirements are likely to evolve over time. The Ministerial Advisory Group (MAG) has also indicated that, Net zero building standard/ LETI Guidance, although UK based and not specific to NI, should be considered as best practice.

Therefore, the SRO of a project should consult with their procurement experts, whether that is CPD or a Centre of Procurement Expertise (CoPE), as early as possible to ensure environmental and climate considerations around design, construction and procurement are fully reflected when drafting the business case.

[13] Effective from 24th February 2025

[14] For more information on social value, see the Supplementary Guidance on Incorporating Social Value into Business Cases (Supplementary Guidance- Social Value Version 2 (finance-ni.gov.uk)).

6 The Financial Case

The aim of the financial dimension of the business case is to demonstrate the affordability and funding of the preferred option, including the support of stakeholders and customers, as required.

The costs given in the Financial Case are financial costs rather than economic costs (as used in the Economic Case to produce Net Present Social Values/Costs). This is an important distinction because it may be the case that many if not all the environmental and climate costs or benefits identified will have a public value but will not necessarily have a direct financial cost or benefit. Therefore, whilst they could influence the mix of funding depending on the preferred option (for example higher capital costs but lower revenue costs for green tech), they should not be included when considering the affordability and funding of the preferred option unless they have a financial impact.

In terms of affordability, there is the potential that a preferred option which has greater environmental and climate benefits could cost more to implement – green energy for example has often more expensive up-front capital costs. However, these types of costs are expected to continue to fall relative to traditional technology and will generally be more efficient in terms of operating or recurrent costs.

Finally, given that transitioning to a low carbon economy will require significant financial investment, it is important that public money is used in a targeted way to unlock private investment and that project sponsors consider if any environmental and climate funding is available at a regional or national level which could be used to help finance the project.

The SRO of a project should consult with their Finance Business Partner for advice on how to ensure that the financial costs and benefits associated with the environment and climate are fully reflected in the business case.

7 The Management Case

The Management Case puts in place the arrangements for the successful delivery, monitoring and evaluation of the programme or project.

If the programme or project has a notable environmental and climate impact, it will be important to outline how this impact will be managed and measured throughout its course. An appropriate methodology for managing and minimising environmental and climate impacts resulting from it should be applied from the earliest possible stage.

7.1 Management Approaches

Generally, the implementation strategy of most organisations for the successful delivery of schemes is to embrace the principles of programme and project management and to adopt a methodology for both, based on proven standards and quality management.

Managing Successful Programmes (MSP) is the Cabinet Office's recommended methodology for the delivery of programmes whilst PRojects IN Controlled Environments (PRINCE2) is recommended for projects.

Where programmes and projects are likely to have a notable environmental and climate impact, appraisers should consider if there is a need to adopt a more environmental and climate specific management strategy.

Specifically relating to emissions, the following two methodologies are example approaches for managing whole life carbon for buildings and infrastructure projects. They are mutually compatible and stem from the need to minimise whole life carbon in the built environment to meet national climate change targets.

Emissions Related Methodologies

1. Infrastructure: PAS 2080

For infrastructure projects (water, energy, transport, communications, and waste), PAS 2080: Carbon Management in Infrastructure should be applied. This stems from HM Treasury's Infrastructure Carbon review in 2013, which identified that most carbon emissions in the UK (53% in 2013) are associated with the construction, operation, maintenance, and use of infrastructure.

PAS 2080 emphasises the importance of all parties involved across the value chain working collaboratively towards a common carbon reduction goal and the achievement of the following outcomes:

- reduced carbon, reduced cost infrastructure.
- more collaborative ways of working that promote innovation, delivering benefit to society and communities served by economic infrastructure.
- effective carbon management in infrastructure that makes an important contribution to tackling climate change and leaves a positive legacy for future generations; and
- the delivery of more sustainable solutions, at lower cost, that will enhance the reputation of the infrastructure industry, generating pride for those who work in it and attracting new people and skills.

In terms of transport, the Transport Appraisal Guidance was updated in May 2024[15] to incorporate PAS 2080.

2. Buildings: RICS Professional Statement

For building projects, The Royal Institution of Chartered Surveyors (RICS) Whole Life Carbon Professional Statement should be applied. This document addresses the emerging understanding of the importance of embodied carbon in building projects and is compatible with other approaches to building sustainability, e.g. BREEAM 7 and the forthcoming Net Zero Public Buildings Standard.

[15] See TAG Unit A3 Environmental Impact Appraisal dated May 2024 section 4.2.10

Note that sector/departmental-specific standards may apply, based on strategies/policy, and it is important that these are considered when appraising and managing programmes and projects.

7.2 Use of Specialist advisers

The use of specialist advisers is encouraged where the necessary capabilities and competencies are in short supply for large, significant, complex, and novel programme or project. Those with notable environmental and climate impacts are likely to be technical/scientific in nature, so it will be important to ensure that relevant specialist advice is obtained when required.

The business case should indicate how and when this advice will be used along with expected costs. Specialist advisers should be used where an independent and impartial role is required to achieve the best results. This includes facilitating workshops. Care must be taken to ensure that ownership of the business case and responsibility for its development is retained by the Programme and project Board.

For more information on what's required, see DoF's Supplementary Guidance on the Use of Professional Services, Including External Consultants.

7.3 Benefits Realisation Plans

It is essential to put in place the management arrangements required to ensure the project delivers its anticipated benefits. This should include arrangements for the identification of potential benefits, their planning, modelling, and tracking. It should also assign responsibility for the actual realisation of individual benefits throughout the key phases of the investment. All benefits should be updated and reviewed continuously before the final evaluation is complete.

This will be particularly important for environmental and climate benefits which have been calculated using non-market valuation techniques and are often the subject of uncertainty. For these types of benefits, quantification of a baseline will be paramount. Care will also be needed to consider other external factors (i.e. how much of this benefit would have occurred without the intervention)? Continuous planning, monitoring, and tracking of these benefits will help to

ensure better environmental and climate outcomes for all programmes and projects.

Note the Climate Change Act (Northern Ireland) 2022, is likely to introduce reporting requirements. Whilst this is unlikely to be at a programme or project level, it is important for programme/ project managers of major expenditure proposals to engage with relevant sector leads so that cumulative impact on sector level emissions (and ultimately carbon benefit) can be taken into consideration.

7.4 Risk Management Plans

Risk management is a structured approach to identifying, assessing, and controlling risks that emerge during the programme or project lifecycle. Its purpose is to support better decision making through understanding the risks inherent in a programme or project and their likely impact. Risk management strategies for individual programmes or projects should be adopted in a way that is appropriate to their scale.

As mentioned previously, environmental and climate effects may be uncertain. Therefore, consideration needs to be given to identifying these uncertainties as risks that must be costed and managed, so that they can be minimised, mitigated or where possible avoided.

This should include consideration of:

- the critical factors of the programme or project that could have a major influence on the environment and climate, and likewise, critical factors of the changing environment and climate that could have a major influence on the programme or project (which may require further investigation).
- arrangements for monitoring these critical factors to manage risks and optimise outcomes.
- mitigating measures so that risks to the environment and climate can be minimised and benefits or opportunities maximised; and
- arrangements for risk ownership so that mitigation measures can be implemented in a timely manner.

The above information should be captured within a risk register which should be updated and reviewed continuously throughout the course of the investment.

7.5 Plan project assurance and Evaluation

It is important that business cases include the necessary arrangements for Assurance, Monitoring and Evaluation.

As per DAO (DoF) 05/23, all programmes and projects with a value of £5m or greater are required to engage with the Gateway Assurance process by completing a Risk Potential Assessment (RPA) form.

For programmes and projects with a notable environmental and climate impact, the environmental and climate risks, opportunities, costs, benefits, and uncertainties identified in the Economic Case should inform evaluation thinking.

The potential for significant environmental and climate effects, whether intended or not, should inform data collection and planning of process evaluation and impact evaluation. VfM evaluation based on actual changes can be useful although a full understanding of outcomes and impacts will also typically require other metrics and qualitative evidence.

Economists in your department/public sector organisation should be able to advise or signpost on specific Business Case queries.

It is recognised that there continues to be a lot of work ongoing in this area, and there may be a need to update the guidance further to reflect new changes and developments. Any suggestions on how to improve this guidance should be sent to DoF at the email address below.

economicappraisal@finance-ni.gov.uk

Annex A: Other Potentially Relevant Legislation, Policies and Strategies

Regional
Programme for Government 2024-2027
Northern Ireland Environment Strategy
Energy Management Strategy and Action Plan to 2030 (for Northern Ireland Central Government)
United Nations/ DAERA Sustainable Development Goals
Draft Northern Ireland Peatland Strategy 2021-2040 Consultation document
Draft Ammonia Strategy for Northern Ireland Consultation
Draft Investment Strategy for Northern Ireland (ISNI) 2050
National
Climate Change Act 2008
2030 Agenda for Sustainable Development (UK)

Annex B: Examples of Objectives

Type of Project	Potential Impact	Potential Spending Objective
Building construction	Embodied (emissions from materials and construction) and operational emissions, as well as transport emissions to and from the location.	At least X%/X tonnes reduction in emissions compared to current estate or a previous build by [date]. Or the building is to result in net zero emissions from [date].
Building construction	Biodiversity	To ensure the impact on habitats is minimised, and if possible, positive due to design of the building and its landscaping by [date].
Building Construction	Raw Materials	To reduce the use of raw materials from x to y. Or, to increase the use of secondary materials from x to y by [date].
Transport	Emissions	New vehicles to emit at least X less CO_2 and/ or other relevant emissions than current fleet by [date].
Infrastructure	Land	At least X% of the total area to include an element of green space by [date].
Energy	Emissions	To increase the energy efficiency rating of an existing building from X to Y by [date].
Agriculture	Water	To improve the quality of ground water from X to Y by [date].

Annex C: Options Framework

Option Choice	Points to Consider
Scope (Minimum Requirement)	What is the potential coverage of the programme or project? What is the likely environmental and climate impact due to this programme or project? Could it be altered to reduce any potential notable environmental and climate impact? (E.g. change in location, refurbishing rather than rebuilding, automation, or reducing/eliminating demand/waste).
Service Solution (Minimum Requirement)	How will the 'preferred' scope for the programme or project be delivered? What effect will the use of different technologies have on the environment and climate? Are there any recognised best practice methodologies that could be used to improve this effect? What innovations can the market deliver to reduce any notable negative environmental and climate impacts?
Green Solution (Recommended Additional Layer)	Where there are several potential solutions with green credentials, it is recommended that an additional green growth solution is added. For example, in the case of a capital build project with an expected notable impact, if the service solution dimension includes a range of options such as refurbishment, retrofitting, new build etc., then an additional layer may be to consider different BREEAM targets or other relevant methodologies.
Service Delivery (Minimum Requirement)	Who will deliver the 'preferred' scope and service solution for the programme or project? Potential options for service delivery are driven by available resources, competencies, and capabilities – both internal and external to the organisation. Is there any potential to improve the environmental and climate outcomes of a programme or project via the delivery partner taking account of recent/emerging developments in a fast-changing supplier landscape?
Service Implementation (Minimum Requirement)	When will the 'preferred' scope, works, solution, or service delivery arrangements for the programme or project be delivered?

Option Choice	Points to Consider
	Potential implementation options are driven by deadlines, milestones, dependencies (between outputs), economies of scale, benefit realisation and risk management. What options that safeguard/improve environmental and climate outcomes are realistically possible within this timeframe? Options for implementation include piloting, modular delivery, big bang, and phasing (tranches).
Funding (Minimum Requirement)	The 'funding' required for delivering the 'preferred' scope, works, solution, service delivery and implementation path for the programme or project. Potential funding options are driven by the availability and opportunity cost of public funding, VfM, and the characteristics of the programme or project. Achieving a successful transition to a low carbon economy, that meets NI's legal targets as set out in the 2022 Climate Change Act, will require significant financial investment by both public and private investors.[16] The Climate Change Committee has said there will need to be a "major nationwide investment programme, led by government but largely funded and delivered by the private sector and individuals". Public money will need to be used in a targeted way to unlock private investment to meet the costs. The investments will yield savings (e.g. reductions in day-to-day operational expenditure such as those associated with the extra efficiency of electric vehicles) which will be substantial, too. It will be important to create policy frameworks in all relevant sectors that encourage net-zero investment, in support of NI's environmental and climate statutory duties. Options that provide opportunities to mobilise and crowd-in private investment will need to be considered. Also, options that provide opportunities to attract external (to NI) funding sources (e.g. UK-wide low carbon related funds), should be explored where relevant.

[16] According to the independent Committee on Climate Change (CCC) UK low-carbon investment each year will have to increase from around £10 billion in 2020 to around £50 billion by 2030, to deliver its Net Zero targets.

Annex D: Useful Tools/ Sources

The Green Book recommends use of the following tools for measuring environmental and climate costs and benefits. Before using these sources, please refer to Annex 1 of the Green Book for further guidance.

Note if appraisers decide to use more than one of these tools to measure the environmental and climate impact for the same programme or project, then they should ensure that double counting of costs/benefits does not occur.

Environmental and Climate Impact	Useful Tools/ Sources
Natural Capital	ENCA services databook provides around 200 sources of selected biophysical and valuation evidence for: • ecosystem services such as food production, flood regulation and recreation • environmental and climate impacts such as air pollution and noise • tailored guidance and a simple explanation of each impact
	ENCA assets databook collates over 100 UK data sources, tools and studies for the 8 natural capital asset categories including, urban, enclosed farmland, mountain, moor and heathland, freshwaters, woodland, coastal margins, marine and semi-natural grassland.
	ENCA featured tools includes summaries of tools developed or supported by Defra and its agencies. These tools provide: • valuation evidence • biodiversity metrics • valuation of outdoor recreation • ecosystem services management
	ENCA case studies are real-world examples of how: • natural capital approaches are used at a range of spatial scales • economic valuation is used to inform decision making • natural capital accounting works at various spatial scales • projects attempt to create new streams of income from investment and maintenance of ecosystem services

Environmental and Climate Impact	Useful Tools/ Sources
Green House Gas Emissions	The Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal provide rules and a toolkit for valuing energy usage and greenhouse gas emissions. DESNZ provides carbon values to be used in policy appraisal and evaluation. These carbon values form part of the guidance outlined above.
Emissions from Built Environment	See RICS's guidance on Whole life carbon assessment for the built environment The Whole Life Cost of Energy (WLCoE) calculator can also be used to understand the full financial cost of the energy in buildings use. However, this should be used when proportionate to the expenditure and risk and is likely to require specialist input.
Climate Change	The Climate Change Risk Assessment (CCRA) provides a framework that quantifies interactions with climate risk. It enables a consideration of the role of climate in altering the scale and distribution of costs and benefits over the lifetime of the programme or project. Accounting for the effects of climate change Green Book supplementary guidance sets out the process for climate resilient appraisal and includes a climate resilient appraisal example as well as useful links for further information on climate change adaptation.
Nature based Carbon Reduction	Any change in land use, restoration or enhancement of ecosystems, has a measurable effect on the quantity of greenhouse gas (GHG) emissions. Tree planting for example will lead to increased sequestration, reducing GHGs emissions in the atmosphere. Degraded habitats such as upland peat emit carbon dioxide, and their restoration will reduce the level of emissions. Table 3 of the Greenbook shows carbon saving estimates for restoration of eroded peatland.
Air Quality/ Pollution	Defra's Air Quality Guidance provides advice for measuring the effects of air pollution within economic appraisals. Sustainable Health Equity: Achieving a Net-Zero UK reports on the public health benefits associated with decarbonisation. DAERA's Air Pollution in NI Report 2023 summarises air quality monitoring results for Northern Ireland in

Environmental and Climate Impact	Useful Tools/ Sources
	2023 and contains useful information on air quality policy and legislation as well as on sources of pollution.
Noise	Defra's Noise Pollution Guidance explains how impacts on noise should be incorporated into a cost benefit analysis.
Waste	Where a programme or project affects the flow of materials or waste it may be possible to access data on environmental and climate externalities from Life Cycle Assessment (LCA) studies.
Recreation	The Outdoor Recreation Valuation (ORVal) Tool allows users to explore existing recreational values of individual or multiple sites as well as the welfare effects of creating or altering sites. It is relevant for national and local appraisals where outdoor recreational opportunities are likely to be affected. The range of values is very large reflecting spatial context, size and land covers. Given these ranges, information on the characteristics of the recreational site affected will be needed and the ENCA Services Databook on Recreation provides richer guidance on which values can be applied in different contexts which should be consulted.
Physical Health benefits from nature	A change in outdoor recreational opportunities will affect the numbers of physically active visits. The ENCA Services Databook on Physical Health and Recreation provides advice on how to measure this impact.
Effects on Amenity Value	ONS publishes hedonic pricing studies to estimate the value of a wide range of environmental and climate costs and benefits reflected in local property prices.
Landscape	In terms of economic valuation, landscape can be seen as a bundled good providing a range of costs/benefits. The ENCA Services Databook on Landscape provides advice on how to measure this impact.
Land Values	Land value changes arising from a change in land use may be used to derive a social value for use in appraisal. The range of wider effects associated with a development includes the amenity cost or benefit associated with a development, potential health effects and any transportation effects arising from the development. Further details of potential external effects and appraisal values are given in the Department for Levelling Up, Housing and Communities (DLUHC).

Environmental and Climate Impact	Useful Tools/ Sources
Water Quality/ Resources	For significant interventions, the relevant local Water Resource Management Plan should be consulted, and Defra can advise at EnvironmentAnalysis@defra.gov.uk.
Flood Risk/Coastal Erosion	The online Flood and Coastal Erosion Risk Management Handbook and Data for Economic Appraisal 2017 can be used as a step by step guide to assessing the costs and benefits of flood and coastal erosion.
Soil Erosion	Soil erosion puts pressure on water bodies through increased sediment runoff, nitrate and phosphorous pollution. Other costs include loss of carbon from soils to the atmosphere, dredging, costs to remove eroded material from drinking water, rivers, and lakes. An indicative average per hectare cost of soil erosion is derived by dividing aggregate estimates of some of these externalities by the total estimate area under soil erosion. For further guidance and evidence, see the ENCA Services Databook section on Soil Health.
Impacts from Transport	TAG environmental impacts worksheets can be used to calculate the monetised impacts of a range of factors in transport appraisal schemes such as, noise, air quality, biodiversity, townscapes, and greenhouse gas emissions. DfI's Transport Emissions Model can be used to calculate the operating carbon from transport.
Other useful sources	The UK Environmental Accounts measure the contribution of the environment to the economy, impact of economic activity on the environment and responses to environmental issues. ONS Atmospheric Emissions: greenhouse gases by industry and gas dataset includes data on emissions of carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulphur hexafluoride, nitrogen trifluoride and total greenhouse gas emissions, by industry (SIC 2007 group – around 130 categories), UK from 1990. The SPACE Geo-Portal can be used for exploring and downloading Geographic Information Systems (GIS) data relating to environmental variables which influence health and healthy ageing in NI's environment.