

**NORTHERN PERIPHERY PROGRAMME
2007-2013**

**EUROPEAN TERRITORIAL CO-OPERATION
INTERREG IV**

**STRATEGIC ENVIRONMENTAL ASSESSMENT
DRAFT REPORT**

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CONTENTS

EXECUTIVE SUMMARY

1. INTRODUCTION	5
1.1 Objective of the Report	5
1.2 Key Facts	5
1.3 Structure of the Report	7
2. THE NORTHERN PERIPHERY PROGRAMME IN CONTEXT	8
2.1 Introduction	8
2.2 Interreg IIB Northern Periphery Programme 2000-2006	8
2.3 Interreg IV Northern Periphery Programme 2007-2013	9
2.4 Synergy with Environmental Strategies, Programmes and Policies	12
3. ENVIRONMENTAL BASELINE AND TRENDS	15
3.1 Introduction	15
3.2 Regional Environmental Distinctiveness	15
3.3 Natural Resources and Biodiversity	17
3.4 Energy	18
3.5 Waste	19
3.6 Transport	20
3.7 Tourism	21
4. STRATEGIC ENVIRONMENTAL ISSUES	23
4.1 Introduction	23
4.2 Climate Change	23
4.3 Tourism	24
4.4 Waste	25
4.5 Marine Pollution	25
5. ENVIRONMENTAL ASSESSMENT	26
5.1 Introduction	26
5.2 Alternatives	26
5.3 Appraisal of Programme Elements	27
5.4 Significant Effects	33
5.5 Mitigation	34
5.6 Indicators for Monitoring Environmental Effectiveness	36
6. NEXT STEPS	37

APPENDIX 1: EU Environmental Directives

APPENDIX 2: National Environmental Strategies and Policy Documents

List of Tables and Figures

Table 1 – Northern Periphery Programme Key Facts

Table 2 – NPP Priority 1: Promoting Innovation and Competitiveness in Remote and Peripheral Areas

Table 3 – NPP Priority 2: Sustainable Development of Natural and Community Resources

Table 4 – EU Sustainable Development Strategy – Priorities

Table 5 – EU Sixth Environmental Action Programme: Priorities 2002-2012

Table 6 – NPP Environmental Conformity and Potential Impact

Table 7 – Potential Environmental Indicators

Figure 1 – Map of Programme Area

List of Acronyms

EAP – Environmental Action Programme (EU)

EIA – Environmental Impact Assessment

EU – European Union

GDP – Gross Domestic Product

GHG – Greenhouse Gases

ICT – Information and Communications Technology

IPCC – Intergovernmental Panel on Climate Change

MWh – Megawatt hour

NUTS – Nomenclature of Units for Territorial Statistics

OECD – Organisation for Economic Co-operation and Development

R&D – Research and Development

SDS – Sustainable Development Strategy (EU)

SEA – Strategic Environmental Assessment

SME – Small and Medium-Sized Enterprise

SWOT – Strengths, Weaknesses, Opportunities and Threats

UN – United Nations

EXECUTIVE SUMMARY

The Interreg IV Northern Periphery Programme (NPP) for 2007-2013 aims to assist peripheral and remote communities on the northern margins of Europe to develop their economic, social and environmental potential. The eligible regions are located in Finland, Ireland, Northern Ireland, Sweden, Scotland, Greenland, Iceland, Norway and the Faeroe Islands.

The current Interreg IIIB Northern Periphery Programme, which concludes in 2006, has performed well in environmental evaluations. It corresponds to the core elements of the Gothenburg agenda, supporting projects on sustainable transportation and ecological waste treatment, and it has exceeded its target for projects focused on environmental improvement. However, baseline data have remained largely descriptive, due to difficulties in comparability, and the programme contains no estimates of environmental impact, and no environmental indicators are provided at programme level.

The new NPP has two thematic priorities: Supporting Innovation and Competitiveness in Remote and Peripheral Areas, with accessibility as a main theme; and Sustainable Development of Natural and Community Resources, encompassing environmental management, climate change and renewable energy. Through transnational co-operation, knowledge transfer and the exchange of experience, the programme seeks to secure balanced and sustainable development in the Northern Periphery.

Various environmental themes relevant for the programme are highlighted in the baseline data and trends, using data drawn from sources in the nine participating regions. Natural resources and biodiversity relates to the extent and wealth of protected areas, habitats, flora and fauna. Energy considers sectoral demand and consumption, as well as current provision by source, highlighting the contribution from renewables and the scope to expand its share. Waste provides information on generation and landfill capacity, emphasising the need for recycling and improved waste management. Transport relates to road traffic, associated emissions, and the policy objective of promoting greater use of public transport. Tourism is considered in its role as an important source of investment and employment, based principally on the quality and diversity of natural and cultural environments.

For the NPP area, four strategic environmental issues are identified, reflecting the topics raised in the programme's SWOT analysis. Climate change is expected to have extensive negative impacts in the NPP area, increasing temperatures and risks of coastal flooding, as well as abrupt changes to ecosystems. It may also bring opportunities in areas such as tourism and outdoor activities. Waste management is seen as a growing problem as volume increases each year, but in addition to resolving this issue, investment in new facilities and techniques might convert this burden into an asset. Tourism is identified as important for the economy, but also challenging for biological diversity, valuable landscapes and historic sites, as well as potentially undermining rural life and local identity. Marine pollution is an issue affecting most of the programme area, threatening the future resource base.

In the strategic environmental assessment of the draft programme, the vision and priorities are considered against the EU Sustainable Development Strategy and the EU Sixth Environmental Action Programme. This analysis demonstrates a clear compatibility between the EU policies and the NPP programming document. Thereafter, each of the objectives is assessed for potential impacts on the strategic environmental issues. Positive impacts promoting environmental gain could include environmental innovation, renewable energy, modal transfer to public transport, SME environmental management accreditation, stimulating the environment sector, and controlling environmental tourism. Negative impacts could encompass minimum compliance in meeting environmental standards, increased transport with associated noise, emissions and fuel consumption, ecological damage from road construction, increased waste generation, erosion, and loss of urban-rural distinctions and wilderness.

With regard to significant effects, the NPP is aimed at small-scale developments providing high-quality solutions within a framework of sustainable development. In this scenario, the programme has potential for significant long-term effects, which could be cumulative as a momentum develops within the programme area. There is considerable scope for very favourable outcomes environmentally, and full realisation of positive potential could elevate the programme to level where the economy-environment interactions act as a model of best practice for other programmes. Guarding against the opposite scenario, where the programme generates a negative momentum with inter-related impacts, requires careful management and mitigation.

To mitigate negative impacts, the programme must convey a clear message that positive environmental impact is a key element of the programme's strategy and that competitiveness should be based on high environmental standards and environmental management techniques. Innovation should be understood to include environment as a means of fulfilling the vision that the NPP is pursuing. The scale of development should be carefully monitored, especially with regard to transport and road construction, to ensure that impacts are within environmental carrying capacity. Project proposals should demonstrate sustainability, be accompanied by environmental impact assessments, and provide evidence that impacts on biodiversity, air, water and soil have been evaluated and can be measured during implementation.

Monitoring indicators are required to determine environmental effectiveness. In practice, these indicators should reflect not only effectiveness in addressing strategic environmental issues but also contribute to measuring the effectiveness of the NPP overall. A range of potential indicators is provided, with suggestions for the division between priorities and sub-themes.

1. INTRODUCTION

1.1 Objective of the Report

The objective of this strategic environmental assessment (SEA) is to compile an environmental report that, following consultation, can improve the environmental dimension of the Interreg IV Northern Periphery programme for the period 2007-2013.

In the context of programme preparation, SEA represents a tool for greening plans and programmes and for improving their overall logic, consistency and effectiveness. The purpose of the SEA is to secure positive environmental impact through constructive participation in the programming process. Feedback received on this draft report will be taken into account in programme design and in the subsequent phase of programme implementation.

The findings of the SEA are not binding on an authority, but they allow scope to create targeted environmental impact. This means going beyond conventional environmental protection to secure environmental gain, defined as the attainment of environmental benefit as a direct or indirect result of economic development activity. In such a scenario, positive environmental impact is envisaged as a result of environmental integration, with development programmes enhancing the environment through innovative measures.

The role of the environmental report is to highlight and facilitate environmental considerations in the preparation and adoption of the programme, identifying the potential for significant effects on the environment that should be taken into account. It subsequently forms the basis for monitoring the environmental effects of the programme. Preparation of the report and integration of environmental factors form an iterative process that contributes to sustainable solutions in decision-making.

This report has been prepared in accordance with Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment.

1.2 Key Facts

Information on the Northern Periphery Programme (NPP) for 2007-2013 is presented in Table 1. These key facts identify the programme boundaries, explain the programme rationale, and specify a contact point where further information can be obtained. The programme's extensive territorial coverage is illustrated in Figure 1.

Table 1: Northern Periphery Programme Key Facts	
Managing Authority:	Västerbotten County Administration, Umea, Sweden.
Programme Title:	Northern Periphery Programme 2007-2013, European Territorial Co-operation Interreg IV
Programme Rationale	The programme aims to help peripheral and remote communities on the northern margins of Europe to develop their economic, social and environmental potential. This will be achieved by supporting innovation, business competitiveness, accessibility, the sustainable development of community and natural resources, and cultural heritage. Through transnational collaboration and innovative actions, the programme will enhance the human and social capital of the area and actively contribute to the Lisbon and Gothenburg agendas.
Programme Duration:	The programme will run for seven years from 2007 until 2013. Awards under the programme can be made until 2013, but spending under the programme can continue for a further two years.
Programme Area:	The eligible area comprises regions in the EU Member States of Finland (NUTS II: Itä-Suomi, Pohjois-Suomi; NUTS III: Keski-Suomi), Ireland (NUTS IV: Donegal, Leitrim, Sligo, Galway, Mayo, Clare, Limerick, Cork, Kerry), Northern Ireland (entire territory), Sweden (NUTS II: Mettersta Norrland, Övre Norrland) and Scotland (NUTS II: Highlands and Islands; NUTS III: Dumfries and Galloway; NUTS IV: North East Moray). It also includes the bordering non-member countries of Greenland, Iceland and the Faeroe Islands (entire territories) and Norway (Finnmark, Troms, Nordland, Nord-Trøndelag, Sør-Trøndelag, Møre og Romsdal, Sogn og Fjordane, Hordaland, Rogaland and Svalbard) (see Figure 1).
Contact Point:	Claire Matheson, Joint Programme Secretariat, Northern Periphery Programme, Strandgade 91, 4 sal, DK 1401 Copenhagen, Denmark. Tel:+45 3283 3784 E-mail: claire.matheson@npp2.net Website: http://www.northernperiphery.net/

Figure 1: Map of Programme Area



1.3 Structure of the Report

Section 2 reviews the environmental context of the Northern Periphery Programme. This includes consideration of the environmental performance of the current Interreg IIIB Northern Periphery Programme, an overview of the priorities of the draft programme for 2007-2013, and the relationship with other environmental programmes and policies.

Section 3 examines the environmental baseline and trends, according to a range of themes. Commencing with a summary of regional environmental distinctiveness, it reviews natural resources and biodiversity, energy, waste, transport and tourism.

Section 4 identifies strategic environmental issues, comprising the selected themes of climate change, tourism, waste, and marine pollution.

Section 5 presents an environmental impact assessment for the draft programme. Following a description of the evolution of the programme’s environmental focus, an environmental appraisal reviews the programme vision, priorities and objectives. Thereafter, the report discusses likely significant effects on the environment, measures envisaged in preventing adverse effects, and potential indicators for monitoring environmental effectiveness.

2. THE NORTHERN PERIPHERY PROGRAMME IN CONTEXT

2.1 Introduction

In a review of the environmental context of the programme, this section considers the environmental performance of the current Interreg IIIB Northern Periphery Programme, the content of the Interreg IV draft programme, and the significance of existing environmental programmes and policies as guiding instruments.

2.2 INTERREG IIIB Northern Periphery Programme 2000-2006

The current Interreg IIIB Northern Periphery Programme relates to the period 2000-2006. Its aim is to encourage and support transnational co-operation between the participant countries of Finland, Sweden, Scotland, Norway, Greenland, Iceland and the Faroe Islands. It seeks to create ways to improve functionality and maximise the potential of the region, while overcoming permanent disadvantages represented by harsh climate, long distances, complicated topography and sparse population.

The current programme has three Priorities and six Measures:

- Priority 1, *Communications*, has measures on transportation, logistics and transport infrastructure (1.1) and access to information society (1.2).
- Priority 2, *Strengthen Sustainable Economic Development*, has measures on sustainable use of nature and natural resources (2.1) and business innovation and development of human resources (2.2).
- Priority 3, *Community Development*, has measures on household-related service provision (3.1) and public management and spatial planning (3.2).

Barlindhaug Consult, from Bodø, Norway, carried out an Ex Ante Evaluation of the 2000-2006 NPP in November 2000. The report noted that the programme provided various opportunities for projects focusing on environmental issues, and that it showed awareness of the three dimensions of sustainable development. Sustainability was cited as a horizontal objective, and project applications were to be evaluated on the basis of key selection criteria that included compliance with sustainable development principles.

The Nordland Research Institute performed a Mid-Term Evaluation of the NPP in December 2003. This was accompanied by an Environmental Evaluation conducted by Nordregio, Stockholm. Positive features that were acknowledged included broad awareness of environmental policy and the inclusion of environmental factors in the SWOT analysis. An environment-economy matrix illustrated that opportunities within the programme were consistent with the SWOT results. During the programme design phase, consultations had been carried out with environmental authorities, and there was scope for environmental organisations to become involved in project generation and implementation. On-going opportunities existed for environmental authorities to participate in the NPP's Regional Advisory Groups. With regard to project selection criteria, five of the six measures included criteria with an environmental character, and projects were to be given higher priority if they demonstrated positive environmental impact and sustainability.

The evaluation was critical of several features. The baseline data were mostly descriptive and qualitative, a feature attributed to a lack of comparability between data for large areas of different countries. Themes were similar, but there was no common structure, and this meant that the data were of limited value for monitoring baseline change. The only quantified environmental goal stated that 28 (from 114) main projects should directly and mainly improve the environment. In practice, the qualitative ‘expected results’ in the measures were more appropriate for presentation as goals, namely developing the potential of the cultural and natural heritage, increasing recycling, and reducing pollution, which could have been translated into numerical targets. The programme contained no estimates of environmental impact. Instead, this dimension of the programme was used to raise awareness of potential impacts (a general description of likely benefits, and how they might be environmentally helpful) rather than to target positive impact. No environmental indicators were provided at programme level, with the focus at project-level offering options between (i) directly and mainly improving the environment, (ii) indirectly contributing to environmental improvement, and (iii) environmentally neutral actions.

The European Policies Research Centre prepared an update of the Mid-Term Evaluation in 2005. It reported that the programme corresponded to the core elements of the Gothenburg agenda, which addresses themes such as reducing greenhouse gas emissions, promoting renewable energy, encouraging environment-friendly forms of transport, and reversing trends in the depletion of biological diversity. Priority 1 supports projects such as the Northern Maritime Corridor, which aims to develop sustainable transportation that connects coastal regions. Priority 2 focuses on environmental protection and the commercial exploitation of natural resources, including new employment opportunities deriving from the cultural heritage of the Northern area. Priority 3 supports projects such as Ecological Waste Treatment in Sparsely Populated Areas, aiming to develop practical solutions, with software to enable municipalities to evaluate and select alternative waste treatment methods. By September 2005, 17 main projects were considered to be directly and mainly improving the environment (exceeding the revised target of 12 projects in this category). The report noted concerns that, for the horizontal theme of environment, there was a potential discrepancy between applicants’ aspirations and the reality of implementation. This issue is to be addressed, most likely with specific guidance on how projects may best fulfil environmental commitments.

2.3 INTERREG IV Northern Periphery Programme 2007-2013

For 2007-2013, the vision of the NPP encompasses the prosperous and sustainable development of its communities and the wise management of resources, while contributing to European objectives and a more dynamic EU. Joint working on common problems and opportunities is expected to emphasise new structures and tools for longer-term co-operation. Strategic themes that have emerged from the SWOT analysis are perceived as interdependent, with actions on one theme expected to have an impact on the others. Accordingly, a holistic approach is to be adopted in taking forward priorities for action.

In addition to devoting one Priority to technical assistance, the new programme has two thematic Priorities (see Tables 2 and 3):

- Promoting innovation and competitiveness in remote and peripheral areas; and
- Sustainable development of natural and community resources.

Table 2: NPP Priority 1 - Promoting Innovation and Competitiveness in Remote and Peripheral Areas
<p>Rationale:</p> <p>Communities in the periphery must be attractive to be competitive. The capacity to attract investment, enterprises, young people and skilled labour is becoming increasingly important. The competitiveness and attractiveness of the Northern Periphery comprises several dimensions that need to be encouraged and enhanced in the future. The Northern Periphery Programme aims to address this reality by focusing on two key aspects related to competitiveness, those of innovation and accessibility.</p>
<p>Objectives:</p> <ul style="list-style-type: none"> • Promote competitiveness by increasing and developing the capacity for innovation and networking in rural and peripheral areas • Facilitate development by the use of advanced information and communication technologies and transport in the programme area.
<p>Intervention:</p> <p>The capacity for innovation in rural areas will be increased by promoting:</p> <ul style="list-style-type: none"> • Co-operation between R&D institutions and SMEs in order to strengthen innovation systems; • Co-operation between enterprises in different countries to develop new products; • Co-operation and exchange of best practice on how to address and reach markets with new products; and • Exchange of best practice on how to increase the capacity for innovation. <p>Accessibility will be addressed by transnational co-operation on information communication technologies (ICT) and transport, facilitated through:</p> <ul style="list-style-type: none"> • Increased use of ICT to overcome distance; • Implementation of ICT to modernise traditional industries; • Special features related to building and maintaining transport infrastructure such as roads, railways, airports, canals and ports under harsh climatic conditions; • Development of maritime routes; and • Maritime safety.

**Table 3: NPP Priority 2 -
Sustainable Development of Natural and Community Resources**

Rationale:

The natural environment is recognised as one of the major assets of the NPP area, and the maintenance of high environmental standards is a matter of global importance. The Northern Periphery benefits from a distinct cultural heritage that is a significant advantage in helping to sustain communities and industries such as tourism. This needs to be developed carefully to ensure long-term sustainability. Although the Northern Periphery is characterised as predominantly rural, it is recognised that co-operation and the development of relations with urban centres (primarily small towns and villages) can provide innovative solutions for rural areas. Accordingly, a sustainable model for urban-rural development is encouraged, and promoting the area as a model of sustainability may promote recognition as an innovative region. These issues will be addressed by focusing on sustainable development in two key areas, namely environment and urban-rural development with the promotion of heritage.

Objectives:

- Strengthen synergies between environmental protection and growth in remote and peripheral regions
- Improve sustainable development in peripheral regions by strengthening urban-rural relations and enhancing regional heritage.

Intervention:

Synergies between environmental protection and growth will be strengthened through:

- More efficient utilisation of resources once extracted;
- Identification of resources that have not been utilised;
- Increasing profitability in established industries by focusing on sustainable management; and
- Considering the impact and possible implications of climate change

Sustainable development, urban-rural relations and regional heritage will be strengthened and enhanced by actions based on transnational co-operation, such as:

- Urban-rural partnerships for new service solutions;
- Innovative provision of existing and new services in the periphery;
- ICT as a means for new service solutions; and
- Promotion of natural and cultural heritage that supports the development of sustainable industries.

These two thematic priorities adopt an approach to the Lisbon and Gothenburg strategies that furthers the role of peripheral and remote regions in contributing to Community goals. Through transnational co-operation, knowledge transfer and the exchange of experience, the programme seeks to secure balanced and sustainable development in the Northern Periphery.

The programme's analysis highlights how topographic and climatic conditions make accessibility a significant issue for large parts of the programme area. Accordingly, Priority 1 focuses on remote and peripheral regions where development resources are widely dispersed, and improving accessibility is perceived as vital in strengthening competitiveness.

Priority 2 acknowledges the unspoiled natural environment as one of the most significant assets of the Northern Periphery. It supports the sharing, expansion and development of skills in environmental management and sustainable development, designed to make an important contribution to the preservation and management of natural resources. Priority 2 also addresses the issue of climate change in the Northern Periphery, favouring more innovative public management policies. The sustainable exploitation of bio-fuels and other alternative energy sources are perceived as opportunities for innovative business development that can provide sustainable services to remote areas.

2.4 Synergy with Environmental Strategies, Programmes and Policies

This section identifies key environmental initiatives that provide the operational context for the Northern Periphery Programme. This contextual awareness also indicates the extent to which the NPP is constrained or enabled by these various strategies, programmes or policies with regard to the scope for environmental impact.

At global level, two important overriding initiatives are the Rio Declaration on Environment and Development and the Kyoto Protocol. The Rio Declaration was agreed at the United Nations Conference on Environment and Development in 1992. It seeks to ensure that current developments do not threaten the needs of present and future generations, that environmental protection constitutes an integral part of the development process, and that in principle the polluter bears the cost of pollution. Parallel outcomes from the conference include the Framework Convention on Climate Change, setting an overall framework for intergovernmental efforts to tackle the challenge posed by climate change, and Agenda 21, which addresses the integration of environment and development in decision-making, particularly at the strategic level of policy, planning and management.

The Kyoto Protocol is an amendment to the United Nations Framework Convention on Climate Change, and it entered into force in February 2005. It responds to predictions by the Intergovernmental Panel on Climate Change (IPCC) that global temperature will rise on average by 1.4°C to 5.8 °C between 1990 and 2100. The protocol seeks to reduce collective emissions of greenhouse gases, with differentiated national targets relative to 1990 levels to be met by 2008-12. Countries that ratify this protocol commit to reduce their emissions of carbon dioxide and five other gases or to engage in emissions trading if they maintain or increase emissions of these gases. The Kyoto Protocol now covers more than 160 countries globally and over 55% of global greenhouse gas (GHG) emissions.

Within the context of the European Union, the two main documents are the Sustainable Development Strategy and the Sixth Environmental Action Programme. Sustainable development became a fundamental objective of the EU in 1997, when it was included in the Treaty of Amsterdam as an overarching objective. Subsequently, at the Gothenburg Summit in June 2001, the first EU Sustainable Development Strategy (SDS) was launched. Whereas the Lisbon strategy focuses on employment, economic reform and social cohesion, the SDS adds an environmental dimension and establishes a new approach to policy-making. In June 2006, the European Council adopted a renewed SDS. From an environmental perspective, the SDS outlines

priorities in four key areas of climate change, transport, public health and natural resources (see Table 4).

Table 4: EU Sustainable Development Strategy – Priorities	
Climate Change	
	The overall objective is to limit climate change and its costs to society. Emissions of greenhouse gases from human activity are causing global warming, and the resulting climate change is likely to cause more extreme weather events (hurricanes, floods) with severe implications for infrastructure, property, health and nature. The EU-15 and most EU-25 Member States are committed under the Kyoto Protocol to targets for reducing greenhouse gases by 2008-2012. The EU-15 target is for an 8% reduction in emissions compared to 1990 levels. The EU will meet its Kyoto commitment and encourage Member States and industrialised countries to do the same, as well as reducing emissions beyond the targets. EU measures support research, development and dissemination of technology on clean and renewable energy resources.
Transport	
	The overall objective is to ensure that our transport systems meet society’s economic and social needs whilst minimising their undesirable impacts on the economy, society and the environment. Sustainable transport policies should tackle rising volumes of traffic and levels of congestion, noise and pollution and encourage the use of environment-friendly modes of transport as well as the full internalisation of social and environmental costs. Action is needed to bring about a significant decoupling of transport growth and GDP growth, in particular by a shift from road to rail, water and public passenger transport.
Public Health	
	The overall objectives are to promote good public health and improve protection against health threats. This relates especially to the long-term effects of many hazardous chemicals in everyday use, ensuring that within a generation chemicals are only produced, handled and used in ways that do not lead to a significant impact on health and the environment. Improvements should be made to information on environmental pollution and adverse health impacts.
Natural Resources	
	The overall objectives are to safeguard the earth’s capacity to support life in all its diversity, respect the limits of the planet’s natural resources and promote sustainable production and consumption to break the link between economic growth and environmental degradation. The loss of bio-diversity in Europe has accelerated dramatically in recent decades, fish stocks in European waters are near collapse, waste volumes have persistently grown faster than GDP, and soil loss and declining fertility are eroding the viability of agricultural land. Strong economic performance must go hand in hand with sustainable use of natural resources and levels of waste, maintaining biodiversity, preserving ecosystems and avoiding desertification. (environmentally sustainable production methods, including organic production, renewable raw materials and the protection of biodiversity). Improvements in fisheries management should ensure healthy marine ecosystems.
	Operational objectives focus on: <ul style="list-style-type: none"> • resource productivity, improving output from each unit of resource and reducing environmental damage; • renewable natural resources such as fisheries, biodiversity, forestry, water, air and soil, improving their management and avoiding overexploitation; • energy consumption, realising estimates of cost-effective potential for savings by adopting renewable sources by 2010; and • biodiversity, reducing the rate of loss in the EU and worldwide.

The EU Sixth Environment Action Programme 2002-2012 (EAP) promotes the integration of environmental concerns in all EU policies and contributes to the achievement of sustainable development. Its four priorities are climate change, nature and biodiversity, environment health and quality of life, and natural resources and wastes (see Table 5).

Table 5: EU Sixth Environmental Action Programme – Priorities 2002-2012
<i>Climate change</i> is an outstanding challenge, contributing to the long-term objective of stabilising greenhouse gas concentrations, thereby preventing unnatural variations of the earth's climate. Its objectives involve implementing international climate commitments, especially the Kyoto Protocol, and reducing greenhouse gas emissions in the energy and transport sectors, and in industrial production.
<i>Nature and biodiversity</i> relates to the functioning of natural systems, habitats, flora and fauna. Its objectives include restoration of nature and biodiversity from damaging pollution; conservation, restoration and sustainable use of marine environment, coasts and wetlands, areas of significant landscape values, species and habitats, and promotion of sustainable use of the soil, especially preventing erosion, deterioration, contamination and desertification.
<i>Environment and health and quality of life</i> aims to ensure that pollution does not harm human health or the environment. Its objectives are to improve understanding of threats to environment and human health, to ensure that chemicals are produced and used in non-harmful ways, to substitute dangerous chemicals by safer chemicals or technologies, and reduce the impacts of pesticides. It seeks to achieve quality improvements in water and air and a reduction in traffic noise.
<i>Natural resources and wastes</i> aims for sustainable production and consumption patterns, decoupling the use of resources and the generation of waste from the rate of economic growth and aiming to ensure that the consumption of renewable and non-renewable resources does not exceed the carrying capacity of the environment. It seeks a significant reduction in the volumes of waste produced, as well as increasing waste recycling.
Seven thematic strategies fulfil the objectives of the 6 th EAP, relating to air pollution, the marine environment, soil, waste, pesticides, resources, and the urban environment.

Thereafter, a number of EU directives has direct relevance for the Northern Periphery Programme, and these are introduced in Appendix 1. Similarly, with regard to the different national contexts of the participating countries, a range of environmental strategies and policies sets a framework for programme development and project design. These initiatives are too numerous to list them all individually, but examples of major documents and strategies are listed in Appendix 2.

3. ENVIRONMENTAL BASELINE AND TRENDS

3.1 Introduction

The purpose of this section is to provide environmental information that describes the current environmental conditions in the NPP area, that supports the identification of environmental issues or problems, and that contributes to a baseline against which the programme's environmental effects can be assessed. This comprises both quantitative and qualitative data. It does not present an exhaustive list of every possible environmental parameter, but is selective in choosing topics considered relevant to the scope and potential influence of the programme.

Data and information have been gathered through a combination of desk-based research and direct consultation with a network of environmental contacts in each of the participating countries. The following organisations have been involved in this interaction:

- Scottish Natural Heritage;
- Swedish Environmental Protection Agency and Ministry of Industry;
- Finnish Ministry of Environment;
- Faeroese Food, Veterinary and Environment Agency;
- Environmental Protection Agency, Republic of Ireland,
- Northern Ireland Research and Statistics Agency
- Akvaplan-Niva, Norway;
- Department of the Environment, Greenland;
- Ministry for the Environment, Iceland.

3.2 Regional Environmental Distinctiveness

Each country within the Northern Periphery Programme has distinctive environmental features that condition and support NPP development.

Situated just south of the Arctic Circle, Iceland is the second largest island in Europe after Great Britain. It is built almost exclusively of volcanic rock, lava and sediment, and the interior consists of mountains and high plateaux. The average height above sea level is 500 meters; the highest point is 2119 meters. Glaciers are a distinctive feature of Iceland and cover about 11% of total land area. Freshwater supplies are abundant. The diversity of marine plants and animals around Iceland result from the influence of the Gulf Stream and the mixing of the warmer waters of the Atlantic with cold Arctic waters. Approximately 270 fish species have been found within the Icelandic 200-miles exclusive economic zone.

Iceland's unique circumstances include an economic dependence on fisheries and the prudent use of natural resources; a rich natural heritage with large areas of wilderness and unique geological features; an abundance of renewable energy resources; and a history of severe soil erosion. Iceland is relatively pollution-free, due to its sparse population, distance from major sources of pollution and the use of renewables as the main source of energy. The Icelandic central highlands are one of the few remaining large wilderness areas in Europe, characterised by glaciers, volcanoes, hot springs,

glacial rivers, lava fields and barren sands, with some isolated bird-breeding grounds. An effort is being made to integrate demands for development in the energy and tourism sectors with nature conservation, with the help of a plan for the integrated management of the highlands, as well as a plan to prioritise further energy utilisation according to economic and environmental feasibility.

Finland's international competitive capacity and the wellbeing of the population are directly dependent on the country's high-quality environment and natural resources. Finland has an extensive and pure natural environment, but population concentrations are small. Lapland comprises an almost untouched, wilderness-like environment, characterised by fells, forests, wetlands, rivers and brooks, which is extremely vulnerable and sensitive to change. It also contains the Sami homeland area, where the most important industries of the Sami culture are preserved.

The lake systems in Finland's lake district are internationally unique in their small scale, with shallow meandering waterways, the only local exceptions being the broad expanse of Lake Saimaa and the extensive open areas on Lake Päijänne, which are bordered by mountainous wilderness. Special coastal features include the Quark archipelago, which is unique on account of the land uplift phenomenon, and the old wooden towns and villages with harbours interspersed along the coastline from north to south. This area also has level agricultural land, broad river valleys, forests and wetlands.

Northern Ireland has a large variety of high quality landscapes and a range of archaeological sites, monuments and buildings that reflect the country's history. The richness of the natural environment is demonstrated by the range of designations for natural beauty, scientific interest, conservation, nature reserves and habitats. The Giants Causeway and Causeway Coast have earned World Heritage Site classification and are Northern Ireland's premier tourist attraction.

However, there are many opportunities for environmental improvement and sustainability in Northern Ireland. Current strategies and initiatives are designed to raise awareness of environmental issues and contribute to a more sustainable future, especially related to waste, transportation and air pollution. Recent changes to planning policy mean that new housing will be built at higher densities closer to towns, significantly limiting the number of isolated rural dwellings. This will increase the scenic value of the countryside, promote conservation and reduce the dependence on the private car through improved accessibility.

The NPP area in Sweden contains all types of nature, from high, snow-covered mountains in the west through large forest and wetlands down to coastal flatland and islands in the east. An important feature in the landscape is the rivers that run from west to east, some of which are the most protected rivers in Europe, while others have some of Europe's largest water power plants. The polar circle passes through the NPP area, which means harsh climate with permafrost, winters that are cold and dark and summers where the sun shines both night and day. In this sub-arctic climate, biodiversity is low and very sensitive to pollution.

The region has a rich cultural and historical past. There are traces of human activities from 10,000 years ago, the western parts have a range of attractive sites for outdoor

life and tourism, and there are large supplies of raw materials and thus a great potential for processing industry. The coastal with its small towns and archipelago is very different from the silence and stillness in the more sparsely populated areas in the mountains. Diversity and contrasts are assets, but the peripheral location also creates problems for business development.

The geographical area covered by the NPP in Norway is vast, encompassing nine counties that cover 212,793 km², and this represents two-thirds of the Norwegian territory. Svalbard covers 61,020 km².

3.3 Natural Resources and Biodiversity

Major industries in the Northern Periphery are based on natural resources, such as fishing, forestry, mining and tourism, and these must be developed sustainably in order for the communities dependent upon them to survive and prosper. The unspoiled environment is a common feature across the programme area, but there are threats. Sea and airborne pollution tend to accumulate in northern regions, even though emissions originate mainly in other parts of Europe and beyond.

Iceland has over 80 protected areas, and these account for about 10% of its territory. There are four national parks in Iceland, and the country's largest glacier, Vatnajökull, and adjacent areas will soon become Europe's largest national park, doubling the size of the area under protection. The flora and fauna of Iceland is relatively poor in species, but there are many locations with rich and varied ecosystems of high conservation value, including bird-colonies in sea-cliffs, lakes and highland oases. Iceland is a party to the Convention on Biological Diversity and is working on the conservation of species and important habitats. Two red lists have been published, on birds and vascular plants. Severe soil erosion has seriously damaged Iceland's vegetation cover for centuries, but efforts are in progress to halt and reverse erosion and reclaim vegetation on eroded land. Large areas remain overgrazed and vulnerable to further erosion. Rivers and lakes cover about 6% of the total land area, whereas arable and permanent crop land amounts to approximately 1% (1,300 km²).

In Finland, protected areas and wilderness extend to 2,500 km², 80% of which is in Lapland, and around 3,300,000 hectares of nature conservation sites, 2,350,000 hectares of which is in Lapland. From an international perspective viewpoint, Finland's wetlands are biologically diverse, and considerable attention is given to the preservation of their natural values. Forests are important for the regional economy, including the utilisation of renewable natural resources. The increased forest growth resulting from global warming, together with changes in the species composition, requires new consideration of how to combine the economic utilisation of forests with conservation interests. The aim is to maintain the full scope of forest habitats, so that species in conservation areas can eventually move to accommodate the changing climatic conditions.

In Scotland, the Highlands and Islands have a low intensity of development and high quality natural resources. This is reflected in the range and scope of natural heritage designations across the region, which includes 154 Special Areas of Conservation

totalling 7224 km², 100 Special Protected Areas covering 4719 km², 40 National Nature Reserves, 26 Ramsar sites, and 28 National Scenic Areas, which cover 11,687 km². Scotland has over 1400 sites designated as Sites of Special Scientific Interest, representing approximately 12.6% of the total land area. In terms of location, these sites are divided in similar proportion between the Highlands and Islands and the Lowlands and Uplands. Scotland has 65 of the total 159 conservation priority habitats listed in the EU Habitats Directive.

Northern Ireland has a relatively small geographical area, but substantial resources in terms of natural heritage. These include nine Areas of Outstanding Natural Beauty, which include the Antrim Coast and Glens and Mourne, covering 285,000 hectares, five Environmentally Sensitive Areas covering 222,000 hectares, 226 Areas of Special Scientific Interest, amounting to 94,000 hectares, and 19 Ramsar Wetland Sites totalling 77,000 hectares. EU designations include 52 Special Areas of Conservation and 13 Special Protection Areas. In addition, three-quarters of Northern Ireland's coastline is protected by some form of conservation designation and work is ongoing to designate national parks. Forests and woodland amounts to 6% of the land surface in Northern Ireland.

The assessment of biodiversity in Ireland is hindered by the lack of biological records to provide the baseline information. While not as diverse as in other European countries, 25 species and 60 habitats in Ireland's natural heritage are recognised by the EU as requiring special protection. Flora, fauna and habitats are also under threat from sources including agricultural practices, forestry, climate change, land clearance and development. For natural resources, policies and measures have been only partially successful in the protection, as economic development has offset environmental gains. In the last state of the environment report, identified deficiencies related to coastal zone policy, natural heritage protection and management, protection of water quality from eutrophication, waste management and resource use, urban development and transport management, marine resource protection, and response to climate change. Significant progress has been made in submitting sites of European importance for designation and an overarching strategy for policy in agriculture, fisheries, forestry and tourism is intended to sustain natural resources.

In Sweden, 50% of the land is covered by forest, wetlands and natural grassland. Rocks and other land extend to about 16%, water covers 7.5%, built-up and related land amounts to 1.1%, and agricultural land (which is constantly decreasing) amounts to 1.4%. Protected areas in Sweden amount to 11 national parks (625,863 hectares), 462 nature reserves (3,174,433 hectares) 12 nature conservation areas (10,130 hectares) and 79 wildlife sanctuaries (51,644 hectares).

3.4 Energy

The total primary energy requirement in Northern Ireland in 2002 was 41,000,000 MWh. The source of this energy was primarily fossil fuels such as coal and oil. Over two-fifths (44%) was required for residential users, 28% for transport, 17% for industry, 6% for commerce and buildings and the remaining 5% for the public sector. With regard to renewable energy, wind farms account for the majority of Northern Ireland's current production, with a total of 103 in operation, 89 of which are large

scale installations. Other forms of renewable energy currently being utilised include hydroelectric schemes, biomass and solar power. In 2003, 1.9% of electricity was produced using renewable sources.

In Ireland, the transport sector is the greatest consumer of energy, followed by the industry, residential and services sectors. Energy conversion efficiency is improving as older generating plant is replaced by high-efficiency technology and existing facilities are optimised. Currently, Ireland is dependent on imported non-renewable fossil fuels, especially oil, but production of renewable energy is increasing, as independent hydroelectricity producers, wood-processing plants, landfill gas and wind energy developments have been initiated. Greater use of renewable energy resources would give indigenous, clean sources of energy providing investment opportunities and employment, often in rural areas.

In Iceland, most stationary energy is pollution-free, because of Iceland's abundant sources of hydro and geothermal energy, and it is government policy to further utilise renewable energy to attract energy-intensive industries. It is envisaged that hydrogen and other alternative fuels can replace fossil fuels in the transport and fishing sectors, and pilot projects have been launched to encourage this transition. A spatial plan for the central highlands and a Master Plan for Hydro and Geothermal Energy Resources in Iceland are intended to integrate demands for renewable energy development with nature conservation concerns.

In Finland, a significant increase is expected in the use of renewable energy sources, especially bioenergy, which offers a broad range of possibilities. Cultivation can be extended and the productivity of agricultural fields promoted by adopting plants suitable for producing bioenergy. This is considered especially relevant for the sustainability of settlements in rural areas.

In Scotland, overall energy consumption in 2002 fell relative to 1990 by just over 2%. This reflects a number of factors, including improvements in energy efficiency and the move towards less energy-intensive sectors. Energy consumption by industry in Scotland has declined, in 2002 falling by around 30% relative to 1990, whereas the demand for gas has grown in all sectors. The majority of coal consumption in Scotland is for electricity generation and its use rose by 50% between 1990 and 2002. Consumption of energy derived from nuclear fuels fell by around 16% between 1990 and 2002, essentially reflecting the loss of generating capacity over that period. In 2000-2003, energy production from renewable sources was around 8%..

3.5 Waste

In Iceland, considerable progress was achieved in improving waste management in the 1990s. Open-pit burning of waste has ceased, and most waste is now landfilled at sites operating under licence. A law establishing a hazardous waste charge in 1996 has resulted in a high rate of recovery of hazardous waste. New legislation, pending approval by Parliament, will extend this experience to other waste-streams, especially packaging, end-of-life vehicles and used tyres. Currently about 60% of households are connected to public wastewater treatment plants.

In Northern Ireland, increased affluence and higher convenience lifestyles have greatly increased waste production, prompting renewed efforts to promote environmentally friendly practices. Nonetheless, Northern Ireland still lags behind the majority of the European Union with regard to recycling and continues to rely heavily on landfill sites, with 80% of waste disposed of in this manner. The amount of household waste produced has fluctuated during recent years, and its disposal is a major environmental issue. At almost 920,000 tonnes in 2004/2005, it was 6% higher than in 1998/1999. The recovery rate for household waste is improving, increasing by 14% between 1998/99 and 2004/2005 to reach 18.9%, comprising treatment through energy recovery, recycling (materials recovery) or composting.

In 2001, waste generated in Ireland amounted to over 74 million tonnes. Agriculture was the single largest source (76% of total), followed by manufacturing industry (7%) and municipal waste (4%), the latter comprising waste from households and commercial activities. The manufacturing sector is the largest generator of hazardous waste, especially the chemical and pharmaceutical sectors; the deficit in infrastructure for waste recovery or disposal capacity means that Ireland exports much of its hazardous waste. The bulk of non-agricultural waste is landfilled, but the number of authorised landfills for municipal, industrial and mining waste decreased from 126 in 1998 to 92 in 2001. In 2004, there was estimated to be 10 years' remaining landfill capacity available for municipal waste.

In Sweden, the municipalities are responsible for waste management and have created a system for sorting and recycling paper, glass, metal, plastic and organic material. Each municipality has sewage treatment plants, and only about 500,000 households in very sparsely populated areas are not connected to the municipal sewage system.

In Scotland, waste generation is a major environmental issue. In 2002/03, from a total of 3.35 million tonnes of controlled wastes collected, 92% went for disposal and 8% for recycling/composting. Stricter legislation is beginning to restrict what can be landfilled and what must to be recovered or recycled, and Scotland's National Waste Plan sets out objectives for local authorities to reduce waste and improve waste management by 2020.

3.6 Transport

There is a heavy reliance on private transport in Northern Ireland with 80% or more of the population using this method of travel to work. In contrast, the number of people travelling to work by bus has decreased to just 4% in the period up to 2004. These patterns have direct environmental consequences, resulting in a larger volume of traffic and increased road usage, increasing greenhouse gas emissions and contributing to global warming and climate change. Many residents in Northern Ireland live in more isolated rural areas and this, alongside increased affluence and greater affordability of cars, contributes to the high reliance on private transport in the region. Transport is the second largest source of CO² emissions in Northern Ireland, accounting for 27% of the total emissions in 2003.

Although Ireland does not have significant air quality problems, road traffic has become a major source of air pollutants. Greenhouse gas emissions are increasing

rapidly, and decoupling further growth in such emissions from growth in transport is a key challenge. However, there has been little progress towards the objective of bringing about a substantial shift to public transport. Adverse effects of dependence on road travel are noise, ecological damage and habitat fragmentation. A policy of urban containment, involving high-density residential development, mixed land uses and good public transport, is crucial to curbing the trend of increasing hinterland-to-city travel. The implementation of pollution abatement measures in the form of short-term traffic restrictions or air quality management plans would also be a major new challenge for local authorities.

In Finland, traffic policy and the planning of spatial and community structures should be geared to stemming the growth of traffic and promoting safe modes of travel, which have only marginal environmental impacts. In the future, various adaptations of information and communications technology will facilitate overall mobility and will also contribute to more effective use of the capacity of traffic networks. In the most northern areas of Europe, the Barents connections, the Archangel corridor and the central northern connection will benefit from increasing co-operation and long-range transport. The northern Baltic zone will become a major co-operation area and the site of the main logistics centre in the northerly areas of Finland and Sweden.

In Sweden, the geographical situation and long distances emphasizes the importance of sustainable, well-functioning transport and communications systems, but only 63% of the roads in the area are surfaced. In Iceland, air pollution in the capital area, caused by increased traffic, is of growing concern

3.7 Tourism

Iceland is heavily dependent on its natural resources to generate foreign revenue. The tourism industry relies on nature and natural beauty, the fishing industry relies on marine resources, and the aluminium and ferro-silicon industry on geothermal and hydropower. In 1998, the share of tourism in total exports was about 13%, fishing and fish processing about 50%, and aluminium and ferro-silicon products about 11%.

In Finland, the diversity of natural and cultural environments, and biological diversity, forms the basis for expanding tourism and recreational services. Cultural sites and nature conservation areas are resources to be taken into account in rural development and also in maintaining ecological diversity. The best means of promoting tourism lie in the peacefulness of the northern natural environment, the variation between the four seasons, and the inland lake systems. Finland should be presented as an object for nature tourism on the basis of the natural riches and broad variety of its regions with their special features. The development of tourism also requires cross-border co-operation with neighbouring countries, especially in promoting wilderness tours and culture tourism

In the northern and eastern Finland especially, nature tourism centres should be strengthened in accordance with the principles of sustainable development. In this respect, it is vital to safeguard landscape values and to provide high-quality tourist services appropriate to the carrying capacity of the environment. In Lapland, the tourist centres already play an important part, both as sources of income and as

safeguards for the preservation of local services. Winter tourism is being developed as an industry in Finland, based upon the snow conditions, which are now being threatened by climate change. However, at the international level, northern and eastern Finland may be able to derive some advantage if the attractiveness of traditional alpine resorts in central Europe declines through climate change.

Scotland is an extremely popular tourist destination, and tourism is very important to the economy, especially in remote areas. Over the past 30 years, tourism has grown by 43%, with the growth coming from overseas visitors. Seven out of ten visitors to Scotland visit the Highlands and Islands.

Tourism is an important source of investment and employment in Ireland, particularly in rural communities. The natural environment is a core asset of the tourism industry, and great importance is placed on the preservation of its quality. This sector interacts closely with other policy areas such as transport, energy, environment, regional planning, business and trade, making policy co-ordination and integration essential. In the past ten years, overseas tourist visits have grown by over 82%, estimated at 6.1 million in 2003 (1.5 times the resident population). The primary motivation for holiday visits is the quality of the scenery, and accordingly all stakeholders in the tourism sector, at national, regional and local levels, have a major part to play in protecting the environment.

4. STRATEGIC ENVIRONMENTAL ISSUES

4.1 Introduction

This section identifies environmental issues considered to have a strategic dimension in the context of the Northern Periphery Programme. This refers to the scope for significant effects, which could be either positive or negative in character.

The range of themes, which reflects the environmental issues raised in the SWOT analysis (draft operational programme, s3.6), is categorised under four headings: climate change, tourism, waste, and marine pollution.

4.2 Climate Change

The balance between incoming solar energy and outgoing infrared radiation determines the earth's temperature, and changes in the amount of energy retained within the atmosphere affect the global climate. It is in this area that human activities are having a discernible impact through the atmosphere's increased retention of greenhouse gases, notably carbon dioxide. The global impacts of climate change are considerable; for the NPP area, there are potential impacts on habitats, species, water resources, agriculture, tourism and a risk of flooding.

The Swedish Regional Climate Prediction Programme has produced a scenario for Sweden that shows how the temperature, precipitation, snow cover and vegetation are expected to change if the carbon dioxide level in the atmosphere doubles compared to its pre-industrial revolution level. Up until the present day, the carbon dioxide level has gone up by just over 30%.

Iceland currently relies on clean and renewable energy sources for about 70% of its total energy needs and over 95% of its stationary energy needs, by far the highest proportion of any OECD country. Further reductions in emissions will therefore largely have to come from mobile sources, the fishing fleet and domestic transport. The Icelandic Government wants to expand the utilisation of the clean and renewable energy of the country's rivers and geothermal fields. Its use for energy-intensive industry would yield a global benefit, with emissions of carbon dioxide being minimal in comparison with plants powered by fossil fuels. Furthermore, Iceland's extensive eroded land provides opportunities for carbon sequestration by revegetation and afforestation.

Climate change in Scotland is predicted to increase temperatures by 3.5°C in summer and 2.5°C in winter; and rainfall patterns will change to considerably wetter winters and drier summers. With regard to future flood risk in Scotland, especially coastal flooding, it is anticipated that 100-year levels in 1990 will increase in frequency to between 20 and 40-year events by 2050, with regional variations. The Scottish Executive aims to offset carbon emissions through the use of renewable energy sources, and it is committed to generating 18 percent of electricity in Scotland from renewable sources, including biomass, by 2010, and 40 percent by 2020.

Evidence of climate change is already apparent in Northern Ireland, with 9 of the 15 warmest years since 1841 occurring after 1990 and average sea levels about 10 cm higher than in 1900.

Continued climate change will have significant impacts on the natural environment and daily life of people across the Northern Periphery. Conversely, it could present new opportunities and lead to the development of industries in regions that have previously been excluded from certain economic activities.

Action is needed both to stave off climate change and to prepare for it. Taken together, climate change and rising oil prices will require better energy performance, ecological efficiency, and a well-developed capacity for risk management. Preparations for climate change should ensure that people, natural environments, spatial structures and associated functions will suffer minimal disturbance, and that the favourable impacts of climate change are used to advantage in the NPP area.

4.3 Tourism

In the Northern Periphery, natural heritage and cultural heritage are interlinked, as the environment essentially forms a cultural landscape. In Norway, the coastal countryside is world famous for its beauty, and this is a major asset for the tourism industry, particularly in rural areas, where jobs created within tourism extend into sports, fishing, eagle and whale watching, rafting, and general outdoor life, amongst other themes. This potential is still under-exploited. However, tourism can also challenge the preservation of biological diversity and valuable landscapes. Visitors can damage cultural heritage sites, as hundreds or even thousands of tourists throughout the season lead to irreversible wear and tear in such sites. This requires access restrictions to be considered and enforced. Protecting and managing the vulnerable heritage sites, for example at Svalbard, is an important task, both to preserve the heritage and to maintain the islands in an attractive state able to benefit from tourism.

Tourism also raises issues in Finland, as it is perceived to result in a weakening of rural life and of local identity. Activities can undermine cultural identity – as evidenced by traditional industries, reindeer herding, fishing and farming – and the interests of indigenous people. This decline in the cultural environment can lead to out-migration and a decrease in the agricultural population and in the agriculture sector.

In comparison, as demand for tourism and recreation continues to increase in Ireland, the pressures of traffic congestion and the generation of greenhouse gases and other pollutants associated with travel are expected to increase. This seasonal aspect of tourism, coupled with the concentration of tourists in certain regions, is adding pressures on the environment in relation to energy and water supply, wastewater treatment, waste generation, traffic congestion and air emissions. Furthermore, inappropriate development of tourism-related infrastructure can often have negative consequences, and visitors engaging in hiking, hill-walking and equestrian activities have the potential to harm sensitive areas of high ecological and resource value.

4.4 Waste

Waste management is a key issue for small communities in the Northern Periphery, and tackling the root causes and environmental impact of increasing waste is important for society. However, it is also important to consider waste generation and resource use together, particularly when raw materials have been imported, as the environmental impact in the country of origin may not always be recognised. Waste can also be a practical source of energy.

Long distances and a sparse population bring challenges for waste handling and also for the economy of collection and disposal of waste in Norway. In the north of the country, landfills are used for refuse depositing, and paper waste is incinerated, often by sending it to Sweden, but plans exist for establishing an incinerator in Tromsø. Nevertheless, contaminated waste such as harbour sediments and waste related to offshore activities is deposited at landfill sites, and the emerging petroleum industry is expected to produce drilling waste and sludge oil that require facilities that are currently only poorly developed.

These circumstances create a need to explore waste minimisation techniques, including alternative procedures and processes. For example, this may be directed at recycling, increased re-use and decomposition and energy recovery. More broadly, there is a need to consider the development of infrastructure within waste handling and petroleum development, an area where cross-border co-operation could be advantageous.

4.5 Marine Pollution

From an EU environmental perspective, the marine environment is a target for conservation, restoration and sustainable use. Maritime issues are important for most of the NPP area, even though not given the same priority in each region. Waters within Iceland are relatively unpolluted, but marine pollution is considered to be a threat to the future utilisation of Iceland's marine resources, especially from persistent organic pollutants. A legally binding international instrument on these pollutants has become a reality after the signing of the Stockholm Convention in May 2001.

Sediments in 33 harbours all along the Norwegian coast are documented to be very contaminated with chemicals and heavy metals. As a consequence, most of these areas have restrictions on consumption of seafood. For nine harbours, action plans for cleanup have been developed, and generally very strict handling procedures are established, related to dredging and any activities involving contaminated sediments. Nevertheless, particularly in north Norway, the infrastructure for handling this type of waste is very poorly developed.

Coastal zone management is a classic overriding issue in Norway, where priorities must be established. Aquaculture, development and building, traffic and nature protection are examples of the issues competing for limited area resources. Each municipality develops coastal zone plans, in which the different interests are allocated areas and locations, and these plans are updated every fourth year, but many municipalities are behind schedule.

5. ENVIRONMENTAL ASSESSMENT

5.1 Introduction

At this stage in programme development, the exact locations, nature and impacts of actions cannot be identified, as this depends on specific projects that will support the delivery of the strategy. Accordingly, the approach of this report is to provide an indication of the range of potential impacts and suggest ways in which negative impacts can be minimised.

The methodology of environmental assessment divides the task into several components. Following a description of how environmental factors were considered in the programme's evolution, the vision and priorities are assessed for environmental conformity with the EU Sustainable Development Strategy and the EU Sixth Environmental Action Programme. This is extended into an appraisal of the programme objectives within the priorities, in each case reviewing a range of effects from positive impact resulting in environmental gain through to negative outcomes requiring mitigation.

This is followed by a discussion of likely significant effects, the scope for mitigation measures, and corresponding indicators that would facilitate monitoring of environmental effectiveness.

5.2 Alternatives

When developing a plan or programme, it is normal practice to propose different ways of fulfilling its objectives, each of which has distinctive environmental characteristics. However, in the Northern Periphery Programme, the path followed is best described as consensual. Rather than choosing between contrasting visions or objectives, the strategy and priorities of the programme have evolved and become more detailed in an incremental fashion.

At an early stage, the decision was taken not to support infrastructure. The reasoning related to reduced ERDF funding as well as the increased geographical coverage of the programme. In seeking to maximise programme economic impact, this positive step assisted in minimising environmental impact.

The first version of the programme priorities was broad and unfocused. However, Priority 2 already acknowledged that conserving the region's natural environment was of global importance, as well as being economically important to the region. It also encompassed renewable energy projects as a response to climate change. As the priorities became more focused, it was agreed that Priority 2 should promote environmental potential through green development and eco-business, as well as recognising the environmental benefits of ICT, themes that more closely reflected the emphases in the Community Strategic Guidelines.

Sustainable development has always been a priority throughout the programme development process. In the third version of the programme, it became a horizontal principle, meaning that each project within the programme must be aware of its

economic, social and ecological impacts and should contribute to the Gothenburg agenda. A broad view of sustainable development has been adopted that includes maintaining cultural resources and developing local communities, supporting these features through innovative implementation models and multi-sector co-operation.

In June 2006, the Spatial North conference was used as an opportunity to gather a wide range of opinion on the programme approach and priorities. A list of appropriate themes highlighted by participants in workshops included natural resources, sustainable energy and measures to tackle climate change, coastal management, and environmental and culture-based tourism. As a result, Priority 2 was modified from ‘natural and cultural resources and sustainable local development’ into ‘sustainable development of natural and community resources’, and the SWOT analysis was expanded to reflect the threats and opportunities emerging from climate change in areas such as agriculture, natural resources and shipping.

These modifications have been retained into the current (fifth) version of the programme, in which more than 20% of the funds have been allocated to environment under Priority 2.

5.3 Appraisal of Programme Elements

To assess the strategic environmental impact of the draft programme, this section first considers the programme vision and priorities in relation to the EU Sustainable Development Strategy and the Sixth Environmental Action Programme, and subsequently appraises each of the programme objectives for their potential impact on the strategic environmental issues (see Table 6). This involves reviewing a range of effects from positive impacts resulting in environmental gain through to negative outcomes that require mitigation. This is the only level of analysis possible at present, because the current programme does not specify quantified environmental targets, environmental indicators or project selection criteria.

Table 6: NPP Environmental Conformity and Potential Impact

PROGRAMME ELEMENT	CORRESPONDENCE WITH EU SUSTAINABLE DEVELOPMENT D STRATEGY (SDS) & 6th ENVIRONMENTAL ACTION PROGRAMME (EAP)	POTENTIAL IMPACT ON STRATEGIC ENVIRONMENTAL ISSUES
<i>Vision</i>		
Regions working innovatively together to help communities: to realise the potential of Europe’s Northern Periphery to achieve a sustainable quality future, and so contribute to a more dynamic EU.	Corresponds with objectives to limit climate change and its costs to society, ensure that undesirable impacts of transport solutions are minimised, improve protection against health threats, respect and work within the limits of planet’s natural resources, break the link between economic growth and environmental degradation, and aim for sustainable production and consumption.	Adopting innovative approaches allows wide scope for the programme to address strategic environmental issues, as well as benefiting the region with other forms of environmental gain. Full realisation of potential could elevate the programme to a level where economy and environment interactions act as a model for other programmes.
Priorities and associated Objectives:		
1. Promoting Innovation and Competitiveness in Remote and Peripheral Areas	<p>The SDS supports cost-effectiveness through energy-saving and technological development that decouples economic growth and environmental pressure. It advocates changing the relationship between economic growth, consumption of natural resources and generation of waste. The SDS supports sustainable transport policies, encouraging environment-friendly modes of transport, internalising social and environmental costs, and favouring modal shift from road to rail, water and public passenger transport.</p> <p>The EAP supports the reduction of greenhouse gas emissions in the transport sector, sustainable use of the marine environment and coasts, and waste reduction.</p>	
(i) Promote competitiveness by increasing and developing the capacity for innovation and networking in rural and peripheral areas.		Exchanging best practice and establishing co-operation networks between R&D institutions and SMEs, while increasing capacity for innovation and strengthening competitiveness, could further environmental innovation through new products or components, devising inter-industry linkages to re-use waste, recycle waste heat,

		<p>or trade experience in industrial ecology practice. The gains in energy efficiency from renewables may lead to greater competitiveness and distinctiveness. New networks and knowledge transfer that develop new and existing products, as well as provide support in addressing and reaching markets, could benefit environmental sector through higher profile and a regional brand image related to high environmental quality and standards in both natural environment and local products. Innovation and renewal in rural economy informed by previous NPP experience could create networks knowledgeable in how environmental and economic gain can be achieved in local conditions.</p> <p>The scope for negative environmental impact is limited, with a more likely worst-case scenario being no environmental impact, representing a missed opportunity if, for example, innovation is directed at sectors other than environment or networks exclude environmental actors. There is also the risk that competitiveness is interpreted as a basis to cut environmental costs, potentially by delaying legislative obligations or by seeking minimum compliance in environmental standards.</p>
<p>(ii) Facilitate development by the use of advanced information and communication technologies and transport in the programme area.</p>		<p>Responding to environmental characteristics such as long winters, harsh climate and mountainous areas, ICT can promote greater efficiency in communications, reducing travel and associated environmental impacts of traffic. It can reduce outmigration, sustaining rural communities and retaining local environmental management skills. Transport infrastructure maintenance and development can be environmentally beneficial if it supports modal transfer to railway, canals and ports, as indicated. Opening new maritime routes gives further scope for prioritising public transport development over private transport. Capacity-building with respect to preparedness for natural disasters would represent a positive addition to regional environmental development.</p> <p>No negative impacts would be anticipated from adoption of advanced ICT. However, transport developments could be harmful if improved access generates increased traffic with associated noise,</p>

		emissions and fuel consumption. In this respect, both airport and road development may promote environmentally undesirable outcomes.
2. Sustainable Development of Natural and Community Resources	<p>Encouraging respect for critical thresholds, the SDS states that economic growth should go hand-in-hand with sustainable use of natural resources and levels of waste, maintaining biodiversity, and protecting habitats and natural systems. Output derived from resource utilisation should be improved, as should management of air, water, soil and land, reducing environmental damage. The SDS supports the dissemination of technology on clean and renewable energy systems and reduced energy consumption. It supports minimising the undesirable impacts of transport, tackling noise, congestion and pollution, and avoiding adverse impacts on human health.</p> <p>The EAP seeks to reduce greenhouse gas emissions from industrial production and in the energy and transport sectors. It supports sustainable production and consumption, reducing waste and increase recycling, and ensuring that the consumption of renewable and non-renewable resources does not exceed the carrying capacity of the environment.</p>	
(i) Strengthen synergies between environmental protection and growth in remote and peripheral regions.		<p>New approaches to the utilisation of resources that increase efficiency in established industries through sustainable management could make a significant change to the use of raw materials and energy, reducing waste generation and journeys, with a corresponding reduction in road traffic and transport emissions. With the encouragement of recycling, these activities could also promote environmental management accreditation (EMAS, ISO 14001) in different sectors. Focusing on the impact of climate change could encompass necessary adaptation as well as deriving economic and environmental benefits, notably in the tourism sector. Exploiting opportunities presented by bio-fuels and other renewable</p>

		<p>energy sources to develop small-scale sustainable solutions, as well as energy-saving initiatives for rural and remote communities, companies and households, will assist the overall transition to renewables, with small-scale projects being more manageable in rural locations. The recognition that the high quality natural environment has an intrinsic value, and that this can be a basis for new enterprises, means that employment can be oriented to high standards, combining traditional knowledge with modern skills offered by ICT and other technical solutions.</p> <p>Within these various initiatives, high standards may not be maintained over time, which could undermine NPP aspirations and the public perception of the programme. Renewable energy facilities can bring problems varying by type, from aesthetic objections to noise from wind farms, and remote locations can require significant supporting infrastructure such as access roads and power lines. The theme of climate change might be open to exploitation, with projects that would normally be discouraged on environmental grounds gaining approval, because of the perceived urgency to meet targets.</p>
<p>(ii) Improve sustainable development in peripheral regions by strengthening urban-rural relations and enhancing regional heritage</p>		<p>Assisting urban-rural partnerships and looking for new service solutions allows scope to be innovative and support targeted environmental change. Urban-rural development is to be based on a model of villages or small towns, keeping the scale manageable and impacts small and controllable. Again, this provides opportunities to incorporate environmental solutions into development models, with environmental conservation and improvement benefiting rural areas, supporting the environmental diversity that created the cultural heritage. Supporting the development of sustainable industries and services in the periphery based on regional heritage can be oriented towards environmental services or environment-based enterprises. In addition to stimulating the environmental sector, preserving biodiversity, ecosystems and habitats, this could reduce out-migration, with new companies and services strengthening communities and improving the urban-rural balance. Developing industries such as environmental tourism, assisted by</p>

		<p>knowledge transfer, means that residents and visitors can benefit from a greater appreciation of the natural environment. Complexities that may lead to negative impacts include the possibility of being too successful, losing urban-rural distinctions and increasing environmental stress. For example, increased interaction could lead to more road traffic, new building and increased waste generation. If the envisaged scale of development is exceeded, proportionate threats emerge for biodiversity, the water environment and soil. Similarly, tourism facilities may promote increased erosion from walkers, cyclists and off-road vehicles, increased noise and disturbance to wildlife and a loss of wilderness, and increased effluent requiring disposal, so increasing risks of pollution.</p>
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5.4 Significant Effects

As the NPP clearly intends to operate on a small-scale, for it to make a significant effect in the environment, the programme would need to be very successful catalyst in driving regional development. In this case, the environmental outcomes would be significant either as best-case or worst-case scenarios: the best case is a momentum of activity that generates positive characteristics; the worst case would represent activities that have spiralled out of control in terms of environmental impact.

Drawing on the analysis in Table 6, the programme demonstrates a clear compatibility with the objectives of the Sustainable Development Strategy and the Sixth Environmental Action Programme. The programme has consistently cited the aim of sustainable development as a horizontal objective, and it is to be small-scale and aimed at high-quality solutions. Negative environmental impacts are anticipated to be minimal. However, there are uncertainties in terms of the nature and significance of subsequent impacts and how effectively the programme will be steered towards positive outcomes.

In a scenario where the programme is very successful, the environmental benefits could be long-term and cumulative in nature, as for example networks develop and best practices are implemented, encouraging SMEs to adopt environmental management and the environmental sector to expand. The scale of impact through environmental innovation could significantly boost regional competitiveness through factors such as industrial ecology, new products, new markets and regional image.

Risks to human health or the environment are anticipated as minimal, especially since the partner countries have robust systems of environmental control and planning, so that projects with environmental implications would be subjected to other filters before obtaining approval. The transboundary nature of the co-operation is also likely to produce a better understanding and exchange of experience with regard to environmental control.

There is clear recognition in the NPP that the landscape and environment are of very high quality, with many areas having national, EU or international protection status. It is also apparent that the programme area is very dependent on its natural resources and landscapes. These factors suggest that areas of special value and vulnerability will be safeguarded from detrimental impacts.

In this fully developed scenario, there is scope for environmental impact to be significant in the respect that the NPP could become a model for other programmes to emulate as best practice, with an innovative urban-rural partnership model that integrates rather than isolates environmental development.

The possibility for significant negative effects relates to a scenario in which the programme's success leads to a scale of economic development where remote areas become much more accessible. In such a case, the increased transport, tourism and industrial sector activities could bring cumulative effects involving greater emissions, increased waste generation, more travel and associated noise, and blurring of urban-rural distinctions that result in loss of habitats and other features. This requires careful management and control, discussed in the mitigation measures below.

In addition, specific activities such as climate change adaptation may involve physical measures protecting against avalanches or rock falls, or construction of dams and defences to protect against flooding. These forms of natural hazard prevention can have negative impacts on soils, water, as well as habitat fragmentation destruction or disturbance

5.5 Mitigation

Although the priorities and actions in the NPP have a wide potential to achieve positive environmental impact, there are a number of ways in which the projects could produce negative impacts, as described in Table 6. This section draws further attention to these potential impacts and suggests ways in which the effects could be controlled, directed and mitigated.

In general, when reviewing the need for mitigation, options for consideration include avoiding projects completely in areas that are most sensitive environmentally, remedying or compensating for the negative impacts of projects by incorporating conditions on the funding being granted to prevent or minimise impacts, and enhancing positive impacts.

Priority 1: Promoting Innovation and Competitiveness in Remote and Peripheral Areas

- *Promote competitiveness by increasing and developing the capacity for innovation and networking in rural and peripheral areas*

In this theme, there is a risk that ‘competitiveness’ is interpreted as a basis to cut environmental costs, potentially by delaying legislative obligations or by seeking minimum compliance in environmental standards. Accordingly, the programme must convey a clear message that positive environmental impact is a key element of the programme’s strategy, and that competitiveness should be based on high environmental standards and environmental management techniques. Similarly, ‘innovation’ should be understood to include environment – possibly to prioritise environment – as a means of fulfilling the vision that the NPP is pursuing.

Even if the scope for negative environmental impact is limited, there is still a risk that this could represent a missed opportunity, with no useful environmental impact, for example if innovation is directed at sectors other than environment or the new networks exclude environmental actors.

- *Facilitate development by the use of advanced information and communication technologies and transport in the programme area.*

It is assumed that the NPP will support only small-scale change to make specific locations more accessible, but there is still a need to ensure that decisions on transport projects are well informed with an environmental impact assessment (EIA) supporting each proposal. This theme also offers scope to encourage or promote

communications co-ordination, for instance by developing a framework that maximises environmental benefits from inter-modality and new accessibility.

Whereas no negative impacts would be anticipated from the adoption of advanced ICT, transport developments could be harmful if improved access generates increased traffic with associated noise, emissions and fuel consumption. In this respect, both airport and road development could promote environmentally undesirable outcomes, and close attention needs to be given to the projected scale of development with monitoring of increased traffic.

Priority 2: Sustainable Development of Natural and Community Resources

- *Strengthen synergies between environmental protection and growth in remote and peripheral regions.*

In the various initiatives that could emerge under this theme, it will be important to find the appropriate balance between the use and conservation of natural resources, forming a foundation for long-term sustainability in the NPP regions. High standards should be maintained over time, with clear environmental credentials and momentum, otherwise projects could undermine NPP aspirations and the public perception of the programme.

SME projects should be able to demonstrate that they are achieving sustainable management either through certification or mentoring, for example co-ordinated through a business-environment forum that transfers best practice and experience. Projects linked to climate change should be monitored to prevent approval of lower quality proposals presented as essential or deserving priority treatment.

Renewable energy facilities can also present problems such as blighting landscapes, noise, and environmental damage caused by supporting infrastructure in the form of access roads and power lines. As with transport projects, an EIA should accompany each proposal.

- *Improve sustainable development in peripheral regions by strengthening urban-rural relations and enhancing regional heritage*

In the event of regional development being very successful, it will be important to retain distinctions between urban and rural locations, with awareness that the rural areas must retain their character and culture. There should be safeguards against increased road traffic, new building and waste generation, while minimising impacts on biodiversity, the water environment and soil.

Tourism development should be controlled or moderated to ensure that facilities do not promote increased erosion from walkers, cyclists and off-road vehicles. Other risks include increased noise and disturbance to wildlife, a loss of wilderness, and increased effluent requiring disposal, which might lead to more pollution.

5.6 Indicators for Monitoring Environmental Effectiveness

Under the SEA Directive, there is a requirement to establish a monitoring programme to gauge environmental effectiveness. A series of indicators will need to be developed for the NPP, and these should be compatible with the indicators chosen for monitoring the strategy. In practice, these indicators should reflect not only effectiveness in addressing strategic environmental issues but also effectiveness of the NPP overall.

The following table provides examples of potential indicators that may be useful in monitoring different aspects of the programme performance, with suggestions for the division between themes in Priorities 1 and 2.

Table 7: Potential Environmental Indicators	
Promote competitiveness by increasing and developing the capacity for innovation and networking in rural and peripheral areas	<ul style="list-style-type: none"> • Employment in environmental jobs • New environmental products • New enterprises with environmental products or specialism • Evidence of energy saving • Waste generation, and percentage of waste being recycled, recovered, composted and landfilled • Environmental management certifications with ISO/EMAS • Formal agreements on environmental resource trading between businesses
Facilitate development by the use of advanced information and communication technologies and transport in the programme area	<ul style="list-style-type: none"> • Reductions/increases in travel or journeys made • Number of projects developing integrated transport options • Expansion in public transport • Volume of road traffic • Length of new road construction • Volume of air traffic • Change in condition of protected areas • Changes in net loss/gain in biodiversity
Strengthen synergies between environmental protection and growth in remote and peripheral regions	<ul style="list-style-type: none"> • Numbers of plans and strategies prepared for parks, scenic areas, habitats etc • Percentage of energy/electricity generated from renewable sources • Changes in habitats • Emissions of key pollutants from differing rural sectors • Percentage of rural land used for flood management • Change in percentage of water bodies deemed to be of good ecological status

<p>Improve sustainable development in peripheral regions by strengthening urban-rural relations and enhancing regional heritage</p>	<ul style="list-style-type: none"> ● Number of archaeological sites, listed buildings, conservation areas judged to be at risk ● Number of people visiting archaeological and historic sites ● Use of chemicals, fertiliser and fuel ● Concentrations of pollutants in rural and urban areas ● Changes in land-use ● Buildings restored
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6. NEXT STEPS

At the end of the consultation phase, the responses derived from representative parties will be reviewed to make appropriate amendments to this report, and a revised version will be submitted to the Joint Programme Secretariat.

APPENDIX 1

EU ENVIRONMENTAL DIRECTIVES

- The *Urban Wastewater Treatment Directive* (91/271/EEC) addresses appropriate sewage treatment for settlements, and it prohibits dumping of sewage sludge at sea.
- The *Air Quality Framework Directive* (96/62/EC) establishes a framework that sets limits for the concentrations of specified air pollutants in ambient air.
- The *Habitats Directive* (92/43/EEC) ensures biodiversity through the conservation of natural habitats and of wild fauna and flora.
- The *Birds Directive* (79/409/EEC) preserves, maintains or re-establishes a sufficient diversity and area of habitats for all species of birds.
- The *Water Framework Directive* (2000/60/EC) prevents deterioration in the status of ground and surface water bodies, promotes the sustainable use of water, and introduces a co-ordinated approach to water management.
- The *Integrated Pollution Prevention and Control Directive* (96/61/EC) employs an integrated approach to regulating certain industrial activities and installations that may cause pollution or have other environmental effects.
- The *Waste Directive* (75/442/EEC) establishes general rules for waste management.
- The *Landfill Directive* (99/31/EC) seeks to reduce methane emissions, ensure high standards for waste disposal, stimulate recycling and recovery of waste and energy, and reduce the amount of biodegradable waste going to landfill.

APPENDIX 2

NATIONAL ENVIRONMENTAL STRATEGIES & POLICY DOCUMENTS

- The *Nordic Strategy for Sustainable Development* (updated and revised in 2004) sets long-term development goals for the Nordic region for the period up to 2020.
- *Choosing Our Future: Scotland's Sustainable Development Strategy incorporating Indicators of Sustainable Development for Scotland: Progress Report 2005*, sets out the measures to be taken in Scotland as part of the UK shared framework for sustainable development.
- The *Scottish Climate Change Programme* is designed to deliver the Kyoto commitment to reduce greenhouse gas emissions by 12.5% below 1990 levels for the period 2008-2012 and to move towards a goal of 20% reduction in CO² by 2010.
- The *Scottish Biodiversity Strategy 2004* presents a vision, aim, objectives and broad directives for action to deliver a 25-year strategy to conserve and enhance biodiversity in Scotland.
- *National Planning Policy Guidelines* (NPPG) relate to renewable energy (No.6), planning and waste management (No.10), natural heritage (No.14), and planning and the historic environment (No.18) in Scotland.
- The *Northern Ireland Sustainable Development Strategy 2006* outlines challenges, priorities, objectives and activities, with a rationale and specific targets for areas including sustainable consumption and production, natural resource protection and climate change and energy.
- The *Natural Heritage Strategic Plan 2003* sets out objectives and targets to advance the overall aim of conserving the natural heritage of Northern Ireland.
- The *Northern Ireland Waste Management Strategy 2006-2020* sets out a vision for the development of renewable energy from waste facilities as part of an integrated network of treatment and disposal facilities for Northern Ireland.
- *A Strategic Energy Framework for Northern Ireland 2004* outlines the energy vision for the coming decade by focusing on setting the agenda, key priorities and principles for the energy sector.
- The Republic of Ireland's *National Biodiversity Plan* and *National Heritage Plan* were published in 2002.
- The *Irish National Climate Change Strategy*
- The *Swedish Environmental Code*, 1999, integrated 15 existing environmental objectives to promote sustainable development. The Code is elaborated through ordinances, regulations issued by public authorities, and by individual decisions.
- Swedish supporting documents relate to environmental quality criteria and standards, environmentally hazardous activities, end-of-life vehicles regulations, motor vehicle emissions, and nitrogen oxides charges.
- Iceland's second *National Strategy for Sustainable Development: Welfare for the Future 2002-2020*, contains 17 objectives in the fields of environmental health and safety, Icelandic nature protection, sustainable use of resources, and global issues.
- Iceland's *Nature Conservation Strategy* was published in 2002.

- Iceland's *National Implementation Strategy* aims to meet the emissions limits for greenhouse gases set in the Kyoto Protocol.
- Iceland has a range of national environmental policies, strategies, action plans and partnership in over 20 international conventions on environmental protection.
- The Norwegian *National Plan for Nature Preservation* and the *National Energy Plan*, are supported by county plans, commune plans, coastal zone management plans and local plans.
- Environment Departments within each of the regional administrations in Norway provide regional environmental information for each county.
- The *Lofoten-Barents Sea Ecosystem-Based Management Plan*, approved in 2006, aims for a holistic approach in managing resources and environmental features, and is to be extended to the remaining Norwegian Sea areas.
- In Svalbard, a new environmental law regulates activities in the fragile Arctic nature.