NORTH SEA REGION PROGRAMME 2014 - 2020

Citizen Summary

Project Developers' Version





Shared copy for Project Development and Partner Search Seminar in Ghent September 2014

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Contents

Please note that this document is a summary of the final draft Cooperation Programme for internal Partner Countries's approval. **Annexes** in this document refer to the 'Annexes to Cooperation Programme' document.

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1. Programme Strategy

1.1. Background and aims

The programme supports cooperation between organisations and enterprises in the regions around the North Sea. Its aim is to develop more effective solutions to some of the main challenges facing the region. Projects should deliver tangible results and long-term impact. It aims to embed greater cooperation in working practices across the North Sea Region (NSR) as a way of tackling joint challenges, pooling expertise and building lasting links between businesses and institutions throughout the NSR.

The economic crisis of recent years has underlined the fact that the North Sea Region still needs to strengthen its knowledge economy so more businesses generate growth and jobs in sectors where the NSR can maintain a strong competitive position in global markets. The programme focuses on SMEs, which represent the vast majority of businesses in NSR economies but where innovation capacity often needs to be increased.

There are also a number of other threats to the long-term stability and well-being of the region. Climate change and environmental degradation could undo progress in other areas if they are left unchecked. The programme will therefore contribute to reducing carbon emissions and preparing for the environmental changes already underway as a result of climate change. The programme also addresses wider environmental issues such as wise management of natural resources, water and air quality, pollution and biodiversity. The measures suggested acknowledge that human interests and environmental interests must be balanced to achieve sustainable development.

The programme addresses transport as a special theme. The North Sea Region is the international trade hub for most of the continent because of its deep water ports. The transport sector is therefore a major contributor to the region’s economy and provides essential links to the outside world. However, it faces enormous challenges if it is to break the reliance of transport on fossil fuels particularly given that transport flows continue to increase.

This trend is also found at a local and regional level, as transport systems have generally been based around car and truck use. The programme aims to bring focus and new impetus to efforts to demonstrate how the North Sea Region can start to move away from fossil fuels for transport.

1.2 Expected results of transnational cooperation

Ambitious themes have been selected for the programme but the budget to address them is limited. Making significant, lasting change on issues such as carbon reduction will require contributions from many sources. Links and coordination with other EU funding programmes and policy initiatives are therefore expected. The specific role of the North Sea Region Programme will be to address current barriers, such as uncoordinated sectoral policies, mismatches between administrative boundaries and functional boundaries, insufficient use of stakeholder knowledge and views, and a lack of long-term visions for planning and objective setting. By taking their starting point in the territory and all of the relevant influencing factors on the territory, transnational projects should transcend administrative and sectoral barriers to actively pursue horizontal coordination (across sectors) and vertical coordination (across different levels of administration). In this way, transnational cooperation *can* make a real difference by demonstrating what is possible as well as delivering real change through practical action in regional and local communities.

Projects must set realistic targets for this action and will be closely monitored for delivery against these targets. The description of each specific objective under the four priorities contains output indicators showing the main benefits that projects are expected to deliver within the project lifetime. These outputs should be seen as a 'proof-of-concept', validating the project's approach by delivering progress on one or more core parameter.

Each specific objective also has a result indicator, which reflects the programme's long-term intention to improve performance in each priority theme across the whole programme area or large parts of it. They attempt to capture the extent to which the outcomes of individual projects have been integrated into policies and practices, and how they therefore have a positive influence across the NSR as a whole. Projects that cannot demonstrate a realistic contribution to these targets will not be approved.

1.3 The programme area

This strategy covers the North Sea Region (NSR) comprising the whole of Norway and Denmark, the eastern parts of the United Kingdom, three provinces of the Flemish Region of Belgium, the north western regions of Germany, the northern and western parts of the Netherlands and the south western area of Sweden (see Annex 29). All regions are on or close to the coast of the North Sea itself. The NSR covers an area of some 664,000 km^2 and approximately 60 million people.

In addition there is an option to allocate up to 20% of programme funds to partners from other parts of the EU outside the programme area. This option may be used in cases where it can be satisfactorily demonstrated that external partners provide inputs not available within the programme area.

1.4 At a glimpse – Overview of the four programme priorities

The programme funds activities under four main themes or priorities:

Priority 1 - Thinking Growth: Supporting growth in North Sea Region economies

There is a recognised need to:

- Strengthen the knowledge economy to generate growth and jobs especially in SMEs
- Improve the commercial take-up of research results
- Improve framework conditions for new and expanding companies
- Ensure that all parts of the region actively develop their innovation potential based on their own positions of strength.
- Stimulate innovation in public service delivery
- Ensure that public administrations where possible use public investments as a driver for innovation

The success of existing measures on these themes varies widely. Transnational cooperation will allow an exchange on why the best innovation measures succeed and how these lessons can be transferred. Transnational cooperation should also internationalize regional innovation activities to ensure that businesses across the NSR can access the best innovation partners in their field.

Priority 2 - Eco-Innovation: Stimulating the green economy

The countries of the North Sea Region have amongst the highest resource consumption levels in the world with correspondingly high carbon emissions. The aim of this objective is to identify measures to improve the environmental footprint of the NSR economy and wider society including carbon and resource use. For example, many businesses already focus on reducing packaging and try to use local, renewable and biodegradable materials. The same actions reduce carbon and resource use. The same dual benefit can be obtained from modifying the way we use water, raw materials, recycling of heat and energy, energy efficiency improvements, renewable energy sources etc.

The NSR is a leader in developing and piloting new approaches in these fields and this priority will build on this strength. Activities under this objective will not just focus on technologies but can also address working practices and lifestyle changes where these can provide significant carbon reduction.

Priority 3 - Sustainable North Sea Region: Protecting against climate change and preserving the environment

With so many low-lying areas, the greatest climate change impact for the North Sea Region will be the increased risk of severe flooding. There is a need to bolster flood defences but also to accept the

limits of conventional solutions and take a lead on developing adaptation techniques that can prevent disasters and limit the impact of unavoidable events. Climate change also has many other effects beyond flooding from local drought and outbreaks of new plant and animal diseases to species invasions and breakdown of industrial cooling systems. Action under this priority should therefore monitor and predict such changes in all sectors and ensure that essential preventative actions are taken so that the climate change threat can be properly managed in the NSR. This should include the spread of effective solutions from existing centres of expertise, and action to reduce barriers to initiating adaptation projects (cost, public resistance etc.).

The NSR environment has been heavily affected by human activity. Habitat and biodiversity loss are continuing. There is a need to:

- Protect plant and animal species
- Reduce pollutants such as TBTs and PCBs in the marine environment, copper and other heavy metals, excessive nitrogen and phosphorus, particulate air pollution, antibiotic residues and hydrocarbons
- Develop green spaces, corridors and other green infrastructure especially in urban areas
- Promote work on challenges like water quality, biodiversity loss and soil degradation so that action on major environmental issues like climate change also effectively integrates other ecosystem services and ensures the environmental quality of areas set aside for e.g. floodwater retention.

Priority 4 - Promoting green transport and mobility

In the North Sea Region transport sector there is a recognized need to:

- Reduce Green House Gases to tackle climate change
- Reduce pollution to improve air quality and public health
- Reduce congestion to maintain competitiveness and free flow of goods and people

As an important maritime transport hub, the NSR should include shipping in these actions. The programme will tackle these issues through cooperation on:

- Promoting effective, more sustainable freight and logistics systems including actions on shipping, fuels, technologies, harbours, hubs and new IT solutions
- Encouraging concrete actions that move freight off the roads to more environmentally friendly solutions
- Promoting environmentally friendly passenger transport solutions
- Encouraging the use of zero or low carbon fuels in the transport sector

Table 1 – Overview of priorities, objectives and expected results

Priority axis	ERDF support (EUR)	Norwegian Support (EUR)	Specific objectives	Result indicators
Priority 1: Thinking Growth: Supporting growth in North Sea Region economies	46,831,112	5,702,128	1.1 Develop new or improved knowledge partnerships between businesses, knowledge institutions, public administrations and end users with a view to long-term cooperation (post project) on developing products and services 1.2 Enhance regional innovation support capacity to increase long-term innovation levels and support smart specialization strategies 1.3 Stimulate the public sector to generate innovation demand and innovative solutions for improving public service delivery	1.1 Capacity of knowledge partnerships in the North Sea Region to deliver marketable product, service and process innovations 1.2 Capacity of authorities / practitioners to increase the scope and quality of innovation in enterprises 1.3 Capacity of authorities / practitioners to increase the scope and quality of innovation in public service delivery
Priority 2: Eco-innovation: Stimulating the green economy	45,158,572	5,498,480	2.1 Promote the development and adoption of products, services and processes to accelerate greening of the North Sea Region economy 2.2 Stimulate the adoption of new products, services and processes to reduce the environmental footprint of regions around the North Sea	2.1 Potential of products, services and processes supported by the projects to replace less sustainable practices 2.2 Capacity of authorities / practitioners around the North Sea to identify and implement new ways of reducing their environmental footprint
Priority 3: Sustainable North Sea Region: Protecting against climate change and preserving the environment	36,795,874	4,480,243	3.1 Demonstrate new and/or improved methods for improving the climate resilience of target sites 3.2 Develop new methods for the long-term sustainable management of North Sea ecosystems	3.1 Capacity of relevant authorities / practitioners around the North Sea to identify and implement ways of improving climate change resilience 3.2 Potential of implemented solutions to improve the quality of the environment
Priority 4: Promoting green transport and mobility	28,433,175	3,462,006	4.1 Develop demonstrations of innovative and/or improved transport and logistics solutions with potential to move large volumes of freight away from long-distance road transportation 4.2 Stimulate the take-up and application of green transport solutions for regional freight and personal transport	4.1 Potential of sustainable transport and logistics solutions to move a larger proportion of long distance freight in the North Sea Region 4.2 Potential of solutions developed to increase the use of green transport services

2. Principles for assistance

2.1 Promoting sustainable development in the selection of operations

The North Sea Region Programme 2014-2020 works for an on-going improvement of sustainability. During project development, projects should consider how to ensure net social, environmental and climate benefits (where possible) in particular when making investments and increasing the use of green public procurement. In addition, greening should be considered in selection of operations, where possible and appropriate. Especially, involving following considerations:

- Preserving natural capital (avoiding irreversible damage and restoring damaged assets)
- Using better production methods (reducing material use and waste generation)
- Changing consumption patterns (promoting healthy choices with a low environmental footprint)
- Ensuring that economic decisions also take proper account of environmental and social costs
- Use of public and sustainable transport

2.2 Integrated Approach to Territorial Development

'A coherent territory offers high quality by efficient functioning as a whole…involves all sub-territories which contribute to the whole in accordance with their distinct natural, cultural, social and economic assets' (European Council of Spatial Planners).

The Territorial Agenda aims to mobilise the potential of EU regions and cities and use territorial diversity for sustainable economic growth. This is a guiding principle in the preparation of all priorities, which promote a place for all regions and strengthened links across the NSR.

Regions deliver growth and tackle challenges based on very different starting points - a place-based approach. Four related principles for the programme are:

- **Capitalise on the strengths of each territory** so they can best contribute to sustainable, balanced development of the NSR
- **Manage concentration** by working with positive and negative impacts of cities - intensifying innovation and productivity while tackling pollution and social exclusion
- **Better connect territories** so there is reasonable access to public services, efficient transport, reliable energy networks and broadband internet
- **Develop cooperation** to address challenges that do not stop at traditional administrative borders

Transnational work should reinforce the process of cohesion by tackling:

- Uncoordinated sectoral policies
- Mismatches between administrative boundaries and functional boundaries
- Insufficient use of stakeholder knowledge and views
- Lack of long-term visions for planning and objective setting

This approach acknowledges the diversity of the NSR: The strategy can be applied in very different circumstances so all kinds of regions can be active:

2.3 Equal opportunities and non-discrimination

The programme aims to promote equal opportunities and prevent discrimination based on sex, racial or ethnic origin, religion or belief, disability, age or sexual orientation. The North Sea Region is considered to be a leading region in terms of promoting equal opportunities and non-discrimination. The majority of countries within the North Sea Region indicate that universal access to high quality services is considered a priority area. A number of countries also highlight the continuous need to tackle regional disparities in the provision and quality of services.

All organisations involved in the North Sea Region Programme 2014-2020 will contribute to a positive environment for the active pursuit of equal opportunities and the prevention of deprivation, exclusion and discrimination in all forms in line with current national legislation.

Promoting equal opportunities and non-discrimination in the Strategy of the North Sea Region Programme 2014-2020 is a concrete commitment. In the North Sea Region Programme 2014-2020, equal opportunities and non-discrimination will be addressed as a cross-cutting issue in order to rectify imbalances, and to integrate a non-discrimination dimension in innovation, environment and accessibility content.

2.4 Equality between men and women

The programme is committed to the promotion of equality between men and women. Projects are expected to proactively address these issues during development and implementation in order to help continue and strengthen positive trends in the region.

The principle of equality between men and women will be ensured through compliance with current national legislation in the involved Member States and Norway. Given the emphasis on gender equality in national legislation in the programme area, compliance with national legislation means that the North Sea Region Programme 2014-2020 is pursuing equality with high ambitions and standards. This is not to say that there are not areas where further efforts are still needed.

The issues of greatest relevance for the North Sea Region Programme 2014-2020 are (1) equal economic independence for women and men (2) equal pay for work of equal value and (3) equality in decision-making. Projects should ensure that gender perspectives are taken into consideration in all aspects of project development and implementation and ensure the effective promotion of gender equality and the gender dimension throughout the priorities. Projects are also expected to take direct action where they can have an immediate impact for example by taking account of the need to promote gender balance in decision-making. Particular attention shall be paid to ensuring gender balance in evaluation panels and in bodies such as advisory groups and expert groups.

3. Justification for the selection of priorities

While there are major geographical differences between different parts of the North Sea Region, all NSR countries are highly developed with strong educational and health infrastructure, a generally well-trained workforce, prosperous economies, which perform strongly in the knowledge economy, and good levels of ICT infrastructure and literacy. Long histories of trade and migration have created strong economic and cultural links. Good transport infrastructure supports physical links across the region. There is a shared interest in developing renewable energy and other green technologies and the NSR is amongst the global leaders in these industries. The NSR is in a good position to develop solutions which can simultaneously act as an engine for growth and new opportunities.

The impact of the economic crisis varied significantly across the programme area. Germany, Norway and Sweden managed to maintain relatively stable economic performance. The national economies of the UK, Denmark, Belgium and the Netherlands, on the other hand, were significantly affected by the crisis and are still recovering. In a number of countries, structurally weaker regions are among those which have been most seriously affected by the crisis and many are still lagging seriously in the recovery.

This situation emphasises the need for stimulating growth in all parts of the NSR though the economic crisis also raises challenges in this respect due to cuts in funding. There is a real need to demonstrate value for money and effectively manage the limited financial resources by, for example, coordinating projects across different sources of funding and maximising their impact.

Improving performance in the knowledge economy remains the key to most high value growth. All countries have programmes for raising skill levels, stimulating knowledge economy business start-ups and encouraging research but in many cases it is still difficult to commercialise the results of innovation. The NSR performs very well in an EU context, but still trails behind global innovation leaders like the USA, Japan, South Korea and increasingly China. This is the impetus behind programme support to promote ever greater coordination of research with business skills and knowledge in an effort to generate new products, quality jobs and maintain the region’s prosperity.

Socially the recent crisis has generated a paradoxical situation. In the long-term there could be a shortage of workers in the NSR. There is an ageing population with people on average living longer and smaller numbers of young people to take their place on the labour market. In the short-term, however, there are large pockets of youth and long-term unemployment and this brings with it a significant risk that these people may be permanently excluded from the labour market. Moreover, a proportion of the jobs that NSR economies have generated over recent years have been in very low pay segments of the economy. Such trends risk creating divisions in North Sea societies and stress the need to ensure that economic recovery is not limited to skilled workers in urban areas.

The economic situation has also put some pressure on the environment. Public spending on the environment has generally decreased slightly and it has not always been easy to maintain support for

long-term environmental goals. Major climate change mitigation and adaptation initiatives are, however, still needed to protect NSR countries. In many cases further efforts are also needed to strike a better balance human needs and the long-term sustainability of the NSR environment.

3.1 Innovation needs in the North Sea Region

Increasingly innovation is carried out not as an isolated activity in individual companies, but in partnerships with other companies, customers and researchers. Many larger companies have embraced this potential but SMEs often lack both the capacity to organise such processes and effective partners to work with. Transnational cooperation offers companies an effective framework for establishing partnerships and a wider network of relevant partners. It also allows those supporting SME development to access successful methods from other countries.

Main opportunities:

- Developing innovation support between countries and regions in the programme area
- Sharing innovation facilities and resources
- Stimulating transnational product and service development activities
- Unresolved societal challenges (e.g. climate change, aging population, alternative fuels) provide strong impetus for innovation

Main threats:

- Lack of funding and support
- Fragmented approaches
- Global competition

The NSR remains one of the most prosperous parts of the EU: No region has a GDP of less than 75% of the EU average and many regions are considerably above the EU average. Economic activity and growth are predominantly found in urban areas. This pattern and the accompanying movement of population away from rural areas seem set to continue. It is estimated that the proportion of the NSR population living in urban areas is already as high as 97.5% in some countries (Belgium). Even in a country with a lower proportion of urban population (Germany), the rate is already 76.3%. While larger cities play an important role as growth hubs this needs to be balanced against the danger of over-concentrating growth in a very small number of locations (Annex 4). Unemployment in the region is still relatively low as a whole but there are major regional differences and the worst affected regions tend also to have relatively high levels of youth unemployment and long-term unemployment.

The countries of the North Sea Region represent the innovation core of Europe (Annex 6) and occupy six of the top eight spots in EU innovation performance. This success is based on a number of strengths in national research and innovation systems and in particular on strong business innovation

measures and the role of the higher education sector as reflected in good links between industry and science. Educational levels are also high, there is a good research and innovation infrastructure and the environment for business start-ups is generally supportive. A number of sectors such as energy, environmental sciences and nanotechnology can be identified as national positions of strength with considerable overlaps between countries and a consequent potential for greater collaboration on development activities (Annex 7).

The NSR cannot, however, afford to be complacent about innovation. National scores on innovation performance parameters vary considerably and on some indicators North Sea Region countries actually perform below the EU average. For example, some countries rate badly on SME and gazelle company performance, which is a cause for concern given the dominance of SMEs in the NSR economy and the need to stimulate innovation in such companies. The NSR needs to maintain the pace and spread of innovation but instead cutbacks are in some cases resulting in stagnation or even decline in innovation performance.

Emerging economies are moving fast to close skill gaps and develop strong positions in knowledge intensive roles such as design, engineering, high technology manufacturing, education and specialist services. Niche markets will therefore be lost unless NSR businesses ensure that they innovate to maintain market advantage. Innovation also needs to open up new industries based particularly on exploiting the world class research carried out in the region. The business world in the NSR needs to be an active part of this process and as far as possible eventual commercial benefits should remain in the region. SMEs in particular must be offered a supportive environment for innovation.

Public service innovation is also an important opportunity. In many countries, finances for the public sector are under severe pressure and there is a need to deliver public services more effectively and efficiently. Digitalisation especially offers the opportunity to improve services to citizens while reducing costs especially in remoter and rural areas. Maintaining a good level of essential services in such areas is one of the main keys to the balanced development of the North Sea Region as a whole.

3.2 Environmental needs and sustainable growth

The countries of the North Sea Region face many shared environmental threats such as climate change impacts, the need to reduce Greenhouse Gas emissions, degradation of the maritime environment, and the spread of air and water borne pollutants. New solutions need to be found and these can benefit greatly from pooling knowledge and funding joint development.

Main opportunities:

- High degree of awareness and support for environmental action
- Strong experience and knowledge for developing new green technologies and processes
- Strong economic potential of green economy

Main threats:

- Short-term economic development needs override more sustainable approaches
- Effective solutions do not yet exist for some challenges
- Accident / natural disaster / climate related events

The North Sea Region has a rich and varied natural environment. The natural landscape is a valuable resource and the basis for many economic activities ranging from tourism to mineral extraction industries. The NSR has a strong tradition in environmental policy. All countries have an advanced system of monitoring and regulating environmental issues but there are still challenges requiring joint action. These include managing water supply, biodiversity and other resources which are under threat. For example, parts of the land and sea areas in the NSR are amongst the busiest territories for transport and economic activity in the world. This is creating concerns about the long-term sustainability of development in terms of both the rate at which resources are being used and the effects that emissions and pollutants are having on ecosystems. The North Sea itself provides a stark example as many commercially fished species are currently being exploited beyond safe biological limits and many fishing methods still cause substantial damage to other species and to the seabed. Many land-based ecosystems face similar pressures.

There are also long-term threats to the environment linked to climate change. Sea levels rose on average by 19 cm last century and the rate has accelerated to more than 3 mm a year. It is very likely that rates will increase for the rest of the century. It is almost certain that global average temperatures will rise by at least 1.5^{o}C in the same period though there is a strong possibility that increases could be higher (see IPCC reports for an explanation of the levels of certainty behind these different terms). Planning for these changes is difficult because they are not uniform. Some impacts may even offer opportunities for the NSR such as improved conditions for some kinds of agriculture and the opening up of Arctic sea routes to the Far East. However, many parts of the programme area lie just above or even below the current sea level and are at serious risk. Even regions where there are few low-lying areas tend to have heavy concentrations of population and essential infrastructure in the low lying areas.

Climate change is already causing negative impacts on the programme area. These effects need to be tackled and include loss of coastal land, salination of fresh water supplies, increased levels of erosion, subsidence and drought. The most dangerous and dramatic effect for the NSR is expected to be a significant increase in the frequency and severity of storms and associated flood risks. Adaptation

measures are needed and in many cases require major planning and investment efforts and difficult prioritisation especially where current land uses are untenable in the long-term.

The long-term solution to these challenges is a reduction in carbon emissions. The programme area has high levels of emissions and when emissions from imported goods are included, only Sweden is below the EU27 average. On a global scale, this means that the North Sea Region has some of the very highest per capita emissions and should demonstrate its commitment to improving performance. Current policy should deliver a 40% reduction in GHG (Greenhouse Gas) emissions by 2050 against 1990 levels on EU level but targets require an 80% reduction over the same period. Achieving these targets will require action in all sectors of the economy. Transport is tackled in a separate priority due to the scale of the challenge and the importance of the sector in the NSR but all sectors need to look at the potential for ever greater carbon reduction (Annex 8).

There are also opportunities in this situation. Knowledge and technologies for sustainable solutions are already in existence and can be applied in order to direct current economic activities into more sustainable directions. This will place much less pressure on the natural environment and in many cases lead to long-term cost savings as well. The region is strong in green economic activity and should showcase the potential of spreading the use of these approaches much more widely.

The ‘green economy’ is one:

…that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. It is low carbon, resource efficient and socially inclusive. Its growth in income and employment is driven by public and private investments which reduce carbon emissions and pollution, enhance energy and resource efficiency and prevent the loss of biodiversity and ecosystem services (United Nations Environmental Programme).

The aim of programme activity is to demonstrate through piloting how resource use and carbon emissions can be significantly reduced and/or how non-renewable resources can be substituted with renewable and preferably local materials.

3.3 Transport needs

The NSR occupies a unique position in the European transport sector: The majority of goods passing through the region are on their way to or from other parts of Europe and the majority of EU international trade passes through the NSR. This gateway function means that transport decisions in the NSR can influence modal choice over much of the continent. The planning of new and more sustainable international transport routes requires the cooperation of all main stakeholders from the point of origin to the destination. For local and regional transport, there is also an urgent need to work together to develop more sustainable new ideas.

Main opportunities:

- Many elements for increased multimodal transport are already in place including under-used infrastructure
- Strong research capacity on transport issues
- Strong business interest and significant market opportunities

Main threats:

- Lack of funding and knowledge
- Technology gaps – lack of solutions for some challenges
- Continued supply of cheap conventional fuels may lead to a timid introduction of sustainable alternatives
- Remoter regions may fall further behind if they suffer a relative fall in accessibility compared to core regions

Accessibility and mobility are important factors in promoting and maintaining economic growth and employment in the NSR. Accessibility varies across the NSR and depends mostly on how close a region is to the 'core' of Europe (Annex 9). The NSR includes extremes from high-density and highly accessible urbanised areas to remote and island areas.

Short sea shipping remains an important mode of transport in the NSR. Lack of cargoes has forced some ports to shut down commercial operations but this has helped make the remainder more efficient and increase competitiveness. Regional airports have found a new lease of life as lower cost airlines pioneer new routes and changes in aircraft technology makes operating smaller aircraft more cost effective. Regional air links are of vital importance for remote areas such as in Norway and northern Scotland but play only a limited role in Denmark, the Netherlands and Germany, due to shorter distances or better railway services.

In parts of the NSR inland waterways still have a significant unrealised potential for sustainable transport corridors and as feeder lines for sea ports. The inland waterways system in the countries of the NSR covers a total of 16,378 kilometres but only in the Netherlands and Flanders and to some extent in Germany are significant volumes of goods transported. In general, the NSR has a well-developed railway system, but many parts of the system face capacity problems particularly for transportation of goods. Whilst there is a general move to restricting new road building in favour of more sustainable modes of transport, roads are an important part of the transport network of the NSR. They are particularly important for access to more sparsely populated areas.

Personal transport, especially for shorter journeys, is dominated by private cars and current development trends are exacerbating this problem. Over the last 50 years urban areas in Europe have grown by approximately 78% but population has increased by just 33%. In the NSR this has led to extensive urban sprawl because of low density residential builds in suburban areas. Such

developments have created ever greater car use and the NSR is now faced with a major challenge in maintaining mobility while trying to move away from conventionally fuelled vehicles.

Achieving overall Green House Gas (GHG) reduction targets has so far been possible without major changes to transport but this will no longer be possible for the new targets for 2030: Transport must start to reduce emissions as other sectors can no longer achieve easy gains that will compensate for increasing transport CO2. Given the NSR's key role in the sector, there is a particular interest in finding solutions for delivering these reductions without an excessive loss of mobility. Due to the lifetime of transport infrastructure, solutions that are planned and introduced now will probably still be in place in 2050 – and must therefore start to move strongly in the direction of meeting the environmental requirements likely to be in force then. The programme can showcase these new solutions to potential users and in this way try to speed up the adoption of more environmentally friendly forms of transport.

4. Summary of priority 1 - Thinking Growth: Supporting growth in North Sea Region economies

Thinking Growth focuses on how the North Sea Region Programme can promote sustainable economic growth through innovation. All actions are particularly targeted towards support for SMEs. As well as being by far the largest category of businesses in the NSR, it is also here that innovation capacity is generally weakest. Three specific objectives are supported.

Objective 1.1

Develop new or improved knowledge partnerships between businesses, knowledge institutions, public administrations and end users with a view to long-term cooperation (post project) on developing products and services

This objective aims to address the identified needs of:

- Ensuring better knowledge exchange between knowledge institutions and businesses
- Increasing R&D expenditure especially in the private sector
- Increasing the number of new commercial products and services developed by businesses in the NSR

Activities will cover exchange of knowledge on how to engage businesses and researchers in active knowledge partnerships, and how to ensure that this involvement leads to the development of new products and services, which will result in creating growth and jobs. Cooperation should also facilitate transnational innovation processes by establishing long-term links between related businesses, and between businesses and knowledge institutions in different countries. It is essential for the success of all actions under this objective that they move beyond networking and stimulate new product development processes rooted in business needs.

The results that the Member States seek to achieve

- SMEs innovate and initiate development of new products, services and processes
- Transnational partnerships and clusters strengthen the participating sectors

Businesses and especially SMEs should maintain and improve competitiveness through continuous innovation. The 15% of SMEs already work with developing and using new technologies but a much wider range of businesses should benefit from innovation and new growth opportunities.

A ‘knowledge partnership’ is a formal cooperation of businesses, researchers, the public sector, NGOs and end users. It should provide the knowledge needed to create new products and services and accompany development to the point when these products can be introduced to the market. Partnerships also promote improvements to existing processes and the adoption of new technologies. Rather than supporting one-off cases of innovation, programme support to knowledge partnerships aims to identify effective innovation methods and tools so more businesses become regular innovators.

Knowledge partnerships need to deliver practical results but such knowledge flows between research and business in the NSR still need improvement. Projects should test new approaches for working with knowledge partnerships in order to increase the practical benefits. They should ensure the widest possible take up of effective methods – particularly for SMEs that have not innovated in the past.

Cooperation should also build transnational networks to support SMEs by creating contacts between SMEs and knowledge institutions in different countries to reduce geographical barriers to new knowledge and support firms in rapidly responding to market changes and accessing international markets. The best and latest solutions may not be in an SME’s own region or country and cooperation should stimulate the transfer of ideas, products and services.
All projects must lead to the development of new products and services based on knowledge exchange and cooperation.

Objective 1.2

Enhance regional innovation support capacity to increase long-term innovation levels and support smart specialization strategies

A region’s innovation capacity depends on the successful combination of a wide range of factors including education, types of sectors present, research intensity and the support of public authorities. The objective will support:

- Joint analysis of gaps in regional innovation capacity and development of methods to address them
- Long-term coordination around, for example, joint training offers, shared R&D infrastructure etc.
- Cooperation to identify new innovation potential outside existing innovation hotspots

It is important that innovation in the North Sea Region Programme is not limited to a relatively small number of urban innovation hotspots. There is a need to look for new economic opportunities in many sectors of the economy and regardless of location so as to ensure continued livelihoods for people throughout the NSR. This innovation should be place-based: firmly rooted in the capacities and realistic potentials of each region. Transnational cooperation should be used to address

disadvantages of location, scale and resources by pooling knowledge and facilities to address common challenges.

The results that the Member States seek to achieve

- Improvement in regional innovation capacity and entrepreneurship across the NSR
- Transnational cooperation on the implementation of regional innovation strategies
- Greater networking of innovation centres across the NSR

Regional innovation performance depends on a range of factors including educational levels, the amount of research carried out, private sector R&D budgets, intellectual assets and patenting and the types of SMEs present in the region (see Regional Innovation Scoreboard – Annex 17). This objective promotes the spread of ideas and examples of how regions can influence these factors to encourage people to start new businesses and support firms as they grow, and can help them engage in innovation and expand into international activities. The objective is focused on innovation support for businesses and the private sector.

Activities include:

- Encouraging entrepreneurship
- Making procedures responsive to SME needs and interests
- Helping SMEs access opportunities in the single market, public procurement and global markets
- Upgrading skills

Projects should identify the factors most likely to boost innovation in each participating region and develop or take over effective methods for improving regional performance in order to stimulate new economic activity.

Rural and disadvantaged areas should be assisted with diversification and becoming better integrated in the knowledge economy. In this connection, the objective supports the implementation of ‘smart specialization’ strategies and similar approaches to define realistic innovation potentials outside established innovation hotspots. Cooperation should encourage the development of a common understanding of how each region’s own assets and expertise can be exploited, and how to draw on other regions’ strengths and resources.

All projects should develop existing innovation support measures in participating regions with a view to creating long-term improvements in innovation performance.

Objective 1.3

Stimulate the public sector to generate innovation demand and innovative solutions for improving public service delivery

The public sector is a major part of the economy in all NSR countries. The need for innovation arises from requirements to maintain service levels against a background of shrinking budgets and in many cases, an increasing demand for services. Transnational cooperation will:

- Share knowledge on how services are delivered and how innovation can improve this through, for example, increased digitalisation
- Analyse the need for new products and services to address shared challenges such as the ageing population, movement to urban areas, the need for greater efficiency etc.
- Support collaboration on how to stimulate businesses to deliver innovative solutions that can reduce the burden on public services

Efficiency and cost reduction in public service delivery are also important for the competitiveness of the NSR.

The results that the Member States seek to achieve

- Improve knowledge of how the public sector can innovate in service delivery
- Use the public sector's role as a launching customer to stimulate innovation in procured products and services

Public service delivery faces a number of major challenges over coming years and service providers need to define how these changes will impact their organisations and work to pioneer innovative solutions.

This objective is targeted at developing innovation in the public sector to address new challenges arising from adaptation to climate change, reducing carbon emissions and resource use, an ageing population and declining tax base, increasing demand for health care, budget reductions and a resultant need for continual efficiency savings. As a result of this objective, public service providers should be better equipped to respond to their rapidly changing operating environment. The public sector can also 'pull' regional innovation forward by creating demand for new products, services and processes that better meet changing needs and this objective will also stimulate that development

Operations should study how these challenges can be addressed in the NSR and initiate cooperation to develop these new products and services. This objective will fund test cases to develop expertise on ways of anchoring innovative approaches in public service delivery through, for example, green procurement, pre-commercial procurement and increased digitalization of public services.

In addition to the products and services delivered, the objective will stimulate the innovative culture in public services and thereby help to deliver performance improvements. This will equip public service providers with new processes for addressing long-term challenges, and stimulate NSR businesses to take first-mover position on developing new products and services for the public service market. Cooperation is required to promote wider use of existing successful models and support joint development of new methods.

Priority 1 – Examples of actions and targets

In order to meet global competition, businesses need to improve their take up of the world class research results being produced in the NSR. Similarly, research and learning institutions in the region need to improve their links to the business community and the way that the commercial opportunities of research findings are communicated so that more product and service innovation can be fed into NSR businesses. This process applies not only to new advanced technologies but also to more traditional companies which also need to grow by introducing new or significantly improved goods and services, processes, organisational and marketing methods into their internal business practices and to the marketplace.

Transnational cooperation can link innovation actors and ensure that key organisations enter into relevant knowledge partnerships. In this way researchers and businesses (in particular SMEs) can meet and initiate joint development activities which lead to new products and services.

SMEs are key targets in this priority as they represent by far the majority of businesses in the NSR but are under-represented in innovation performance. There is a huge variation among SMEs and it will not be possible to develop one standard approach. Instead a variety of techniques should be used to develop innovation including meetings and events, temporary placements of academic workers in SMEs, presentations of new research findings to businesses or a wide range of other methods. It is important that projects develop processes which effectively move ideas from the academic world through to new products and services and eventual commercialization.

Actions should address the communication gap between knowledge institutions and business, which is a well-recognised barrier to the innovation process. Often SMEs do not have their own researchers and do not know who to approach when developing new solutions to technical or operational problems. Equally, researchers may be unaware of needs in local businesses.

Knowledge partnerships should aim to integrate all relevant innovation resources in a harmonised effort. This should include material resources (funds, equipment, facilities, etc.), human capital (students, faculty, staff, industry researchers, industry representatives, etc.) and the full range of relevant institutions (e.g. universities, colleges of engineering, business schools, business firms, venture capitalists, industry-university research institutes, government or industry supported centres of

excellence, and regional and/or local economic development and business assistance organizations, funding agencies, policy makers, etc.).

In many cases, the 'triple helix' relationship of research institutions, businesses and the public sector can also be strengthened by the inclusion of end users as a fourth actor (a 'quadruple helix'). User-driven innovation and co-creation of solutions have proven in some cases to be successful approaches and might be particularly effective in developing new solutions for local and regional problems.

Clustering is another specific example of this kind of activity. There are emerging industries such as nano-technology, where several countries/regions in the programme area are particularly strong and there is a potential for lasting cooperation. Other NSR areas of specialisation include modern manufacturing, creative industries, design, aerospace, telecommunications, energy, and environmental and maritime technologies (Annex 7). Clusters need to be far more than loose networks of related businesses. The competitive advantage of a cluster emerges when a concentration of related businesses grows big enough to attract specialist workers and suppliers and thereby moves into a position to lead in the sector as the companies involved feed off each other. Distance and competition between countries work against this process and strategies need to be found to address this challenge if transnational clusters are to result in genuine transnational positions of strength.

Blue Growth requires a specific mention. Established maritime activities like fishing and tourism need to be consolidated while space is also made for developing maritime industries. For example, the number of pharmaceutical patents based on marine genetic resources is rising by 12% per year and the first global seabed mining licences are being issued with North Sea companies taking a lead. There is considerable potential here but also a need for cooperation to manage the considerable shared risks of actions in the North Sea.

Transnational cooperation can facilitate an exchange of best practice and it should also ensure that businesses and knowledge become better linked across national boundaries. Effective activation of these international links will require the use of tools that can effectively support trust building and overcome the distance barrier. The public sector has an important role to play as broker in creating these new knowledge partnerships. Valuable experiences can be found in some past NSR projects, which have achieved real product and service improvements through a tight sectoral focus and securing a strong commitment to virtual cooperation.

In terms of target sectors, hi-tech industries and centres of excellence will be targeted but there is also an urgent need to stimulate the innovative potential in regions and sectors that are not normally associated with the knowledge economy, such as agriculture and transport. Leading edge research will remain concentrated in a small number of locations but all regions need to develop and identify innovation opportunities based on their specific resources and the sectors where they can realistically maintain and extend a competitive advantage. In many cases this will rely less on technological R&D

and more on organisational and marketing innovation or making small incremental improvements to existing technologies and processes.

The development of knowledge partnerships and clusters is only one method of increasing innovative capacities in a region. A strategic approach needs to be developed which meets the needs of a variety of user groups with different objectives, and uses multiple approaches and tools to reflect the big differences between SMEs. For example, access to venture capital remains deeply problematic for many technology developers and the programme could support operations bringing together funders and businesses. The vast majority of SMEs (the technology followers) on the other hand need more basic assistance such as:

- Consulting services
- Help with recruitment of university graduates and skilled personnel
- Support to gain awareness of new ideas and technologies

Furthermore, many SMEs still lag on the take-up of new ICT services. New communication technologies can facilitate global reach and help reduce the disadvantage of scale economies which small firms face in all aspects of business.

In addition to general innovation support measures, there is a need to consider the huge differences between regions around the North Sea when it comes to innovation performance. There are world-class academic research centres at one extreme and strongly rural and agricultural areas at the other. There is a general concentration of innovation in urban centres and this is strengthening the problem for remoter parts of the NSR to attract and hold on to highly skilled workers and young people. Balanced development of the NSR requires that all regions are able to innovate, attract investment, and generate and maintain positions for highly skilled workers. The priority also seeks to ensure that all regions – regardless of location and capacity – have the opportunity to develop their role in the knowledge economy and deliver growth and jobs to the population. This aim is closely related to the development of ‘smart specialization’ strategies (or similar approaches), which can break "follow the leader" trends by identifying and targeting each region’s own specialized growth sectors.

Smart specialization calls for a clear differentiation of each region’s core development fields and building a development path based on existing assets and the potential of specialisation in a market niche. This can compensate for some of the disadvantages of small scale and location. A number of different development pathways are possible including:

- Rejuvenation of traditional sectors through higher added value activities and identifying new market niches
- Modernizing by adopting and disseminating new technologies
- Technological diversification from existing specialist industries into related fields

- Developing new economic activities through radical technological change and breakthrough innovations
- Exploiting new forms of innovation such as open and user led innovation, social and service innovation

Cooperation should foster an exchange of knowledge on different development strategies and success factors as well as assisting with the identification of regions with complementary skills and assets. This exchange should be rooted in demonstration actions that seek to confirm the validity of the measures being taken. Such support actions should be targeted at clearly identifiable innovation gaps in the participating regions. Projects involving a wide cross-section of regional interests and including target businesses will be strongly favoured.

Examples of actions under this objective include:

- Support for policy making
- Development of regional research and innovation strategies
- Alignment of educational courses with industry needs
- Skills development and recruitment support
- Support to entrepreneurial programmes
- Support for start-ups and gazelles (new companies with high and consistent growth)
- Support for the innovation climate
- Support for the creation of new markets by identifying and moving on new business opportunities

Finally, authorities in the NSR also need to be able to deliver a wide range of public services in order to ensure the continuing attractiveness and competitiveness of their regions. Public service delivery faces a number of key challenges such as the need for major investment to address threats like climate change, a growing elderly population needing care and a smaller working population to pay for it, falling budgets and staff levels, and rising public expectations and demands. Innovation is therefore equally important in public service delivery in order to respond to these challenges.

Public services represent 40%-55% of GDP in the EU, directly employ about 15% of the working population, and are responsible for a procurement budget of up to €450 billion per year. The public sector can therefore serve as a driver for the wider knowledge economy through demonstrations, setting standards and creating markets for innovative products and services. The aim of this group of activities is to promote the dual benefit of improving service delivery and at the same time stimulating innovation in the wider economy.

A range of measures are available to improve the quality, speed and cost of service delivery:

- Continuing the roll-out of e-government services to provide time and cost savings. Projects can address piloting and exchange of good practice particularly around issues such as interoperability, security and user-friendliness
- Redesign of service delivery based on the new opportunities that digitalization can provide. A good example is health care provision in the home, which exploits ICT to re-design the delivery of many health services
- Inter-agency approaches which add value and functionality to the work of each agency by, for example, cross-checking data and providing one-stop desks and portals for a wide range of services. Examples include Norwegian experiences of training home-helpers to provide fire safety advice, which has cut house fire deaths by half
- Methods like customer differentiation to allow for better targeting of services
- Making use of bottom-up input from junior staff, public consultation, crowd sourcing and social media

There are very different but complementary experiences of these developments across the NSR and cooperation should be used for transferring methods and joint development of new ideas. A number of barriers have, however, also been identified in the reform process and these include cuts to public sector research and development budgets, lack of employee incentives for innovation, lack of skills and institutional resistance. Solutions to these issues could also be targeted by projects to help ensure the success of future initiatives.

The public sector can also support innovation by creating demand for innovative solutions through procurement of products and services which promote improvements in the environmental profile of existing technologies. Projects to develop successful methods for green procurement, joint procurement and pre-commercial procurement should investigate how best to contract research and product development by the public sector and develop knowledge and experience on how to do this safely. Green procurement can be used to set demands about the environmental performance of goods and services. Pre-commercial procurement can be used to enter into joint research and development projects between the public and private sectors. Joint procurement between a number of organisations could be used to ensure that contract values justify the innovation effort required from bidders. All of these approaches are relatively new and would benefit from exchange of experience.

Taken together, action under the three objectives in this priority will allow regions to tackle the main barriers to innovation and integrate larger parts of the regional economy into the knowledge economy.

Table 2: Output indicators Priority 1

Indicator *(name of indicator)*	Measurement unit	Target value (2023)	Source of data
Number of enterprises cooperating with new / improved knowledge partnerships	Enterprises	500	Project reporting
Number of improved or new innovation support measures launched for businesses	Measures	21	Project reporting
Number of improved or new innovation support measures launched for public service delivery	Measures	21	Project reporting
Number of organizations / enterprises adopting new solutions by project end	Organisations and enterprises	228	Project reporting
Number of organizations / enterprises informed about new solutions by project end	Organisations and enterprises	2280	Project reporting

5. Summary of priority 2 - Eco-Innovation: Stimulating the green economy

The Eco-innovation priority addresses the need to develop new approaches, which can promote the more sustainable use of resources and reduce carbon emissions. Major investments and research programmes are currently running on both themes and will provide significant long-term change. The aim of activity in the North Sea Region Programme is to maintain momentum by spreading awareness of practical steps that can already be taken and promoting the take up of new technologies and processes. The NSR is still a world leader in renewable energy technologies and green industry and should also consolidate this position. There are two specific objectives:

Objective 2.1

Promote the development and adoption of products, services and processes to accelerate greening of the North Sea Region economy

Greening in this context does not refer only to support for traditional green sectors of the economy but rather to improvements in sustainability in any part of the NSR economy. Clearly this is a long-term process and the aim of this objective is to provide inspiration and show what can be achieved by applying new sustainable approaches. This should result in a developing body of transnational good practice on how to increase resource efficiency. This can also lead to reduced carbon emissions and manufacturing costs. Actions will include:

- Pilots to identify resource savings through innovative industrial design and manufacturing processes
- Pilots to experiment with new uses of renewable and locally sourced materials
- Increased recycling of non-renewable materials supported by improved lifecycle design
- Awareness raising of greening methods and results

People in the North Sea Region consume on average 16 tonnes of materials and throw away 6 tonnes every year. This objective also supports coordinated action which will influence behavior and reduce these figures to more sustainable levels.

The results that the Member States seek to achieve

The aim of the objective is to stimulate the development of technologies and processes which reduce natural resource use and increase investment in the NSR's existing natural assets. The focus is on the design, production, consumption and reuse of goods. Projects can target raw material use across any sector of the economy. The approach seeks to support businesses, and particularly SMEs, in redirecting activities in a more sustainable direction. This can in many cases also open up new growth opportunities based on green products and services.

Through these actions the programme can act as a catalyst for green growth and support regions in drawing on the extensive experience available in many parts of the NSR. Transnational projects can, for example, demonstrate the potential for businesses of increased use of recycling, introducing zero waste production and consumption methods ('use and re-use'), making much greater use of renewable energy, green buildings, sustainable transport and mobility, improved land use planning and improved management of waste and water.

Use of renewable natural materials such as bioplastics and biofuels should be promoted as much as possible. Where it is not possible to identify renewable materials, projects should try to adapt consumption, and improve reuse and recycling including finding new uses for materials generally regarded as waste. The trend should be towards circular economies where the majority of materials are returned to nature and products are designed in such a way that non-natural materials can be reclaimed in high quality form at the end of product lifetimes.

There are many successful cases to draw on. Cooperation should be used to raise awareness of the potentials, advise businesses on measures they can take, and look at potential synergies within and between regional economies.

Objective 2.2

Stimulate the adoption of new products, services and processes to reduce the environmental footprint of regions around the North Sea

This objective addresses the need to increase renewable energy generation and reduce overall energy use. Transnational cooperation should help partner regions to:

- Identify viable opportunities for installing additional renewables infrastructure
- Pilot installation of newer renewable technologies such as wave power and blue energy
- Demonstrate the application of smart grid technologies as a way of saving energy and integrating more renewable power in the energy mix
- Reduce overall energy use by changing behaviour and increasing take-up of energy saving technologies

Energy is a complex issue with many stakeholders, regulations and limitations. Projects should help partners to identify realistic options within these constraints and demonstrate the carbon reductions that can be achieved, building on the many good examples available of regional and district energy planning and implementation. There is also considerable scope for exchange on energy saving techniques and technologies. Cost-effective retro-fitting of older buildings is one area of considerable potential but this objective should also support partners to experiment with identifying completely new areas where carbon savings are realistic.

The results that the Member States seek to achieve

Transnational exchange of experience and knowledge will help the NSR to develop new initiatives to reduce its environmental footprint including carbon emissions. The objective focuses on energy use and generation, and achieving 2030 targets. The provisional 2030 EU targets for renewable energy generation and Greenhouse Gas reductions will require major new initiatives to succeed. The 2020 target for energy efficiency is unlikely to be met (Annex 22).

The programme will not deliver these targets but coordinated local and regional level action *can* contribute to the energy and emissions savings required to meet these targets. Actions should be based on areas offering significant potential for emissions reductions in the participating regions. Projects should provide inspiration on new approaches for reducing energy use, increasing the use of renewables, and other ways of reducing the environmental impact of communities in the NSR.

For the NSR, work on energy savings is particularly relevant. Based on current performance it seems that the NSR will not achieve the 2020 target of a 20% reduction in energy use. Renewed transnational efforts should therefore be made to identify areas where technological development, wider take-up of proven technologies, changes to working practices and/or behavioural change can provide new energy savings.

There is also potential in looking at energy generation and in particular building on successful pilots that have demonstrated the possibility of transforming local energy production to a much greater use of renewables. In the NSR infrastructure projects are currently underway that should lessen some of the bottlenecks to integrating more renewables in the energy mix. Enabling technologies for smart grids are also becoming widely available and will allow greater use of renewables and considerable energy savings.

Priority 2 – Examples of actions and targets

There is growing recognition that current economic practices and lifestyles are leading to the rapid depletion of non-renewable resources and degradation of natural systems. Rising global populations and wealth are accelerating this process and creating an urgent need for the development of new methods. The programme will support the development of green economy demonstration actions as an inspiration for NSR economies to move towards more sustainable practices and strengthen the region's position as a global provider of green solutions. 'Greening' has been a growth sector over recent years despite the economic downturn and can generate highly skilled and well-paid jobs in the NSR. 'Green economy' means more than supporting traditionally green sectors like renewables and refers in addition to efforts to improve environmental performance in all sectors.

Greening involves a number of inter-related actions:

- Preserving natural capital (avoiding irreversible damage and restoring damaged assets)
- Using better production methods (reducing material use and waste generation)
- Changing consumption patterns (promoting healthy choices with a low environmental footprint)
- Ensuring that economic decisions also take proper account of environmental and social costs

The aim of the objective is to act as a catalyst for an industrial transition based on 'technologies and production methods that reduce natural resource use and increase investment in the EU's existing natural assets'. Transnational cooperation can spread awareness of the many initiatives that have already been launched across the region, pilot new ideas, and should demonstrate the benefits of green action to citizens, decision-makers and businesses.

The NSR is relatively well-placed in this respect and has taken a lead in providing environmental solutions. It is still a leader despite growing competition especially from China and North America. Denmark and Germany are the two leading countries in the world in cleantech investment performance and Sweden and the United Kingdom are also in the top 10. There is an estimated potential for millions more jobs. Green technologies represent an important growth sector with the global market currently worth €1.15 trillion annually and predicted to grow to €2 trillion by 2020.

When it comes to resource use, NSR consumption of materials continues to rise and this trend is even stronger if imports are included. The programme aims to support experimentation and pilots to stimulate change in current patterns of production, consumption, working and living'. These actions should demonstrate the potential of new, renewable natural materials, new approaches to industrial design, a greater focus on product lifecycle planning, more use of green buildings, improved land use planning and careful management of waste and water. Many of these actions can also be expected to have a positive knock-on effect in terms of carbon reduction.

In terms of resource efficiency, reconsideration is needed of patterns of production and consumption including:

- Greater use renewable materials
- Increasing reuse and recycling
- Promoting circular economies where the majority of materials are returned to nature and products are designed so non-natural materials can be reclaimed in high quality form at the end of product lifetimes

These activities should not be limited to niche markets and specialist products but should be placed firmly in the mainstream of economic activity. Such practices are increasingly common in large companies due especially to the growing use of environmental auditing and Corporate Social Responsibility strategies. Programme support will raise awareness of the potential for transferring or

modifying them for SMEs. This includes support to develop new green products and services but should just as importantly address process change and developing environmental management capacity in SMEs.

Eco-design is a major task for the future and should aim to ensure that all products use a minimum of materials, use the least harmful materials, are designed to be durable and upgradable, with a potential for recycling. In parallel, new ideas are needed for separate collection of different types of waste and to promote consumer willingness for greater recycling (see Annex 19).European Commission figures suggest that by using this kind of approach the EU as a whole could realistically reduce total requirements for materials in the economy by between 17% and 24%, boost GDP and create between 1.4 and 2.8 million jobs. This is a prime area for projects to work with new knowledge partnerships and demonstrate what can be achieved in different sectors.

Specific actions for stimulating business greening include:

- Identifying ways of reducing raw material usage in different sectors (see Annex 20)
- Encouraging display of environmental information on products and promoting use at regional level of resource performance indicators such as EUROSTAT sustainable development indicators
- Reducing waste, encouraging high quality waste management and increasing recycling (incineration of non-recyclable waste only and phase out of landfill). ‘Use and re-use’ of ‘waste’ Producers should be responsible for ensuring that products can be recycled and incentives should be provided to take environmental considerations into account in product design
- Improving resource efficiency in B2B relations including SMEs by building capacity and encouraging involvement in existing sustainable sourcing standards for industry and retailers (such as existing certification schemes for fish, wood etc.)
- Encouraging the spread of ‘industrial symbiosis’ networks where the waste of one industry is traded as a commodity needed by another. Kalundborg in Denmark is a pioneer in the North Sea Region and its companies trade steam, dust, gases, heat, slurry or any other waste product that can be physically transported from one enterprise to another
- Providing a coherent policy framework for resource efficient product and service development and ensuring that this is reflected in requirements for warranties, durability, upgradability and/or recyclability, eco-design requirements etc.
- Providing specific support for SMEs to gain capacity, skills and access to finance required to take full advantage of resource savings and new markets. This could include resource efficiency audits / consultancy, and other financial, advisory and skills services

On a regional level these activities should be integrated with the development of smart specialization strategies (or similar) to consider possible overlaps between waste and raw material needs in

businesses in each region together with the natural asset base and its best possible sustainable exploitation.

The NSR also remains a major source of carbon emissions and other Greenhouse Gases (GHGs) and must continue to reduce energy consumption and convert energy production as far as possible to renewable sources. In addition to climate benefits, these activities will contribute to reduced reliance on imported fuels and promote green innovation. Previous projects have shown that local and regional pilot actions can identify new approaches and build stakeholder support for them, and that transnational cooperation can be used to improve the design and implementation of such pilots.

Examples of actions include:

- Development of new technologies and approaches
- Demonstration and increased use of existing technologies
- Better planning, smarter use of existing capacities and resources
- Behavioural change
- Knowledge exchange
- Collaborative innovation between public authorities, businesses, knowledge institutions and citizens.

There is a need to support the continued development of sustainable energy generation in the NSR, to assist regions in identifying their best renewable energy potentials and share knowledge on how to remove remaining barriers to implementing renewables projects. Exchanges of knowledge and experience should support the transfer of successful practices between regions of strength in different renewable technologies and other regions with a similar resource base (e.g. onshore and offshore wind, biogas and biomass, tidal energy and geothermal energy). Increased cooperation on successfully exploiting regional energy resources can stimulate long-term networking of regions around shared energy assets.

Pilot and demonstration investments for renewables will realistically be based on small decentralised electricity generation plants or co-generation schemes due to prohibitive costs involved in larger projects. Decentralized capacity such as domestic solar panels, small wind turbines, local biogas plants etc. is increasing and arrays of small installations can meet most of the energy needs of a relatively large area. Cooperation should support exchange of knowledge on developing small infrastructure. New energy investments and the implementation of new and existing energy plans should be encouraged. Pilots should be based on testing a new technology/approach where there is a demonstrable need for drawing upon external resources (the partnership) to develop the pilot. Energy transition can lead to quick wins by (re)-using energy infrastructure and integrating transition fuels (especially gas) into energy planning.

Support for larger scale transnational energy planning is possible where it can be demonstrated that there is a clear need and support for coordination among the main stakeholders, and they have accepted a project as the vehicle for this coordination. The focus of such projects would be to work towards transnational agreements on future energy supply.

Local areas and even individual households will in future change from being pure energy consumers and will also be energy providers when local generation devices are producing more electricity than is needed. Combined management of electricity generation, heating (thermal storage) and transport (battery storage) with non-intermittent power generation such as from gas (preferably biogas) to address short-term energy shortages should allow the use of more renewable energy (see Annex 21). As a result, future power supply and distribution networks need to be much more flexible and the programme will support testing of new methods to deliver this flexibility. This can be achieved by coupling power supply together with ICT (smart grids) to balance flows of electricity and improve the match between supply and demand at different times to avoid surges and blackouts. Much of this grid 'smarting' needs to be done locally by using smart meters and intelligent planning of electricity demand based on variations in supply. Previous projects have shown that major energy savings can be achieved through better planning and timing of energy intensive operations like heating, cooling and lighting.

Advances like the widespread use of smart meters and wireless connections in household appliances will revolutionise the way that electricity is used and make it possible to achieve countless small savings with a major overall impact. Digital monitoring and display of electricity supply and demand (possibly with variable pricing for peak periods) will help consumers reduce overall and especially peak period electricity use. The basic requirements for such a system are broadly agreed (see Annex 20) but transnational cooperation can demonstrate its working in practice, explore issues like cost, reliability and effectiveness, and lay the ground for more extensive schemes in future.

Reductions in energy demand are also needed. Cooperation on energy efficiency measures should focus on sharing knowledge where there are wide differences in standards for example in construction. Concerns about the payback time on such investments have been a major barrier and projects can explore financing models for energy efficiency. The potential for small-scale action here is very clear and earlier projects have shown that cooperation can:

- Help change attitudes to energy use
- Support the development of more energy efficient processes
- Improve the take up of energy efficient technologies

Demonstration projects on refurbishing buildings is one area where there is a good unexploited potential in some parts of the NSR. Project activities should focus on providing cost effective energy reduction including retro-fitting existing building stock. This work should be centered on an exchange of knowledge on construction, material technologies, installation of low carbon electricity and a consideration of costs and financing models with a view to accelerating the pace and extent of

refurbishments across the programme area. Public buildings can be used to pilot these activities. Techniques should be transferable to private buildings including business premises. Refurbishment plans must be based on a sound analysis of potential energy savings.

Greening is in many cases a new approach and will require good channels for transnational knowledge transfer and research to spread ideas and technologies as they are developed. Cooperation on specialist training is also possible and should include skills in circular design and production, new business models, environmental regulations and technologies. Businesses should in general be encouraged to analyse their processes and look for energy savings. Support will focus on SMEs, which in many cases do not have the capacity to identify and implement innovative greening actions independently.

Finally, there is still a great deal that could be done by individuals and public organisations to achieve a host of small energy and carbon savings in everyday life. Measures are still needed to identify new areas with energy saving potential and raise public awareness of the action that needs to be taken, including the development of new procedures and processes, improvements to existing products and services, providing training and education, and piloting.

Table 3: Output indicators Priority 2

Indicator *(name of indicator)*	Measurement unit	Target value (2023)	Source of data
Number of green products, services and processes piloted and/or adopted by the project	Green products, services, processes developed	54	Project reporting
Number of organizations / enterprises adopting new solutions by project end	Organisations and enterprises	223	Project reporting
Number of organizations / enterprises informed about new solutions by project end	Organisations and enterprises	2230	Project reporting

6. Summary of priority 3 - Sustainable North Sea Region: Protecting against climate change and preserving the environment

Objective 3.1

Demonstrate new and/or improved methods for improving the climate resilience of target sites

The most pressing need in terms of climate change adaptation in the NSR is better flood control but other actions must ensure that all kinds of landscapes and the marine environment are resilient to increased temperatures, more frequent and more severe extreme weather events, and changes to natural cycles and processes. This objective therefore addresses:

- Exchange of knowledge on the latest flood defence construction techniques targeting especially 'build with nature' methods
- Improved environmental and catchment management to improve the flood resilience of NSR landscapes
- Exchange of knowledge and demonstrations of new urban planning and infrastructure approaches to improve resilience
- Adoption of new and/or improved methods for tackling other effects of climate change such as drought, increased nutrient leaching and invasive species

Projects should also address the cost of such measures and how they can be integrated with other land uses in order to achieve the overall goal of stimulating more extensive adaptation investments.

The results that the Member States seek to achieve

There is a need to:

- Jointly develop new flood prevention techniques and methods
- Predict and monitor other climate change impacts
- Demonstrate effective adaptation measures
- Mobilise stakeholder support for adaptation measures
- Promote the integration of adaptation perspectives in regional planning and development

Severe weather events are becoming increasingly common in the NSR and require adaptation of flood defence thinking and infrastructure. Projects should address the negative impacts that have already occurred and prepare the North Sea Region for projected changes based on a further temperature rise of at least 1.5^{o}C. In addition to flooding, consequences of severe weather and climate change include:

- Coastal erosion and land loss
- Freshwater shortages and salination
- Heat stress in urban areas
- Marine acidification
- Wind surges
- River and lake flooding (including in urban areas)
- Increased pollution from run-off water
- Increased algal blooms due to temperature rise

Projects should identify and implement effective actions for addressing these and other impacts as they emerge. It is important that results are communicated throughout the NSR to promote widespread adaptation investment.

Projects should also include awareness raising and joint development of new ways of working in the most affected sectors such as agriculture, forestry, tourism, health, fisheries, energy and water providers. These actions should be harmonised with national Adaptation Strategies where these have been adopted. Projects using green infrastructure and taking an ecosystem-based approach will be favoured. Priority will be given to projects whose results have a good potential for transfer to other regions.

Objective 3.2

Develop new methods for the long-term sustainable management of North Sea ecosystems

A robust natural environment provides food and resources, as well as regulating water and air quality and nutrient cycles. It is an essential element of quality of life, and protects against the most severe effects of climate change. Although awareness and actions to manage environmental threats have improved significantly over recent years, there are still serious challenges that have to be addressed if NSR environments are to continue to provide these functions. Actions under this objective should stimulate an exchange of knowledge and joint action to:

- Develop and implement long-term strategies for sustainable management of North Sea landscapes and the North Sea itself
- Develop and test new methods and technologies for tackling environmental problems
- Use participatory processes to win stakeholder support for environmental measures including promoting understanding of ecosystem services

The results that the Member States seek to achieve

Projects should:

- Develop and implement long-term strategies for sustainable management of North Sea landscapes and the North Sea itself
- Develop and test new methods and technologies for tackling environmental problems
- Use participatory processes to win stakeholder support for environmental measures

Sustainable management aims to ensure that human impacts do not exceed the sustainable limits of the North Sea Region's ecosystems so that a natural balance can be maintained. This should include ways of reducing nitrogen and phosphorous overloads pollution and biodiversity loss, as well as ensuring sustainable limits for resource extraction, freshwater use and land use.

Projects will protect the environment through early identification of potential problems and identification of new opportunities for better use of natural and maritime areas. This should include development and deployment of new methods and technologies for environmental monitoring and management. Successful approaches should be mainstreamed. This should be done in such a way as to reduce conflicts between sectors and create synergies between different activities.

It will not be possible to address all relevant challenges and projects should be developed around the most pressing and serious shared threats to the ecosystems in partner regions. There should be a demonstrable potential for joint action (e.g. similar habitats) or a need for coordinated action due to the cross-border nature of the problem addressed (e.g. marine pollution, migrating wildlife).

This work must take account of the work of existing organisations such as OSPAR and the North Sea Commission's Maritime Resources working group. DG MARE is also promoting the development of integrated maritime spatial planning approaches and sea basin strategies so projects will have to be coordinated with any such initiatives that are formally adopted within the programme's lifetime.

Priority 3 – Examples of actions and targets

Adapting to climate change is a key challenge for the whole North Sea Region. It is clear that there are already significant negative effects in the programme area and that they need to be managed. Transnational cooperation provides opportunities for:

- Sharing knowledge on the latest methods
- Joint work on designing improved infrastructure and procedures
- Developing new solutions to tackle emerging threats

Rising sea levels and storm surges are a particular threat for the NSR. Many parts of the programme area lie just above or even below the current sea level and are at serious risk. Even regions where there are few low-lying areas tend to have high population density and essential infrastructure situated in the low lying areas – and there is a tendency to continue developing flood plains and coastal areas in most North Sea Region Programme countries. The increased frequency and severity of storms coupled with the underlying rise in sea levels means that many existing coastal flood defences are inadequate and there is a serious and increasing risk of major flooding in these areas.

Cooperation is needed on how to address this challenge. In many cases, building conventional sea defences may prove to be prohibitively expensive and ineffective in the long-term. Dialogue and planning should begin in order to design the solutions required for all parts of the NSR's extensive coastline. This should be done by drawing on and developing the extensive knowledge already available in some parts of the programme area as well as by identifying land that cannot be defended and planning a managed retreat from it. Projects should also examine other measures to manage unavoidable flooding such as:

- Changes in planning rules to prevent construction in high risk areas
- Designing sea defences for 'over-topping'
- Setting aside and managing retention areas for flood water
- Disaster management

Projects should include work on modeling climate change impacts on a regional level if this has not already been done, and developing risk management and investment plans based on the picture that emerges. New and more effective flood defences should continue to use 'building with nature' techniques wherever possible in order to harness natural protection mechanisms.

In addition to coastal flooding, frequent severe weather events can cause river and lake flooding and increased levels of erosion and declining water quality due to increased rates and amounts of run off. New techniques using landscape features such as tree planting, restoring slow moving river courses, and using peat bogs, marshes and mudflats to retain water can manage flood risk, preserve water quality, and restore ground water reserves. Securing commitment to full implementation of existing measures such as ploughing restrictions near streams and rivers is equally important. Actions should include recognition of the benefits of returning farmed land to woods or marshes in some cases and an exploration of how landowners might be compensated for losses of cultivatable land.

As the major landowners in most NSR catchment areas, farmers also have a key role to play in other aspects of climate change adaptation. Many farmers in the NSR report that localised drought is often a severe problem and is becoming worse. Improving water retention in upstream catchment areas should help but additional measures may also be required such as remote monitoring of crops, smart irrigation, changes to land management and new agricultural techniques. Projects should explore these measures to ensure that farming is not reliant on extracting excessive reserves from groundwater reservoirs. Farmers can also be assisted with smart spraying of fertilizers and pesticides to avoid rapid run off in heavy rain, and measures to improve soil structure and reduce nutrient

leaching into watercourses. Transnational cooperation should assist the development of adaptation plans that consider all of these effects and develop integrated management approaches on this basis.

For urban areas there is a need to integrate engineered solutions into all new developments on sites that are at risk, and to retrofit older buildings as well as making space for natural defences. Techniques should be developed for increasing water retention in urban areas including the addition of new green infrastructure and creating opportunities for drainage into underlying soil. Green infrastructure should be used wherever possible meaning that the same area of land can frequently provide multiple benefits if the correct priorities are established from the outset. Green infrastructure can frequently be managed so as to maintain a high level of biodiversity while supporting broader well-being in the area.

Examples include:

- Downspout disconnection (directing rainfall to permeable areas)
- Rainwater harvesting and rain gardens (collecting rain water for later use)
- Planter boxes and bioswales
- Permeable paving
- Green parking areas and roofs
- Urban tree planting
- Maintenance of green corridors and parks

Such initiatives have been used successfully to complement and reduce the cost of operating conventional ‘grey’ infrastructure or, in some cases, completely replace it, and should be extended into other urban areas.

Climate adaptation investments also provide additional environmental benefits in many cases. For example, planting marginal riverside agricultural land with willow can stabilize river banks, reduce run off and thereby improve water quality. Willow can also be used as biomass for energy production. Careful planting and smart spreading of agricultural chemicals at these sites should protect biodiversity and raise overall environmental quality. There are many examples of such win-win situations which demonstrate the need to consider the full range of functions provided by different landscapes.

Rising water levels also have effects beyond flooding and once more the effects are felt most strongly in low lying areas. These include the salination of fresh water supplies and arable land as well as subsidence due to rising water tables. New techniques make it possible to map and predict these effects and can support decisions on the preventative measures to be taken.

Rising average temperatures also have a range of effects both positive and negative. In agriculture, temperature changes may influence the type of crops that can be grown in some areas leading to changes in farming conditions and an extended growing season. On the other hand they may also cause increased prevalence of plant and animal disease. An increase in winter temperatures can be expected to have an effect on the number of invasive species that can survive the colder months in

the NSR. Additional pressures on native species from other climate effects such as ocean acidification and loss of habitats may have a major effect on NSR biodiversity. Better or clearer understanding of the effects of these kinds of changes is still emerging and predicting effective responses is therefore impossible in some cases. Every sector will be affected to some extent and transnational cooperation will support participating regions in following these processes and adapting to newly emerging risks.

The North Sea Region Programme has a reputation for sound environmental monitoring and management, and should continue to play a leading role in the development of new approaches for preserving high quality environments, limiting pollution and managing diverse demands on natural resources. Nevertheless, despite this progress, the environment in the NSR continues to faces challenges because of:

- Continuing urbanization
- Habitat loss and fragmentation
- Intensive farming
- Heavy exploitation of resources
- Damaging legacies from earlier industrial activity in some locations

There is a need to ensure balance between the many changing demands on the environment and work towards new agreements on how this balance can be maintained in the long-term. Differing threats on land and at sea will require different approaches and it will not be possible to address every aspect of the issues. Projects should be developed around the most pressing and serious threats to the ecosystems of the regions where there is potential for joint action or where regional coordination is needed to develop and implement new solutions.

The objective's primary goal is to protect and restore the environment through:

- Early identification of potential threats
- Identifying opportunities for better use of natural and maritime areas,
- Development of new methods and deployment of new technologies for environmental monitoring and management
- Mainstreaming successful approaches

The overall aim is to reduce conflicts between sectors and create synergies between different activities. Efforts should be made to increase coordination between administrations in each country and ensure that sufficient weight is given to the preservation of the environment. The aim should therefore be to protect and/or restore ecosystems to the point where they can indefinitely support regional economies and populations without a significant loss of quality and to prepare to offer this expertise to others.

The marine environment is a key target area since increased pressure is being placed on the limited space available from a growing range of economic, transport, infrastructure and leisure demands. Major threats to maritime sustainability center on shipping, oil spills and over-fishing but as maritime

activity increases in other sectors so does the risk of accidents. In addition to traditional maritime activities, marine resources are increasingly being used in the cosmetics and pharmaceutical industries as well as for blue biotechnology, aquaculture and tourism. The development of energy infrastructure places demands on space as do mineral extraction, marine conservation and fish stock recovery programmes.

The large and growing intensity of activities in a limited marine space is an increasing problem. There is little coordination between countries on many of these issues and the programme should support the development of integrated approaches to planning and managing the North Sea. Problems are found throughout the region and are particularly acute at the narrow southern end of the North Sea. DG MARE is currently exploring the development of a Sea Basin Strategy for the North Sea to promote greater coordination of interests and activities and the programme will support this and similar initiatives as and when they are formally adopted.

Projects targeting the North Sea should aim to remove or mitigate major threats and pressures including the risk of accident, eutrophication, highly toxic pollutants and the urgent need to support fish stock recovery and preserve all parts of marine food chains. They should also explore the environmental limits of new and existing economic activities in the North Sea in order to provide a sound basis for sustainable Blue Growth. Transnational cooperation is needed especially in the areas of:

- Coordinating different user needs and planning the best locations for different activities
- Action on pollutants
- Action to preserve the breeding, spawning and feeding grounds of North Sea fish and animals

Land and fresh water environments are equally important and the programme will support exchange of knowledge to tackle threats facing sites across the North Sea Region. The most pressing of these include nitrogen and phosphorous overloads, biodiversity loss, chemical pollution as well as unsustainable resource extraction. There is also a need for cooperation on effective methods for restoring and preserving North Sea Region ecosystems where damage has occurred, for joint action on migratory species, and improved management of shared ecosystems. Solutions should be climate-proofed and should also preferably contribute to the overall adaptation strategies of the regions where target sites are located.

For projects working with the North Sea marine area, work must take account of activities in organisations such as OSPAR and the North Sea Commission’s Maritime Resources working group. DG MARE is also promoting the development of integrated maritime spatial planning approaches and sea basin strategies so projects will have to be coordinated with any such initiatives that are formally adopted within the programme’s lifetime.

Table 4: Output indicators Priority 3

Indicator *(name of indicator)*	Measurement unit	Target value (2023)	Source of data
Number of new and/or improved climate change adaptation methods demonstrated	Climate change adaptation solutions	21	Project reporting
Number of sites managed using new solutions supporting long-term sustainability	Sites	35	Project reporting
Number of organizations / enterprises adopting new solutions by project end	Organisations and enterprises	184	Project reporting
Number of organizations / enterprises informed about new solutions by project end	Organisations and enterprises	1840	Project reporting

7. Summary of priority 4: Green Transport and Mobility

NSR economies and societies are dependent on goods transport and the mobility of workers. For many years this has meant trucks for goods and cars for people and in most cases economies and societies have been planned around these solutions. These forms of transport are still overwhelmingly dependent on fossil fuels. This gives rise to serious concerns about carbon emissions and long-term fuel supplies and costs. In addition there are problems with pollution, noise, congestion and the risk of accidents. Efforts so far to reverse these trends have been disappointing: road freight and car use continue to increase. This objective seeks to demonstrate where alternative solutions can be made to work, and to lay some of the groundwork for longer-term solutions where alternative fuels might offer a viable alternative for mass transport.

Objective 4.1

Develop demonstrations of innovative and/or improved transport and logistics solutions with potential to move large volumes of freight away from long-distance road transportation

The majority of international trade into the EU travels by ship through North Sea ports. Many goods are immediately transferred onto trucks although a significant proportion do already travel by rail or ship for the next stage of their journey until road becomes the only viable option for the last part of the journey. Improving the sustainability of long distance transport requires that more sustainable routes are available from transport hubs like ports and that these routes extend as far as possible into the hinterland to minimize the number of cargoes transferred to road and keep the road part of the journey as short as possible. If viable routes are established they can also be used for journeys from the hinterland to the transport hubs and also for shipment of goods between locations in the NSR and to other EU locations. Transnational cooperation is needed to:

- Identify viable multimodal routes and goods flows, and the barriers to wider use of these routes.
- Pilot solutions to remove these barriers
- Ensure that NSR services and routes link up to the major corridors being promoted by the European Union (TEN-T)
- Support the development of improved logistics solutions to facilitate these developments

All actions under this priority must have a strong strategic orientation based on action along the length of the transport chain concerned rather than just at isolated locations. Where infrastructure investments are supported it must be demonstrated that these will remove or mitigate important bottlenecks in the transport chains concerned and should realistically lead to increased multimodal traffic.

The results that the Member States seek to achieve

- Demonstrate effective freight and logistics solutions and increase the number of users
- Reduce dependency on road transport for freight
- Promote integrated logistics across all transport modes

Efforts are needed to improve the speed, reliability, ease of use and cost of rail and shipping in order to cut CO_2 emissions and other negative impacts of oil-based road transport including air pollution, noise, congestion and dependence on imported oil. Projects should demonstrate that multimodal solutions can be made to work for different routes and goods. This could include tackling organisational barriers (lack of cooperation and coordination, unclear responsibilities / liabilities etc); technical barriers (missing information technologies, no door-to-door tracking and tracing, delays at transfer points, lack of standardization (semi-trailers, loading units) etc); operational, logistical and service-related barriers (lack of transparency in transport chains, limited flexibility for short-term orders, priority for rail passenger transport, problems integrating intermodal transport in logistics chains of companies etc); and political barriers (no harmonized framework conditions for first and last mile haulage, terminal funding etc.).

Operations should deliver practical solutions that provide new ways of coordinating and promoting services, trials of technology and ICT, use of inland ports and similar infrastructure, methods for reducing the time and administrative burdens of cross-border customs procedures for ships, improved logistics services etc. Operations may also plan how to tackle infrastructural barriers (unsuitable terminal infrastructure, different rail gauges, capacity restraints at terminals and access roads etc.) and financing barriers (high investment costs of intermodal equipment and terminals, cost-intensive storage capacity etc). These solutions should be transferable to other route.

Objective 4.2

Stimulate the take-up and application of green transport solutions for regional freight and personal transport

Multimodal solutions apply mostly to long distance goods transport. Shorter journeys and personal transport generally require a different set of solutions. Transnational cooperation should be used to:

- Demonstrate the potential of immediately available solutions such as car-sharing, multi-use vehicles, and non-conventional fuels for urban public transport and freight distribution systems
- Continue to promote and prepare for the wider roll out of alternative fuels for privately owned vehicles
- Support other long term solutions like changes to planning rules and practices to reduce travel need and promote healthier forms of mobility

This objective is ambitious and tackles very complex challenges. The programme will therefore encourage applications from partnerships willing to take a lead and implement Living Lab approaches

to experiment with comprehensive changes to local transport systems in order to increase working knowledge of the steps needed and the benefits available.

The results that the Member States seek to achieve

- Reduction in CO_2 emissions and pollution from local and regional traffic
- New sustainable transport and logistics solutions for first and last mile freight
- Greater use of vehicles running on zero/low carbon fuels

The average distance for freight transport in the EU is 84 km and so too short to justify multimodal solutions. Goods often travel the same routes as people and it makes sense to develop integrated solutions that consider all of the shorter distance travel and transport needs in a region. Alternative fuels are one good long-term option for greening freight and personal travel but other solutions like mobility management and city logistics are also needed in the immediate future.

Transnational cooperation can make a range of contributions. Mobility management projects should help people with decisions on how to reduce private car use. Land-use planning can help by better connecting people, services and transport infrastructure. Collective transport should be further developed and integrated into wider transport networks, and the use of bike-sharing, taxi-sharing, ride-sharing and car-sharing should be encouraged.

Intelligent transport systems should be used to create smart services that allow for greater coordination of services, consolidation of loads, optimized load weights and reduced numbers of empty runs. Existing vehicle fleets such as local trains, river transport, metro trains, trams and even cargo bikes should be used for moving goods especially at night or in off-peak periods.

Operations will also look at new types of vehicles, engines and green fuelling infrastructure, and more fuel efficient ways of operating vehicles and ships. Cooperation can support inter-operability and cost-effective solutions for spreading these technologies and especially the support infrastructure required.

Effective solutions are needed for remoter parts of the NSR where the most sustainable modes may not be viable due to low traffic flows. Solutions should instead focus on improving the environmental profile of air and road transport.

Priority 4 – Examples of actions and targets

45% of freight in the EU moves by road and less than 15% by rail and inland waterways. The EU's new TEN-T policy aims to improve the core network of railways and waterways to boost their share of freight transport. The core network links major ports and cities. It does not extend into many of the remoter parts of the NSR (Annex 23). The 'unconnected' parts of the NSR therefore need to effectively link to core networks in order to offer modern, sustainable transport options. If goods have to travel a

long way by road to reach a multimodal route, it is generally just as easy shippers to rely on road transport for the whole journey. To move freight onto more sustainable forms of transport, the NSR therefore needs effective multimodal routes, including maritime routes, to as many parts of the region as possible. This objective focuses on improvements to those multimodal routes and the services that operate on them.

Actions supported will demonstrate how to increase the use of multimodal services so truck use is as far as possible limited to the first and last kilometers of any journey. This requires that multimodal services are upgraded to improve speed, reliability and competitiveness, and that action is taken to raise awareness of the options and persuade shippers to try alternative services. Transnational cooperation is an important tool given that effective multimodal transport chains rely on a well-functioning system along the whole route from start point to final destination.

Actions can be based around the European Commission's target of having 30% of road freight over 300km on sustainable modes such as water or rail by 2030, which will require fast and reliable multimodal routes that allow goods to move quickly, cheaply and reliably between terminals in the multimodal network and to and from these terminals to the customer. The TEN-T network provides a framework around which to build multimodal feeder services to as many parts of the NSR as possible so that as many shippers as possible can be offered a viable multimodal route. For transnational territorial cooperation actions there is a role in looking at how feeder networks can be formed from existing infrastructure and services at relatively low cost. Better service integration should also allow shipments to move easily from one mode to another. The TEN-T regulation specifically calls for the use of transnational cooperation as a tool to support these developments and promote coordination between investments. Projects will need to demonstrate that these synergies have been considered.

Transnational cooperation should support the identification of new routes and removal of barriers in physical connections, information technologies, and administrative/regulatory requirements so freight can move quickly between modes and countries. While some investment in small infrastructure at terminals might be possible, projects will generally work with existing infrastructure and look at how to make better use of it and exploit the potentials of new infrastructure developed under other funding schemes like the Connecting Europe Facility. Examples of activities would include filling gaps in local/regional networks through better use of the capacity of small and medium ports and regional rail networks, and small infrastructure investments including the upgrade of existing facilities such as fuel storage/bunkering facilities, secured truck parks, flow management tools and information provision. Projects should demonstrate how such investments can be provided cost effectively in smaller ports and terminals, where a lack of such services can exclude them from multimodal transport chains and low traffic volumes may make it hard to justify high investment costs.

Long distance multimodal services also need to be effectively linked to local and regional infrastructure so transshipment does not cause delays. Different elements of the multimodal network (ports, logistics platforms, urban nodes, freight terminals etc.) should cooperate in order to ensure

joined up services for users. For ports this could include the use of inland ‘dryports’ to ease congestion and allow for expanded port services outside the space constraints of the actual port site.

Actions should demonstrate that multimodal solutions can be made to work efficiently in practice, and encourage users to switch to the new services. Logistics management should support the planning and operation of these services to improve the competitiveness, speed and efficiency of multimodal routes. Smart transport systems and integrated journey planning are examples of technologies that could make routes more efficient. These systems should give easy access to information on all modes of transport, the possibilities for combining them and their environmental impact. Where systems have already been developed on a European level these must be used rather than inventing new systems. Improved procedures are also needed for inter-modal freight documentation, insurance, liability, and real time delivery information. Interoperability of all new systems should be a key goal. Such measures should also take account of the simplified customs requirements for ships moving between Member States, which are being introduced as part of the Blue Belt Single Transport Area for Shipping.

Training is important for suppliers and users of multi-modal offers. Transport and logistics managers must understand how to put together seamless transport chains using sustainable options. Transport users should be supported to develop an understanding of new services and routes and exploit them effectively. For example, combining shipments and sharing services will reduce the transportation of empty loads. SMEs need particular support in this area as they often do not have in-house logistics expertise.

For the North Sea Region in particular, maritime transport is important and sea and ferry routes should be considered as an ‘extra corridor’. Actions should focus not just on sea-based travel but also on connections inland. Time-consuming and complex administrative handling procedures and paper based data flows are a problem in this respect and many small ports have no electronic data transmission. As a result, interoperability between different ports and different information systems used in the ports is not satisfactory and limits possibilities for integrating new joint services and creating economies of scale.

The second objective is focused on exploring the wide range of options available for greener transport on shorter journeys – most importantly looking at how these different options could be combined to pilot the transition of local and regional transport systems to much lower carbon solutions. Transnational cooperation can support the joint development of new approaches that explore viable alternatives to conventionally fuelled vehicles for shorter journeys. Living laboratory approaches could be particularly effective as a way of testing a range of interlinked solutions in the same area and finding transport solutions that offer comparable levels of convenience at a much lower environmental cost. In many cases effective solutions will depend on finding solutions for both goods and people on the same routes. Integrated regional solutions that consider the full range of travel needs are therefore preferred.

For short distance freight transport a different set of solutions is required compared to long-distance multimodal solutions. For example, urban areas account for 40% of all CO_2 emissions from road transport and up to 70% of other pollutants from transport. 25% of these CO_2 emissions are caused by freight. European Commission policy aims for near zero CO_2 city logistics by removing conventionally fuelled vehicles from urban areas by 2030. This requires action to promote:

- Larger scale experiments with electric, hydrogen and hybrid propulsion for trucks to assess and improve viability
- Better loads management and city logistics. Urban supply chains are inefficient with low load factors (goods volumes carried compared to vehicle capacity) and frequent and uncoordinated deliveries. Urban logistics should be used to manage combined deliveries to towns and cities to avoid unused vehicle capacity
- Multi-use vehicles to ensure that all trips are useful. This may require new designs and procedures to meet different roles (e.g. trucks taking goods in and waste out)Other flexible-use solutions including combined use passenger/freight vehicles, freight trams, flexibus services, car-sharing etc. to reduce the overall number of vehicles and ensure efficient use of the vehicle fleet

Such measures need to be tested in different locations to explore how they can work best and should be jointly designed based on experience from across the NSR. The programme will also address personal journeys and the need to move from private cars to other means of transport including:

- Increasing the frequency and capacity of public transport services
- Encouraging more active transport (walking and cycling) in urban areas
- Behavioural change amongst users
- Integration of services to bring together electrified rail services, trams, rapid transit systems, buses and improved conditions for walking and cycling to allow rapid movement independent of cars.

Specific actions could include:

- Integrated ticketing and traffic information systems across various forms of transport including ships and planes, which would simplify combined transport and contribute to increased occupancy rates
- Car-sharing services, which can reduce the pressure on public transport and reduce the number of private cars on the road as well as offering a more sustainable solution than single occupant journeys on routes where no public transport is available
- Integrated strategies that will provide additional street space for walking, cycling, green infrastructure etc. and will therefore also improve quality of life and the urban environment
- Urban planning should encourage shorter journeys and better access to services, while the cityscape should be designed in way that encourage active travel

Outside city centres, urban sprawl and dispersed rural populations can create car dependency. Loss of public transport services can exclude non-drivers and particularly older people and the young. Actions are therefore needed to maintain and improve rural services at a reasonable cost to avoid the risk of social exclusion, and ensure accessibility for tourists and visitors to rural areas. New approaches to public transport such as door-to-door flexibus services, demand responsive transport (DRT) and combined freight and passenger services may offer some solutions. Ride-sharing platforms and peer-to-peer car-sharing also have potential for rural areas but will require different approaches to those used in urban areas to avoid long distances to pick up points. Where services are under threat, non-profit social enterprises could be an option for delivering transport services in remoter areas by building on community involvement.

Actions based around better use of the existing transport system can achieve a lot but the scale of change required means that large numbers of low and zero carbon vehicles must also be introduced. According to Commission targets, the number of conventionally fuelled vehicles in urban transport should be halved by 2030. They should be completely phased out of major urban areas by 2050.

Many of the necessary technologies are ready for use or are in use on a small scale and more could be done to continue piloting the newest ideas or to support the roll out of proven technologies across the programme area. Potential actions include:

- Further use of urban bus fleets, taxis and delivery vehicles as demonstrations for the introduction of new fuels and propulsion systems
- Showcasing integrated urban transport solutions and last mile solutions
- Cooperation on procurement of vehicles to develop new standards, expand the market, secure cost savings, spread risk and ensure inter-operability of solutions put in place in different countries

Other modes and especially shipping should also be considered. New technologies and better fuels and operating procedures need to be introduced. Maritime transport emission levels should be cut by 50% by 2050 against 2005 levels. Although maritime transport is one of the most environmentally friendly modes of transport in terms of energy consumption per transported tonne, the increase in global volumes makes shipping a significant source of emissions. The NSR is a prime location for maritime pilot projects with global implications to improve the environmental and safety standards of maritime transport and the promotion of Short Sea Shipping.

Liquefied Natural Gas technologies for shipping are in development. The core ports in the TEN-T network need to provide LNG bunkering but the infrastructure is currently prohibitively expensive for smaller ports and solutions need to be found to this problem. Similar changes – and concerns – apply for all modes and could usefully be addressed in projects exploring the roll out of the infrastructure and vehicles needed for the range of alternative fuels being explored (see Annex 24). For example, LNG

might serve as a reasonable transition fuel for trucks, as its emissions footprint is much better than solid and liquid fossil fuels. Second generation biofuels derived from waste rather than food crops offer one longer-term alternative while electric and hydrogen vehicles are other strong alternatives but need major technological and infrastructure developments. The programme cannot fund a transition on this scale but aims instead to demonstrate its viability through small scale tests that show the way for widespread implementation through the use of appropriate technologies and changes to public policy.

Table 5: Output indicators Priority 4

Indicator *(name of indicator)*	Measurement unit	Target value (2023)	Source of data
Number of new and/or improved green transport solutions adopted	Green transport solutions	54	Project reporting
Number of organizations / enterprises adopting new solutions by project end	Organisations and enterprises	145	Project reporting
Number of organizations / enterprises informed about new solutions by project end	Organisations and enterprises	1450	Project reporting

8. Main target groups and types of projects envisaged

Participation in the programme is not limited to specific types of organization and will rather be decided based on:

- The ability of a partner to contribute to the outputs and results identified for the specific objective
- The extent to which the partnership can influence development in the wider programme area (i.e. not just a local effect)
- The overall balance of the partnership in terms of geography, expertise and competence (are the participating organisations able to influence the theme?)
- The ability of the partners to live up to the formal requirements for the programme

There are differences between the legal status (public, private etc.) of parallel organisations in different countries. Legal status does not, however, have a bearing on whether an organisation can participate but may affect the terms of participation especially for private sector bodies. Potential beneficiaries will include (the list is non-exhaustive):

- Public authorities and their agencies– National, regional, municipal and local administrations, regional development agencies, industrial parks and incubators, regional environmental agencies etc.
- National and European interest organisations and institutes
- Knowledge institutions – Universities, colleges, research centres, technology centres, providers of professional training, schools, consultants, cluster managers etc.
- Enterprises – Including social enterprises and with a particular focus on small and medium sized enterprises
- Civil society – Associations, NGOs, charities, community organisations etc.

Many objectives have a clear sectoral focus, which should be reflected in partnerships (transport, energy etc.). Projects should however also take an inclusive approach and consider involving stakeholders from different levels (local, regional etc.), different types of institution (government, research, business, civil society etc.) and with backgrounds in a range of relevant disciplines depending on the topic of the project (water management, agriculture, urban planning, creative industries etc.).

Partners should be selected based on their potential contribution to the project theme. Not all target group representatives need to be involved as project partners. Alternative methods of participation include membership of working groups and expert groups, acting as the subject of pilot and demonstration actions etc. Finally, projects should ensure effective engagement with end-users of all

deliverables to ensure user support for the work being carried out. End users are diverse and range from citizens to decision-makers, entrepreneurs and consumers.

9. Examples of projects

Projects should be planned around a programme of joint activities to deliver the required result. Successful examples of different types of projects include (the list is non-exhaustive):

Projects with a focus on testing and training

For example, a problem or issue is raised in one or more of the partner countries and the entire project partnership works on developing a joint solution based on their regional or national experiences. This is typically tested at one or more of the partner country locations and in the best cases solutions are taken up in the long term by more than one of the partner countries. Some projects have applied this to training and have developed courses on a transnational basis for use by all regions around the North Sea.

Projects with investments and pilot actions

'Pilot' or 'demonstration' investments test a new or improved approach with clear and measurable differences to standard practices. These investments must be relevant to wider project and programme goals and must be rooted in the joint activities of the partnership. The best of the investments in past periods have piloted completely new ideas but even those offering only small adjustments to existing ideas can greatly benefit the regions concerned and provide very concrete proof of the value of continued cooperation.

Development of best practice

Some projects primarily focus on knowledge transfer and exchange of experience within a transnational environment. Here networks and clusters have been created or improved to exchange knowledge between institutions in different countries. Joint discussions and continuous exchange have enabled the creation of jointly developed models and action plans that have been adapted for use by each partner region to enhance the work being undertaken by their organisation or region.

Development of new models, strategies

Projects may aim at changing national and regional policy and strategies for managing a certain theme. For such projects it is vital that all main stakeholder groups are involved in strategy development and especially the authorities which are mandated to adopt or change policy on the issue in question.

Up-scaling and expansion of new solutions

Some projects focus on the wider scale adoption of ideas that have already been tested in other locations and contexts. This is an acceptable approach provided that it can be demonstrated that adoption of these solutions will deliver better performance for participating regions against one of the programme's specific objectives. Such projects should be designed to act as a bridge between testing and general adoption of the approach in question. Living laboratory approaches are one example.

All projects must observe the principles of inclusive and sustainable growth. As a result all projects should take account of the impacts of issues such as ageing populations, lack of relevant skills, social exclusion, the need to improve governance, and location disadvantages. Projects are invited to indicate how they comply with the regional innovation strategies. Regardless of type, it is also possible to define a number of characteristics that all projects under the new programme should fulfil:

- **Based on the shared or complementary needs of all partners.** It is not possible to put together partnerships based only on a loose thematic umbrella with no joint implementation. Projects should instead be built around a clearly defined and agreed set of needs with a clear definition of the requirements and skills that each partner brings into the partnership. Projects allow all participating regions to pool the resources used on their particular challenges – and allow them to learn from assisting other regions.
- **Reliant on joint implementation.** The value of cooperation lies in bringing in knowledge and new perspectives from other partners. Results should be based on joint action.
- **Focused on delivering progress on core programme goals.** Every programme objective has a clear output and a related programme target. These targets give a clear direction for all activities and the results expected but leave freedom for projects to define their precise activities based on partner needs and the evolving situation in the programme area.
- **Implementing EU policy.** Projects have been successful in taking the objectives and visions of European policy in different sectors and defining specific actions and processes to achieve these goals on the ground. Projects should continue to give practical shape to policy in this way by developing synergies with existing national and regional initiatives and also integrating the outputs of relevant projects under other Interreg programmes and all other funding programmes.
- **Innovative.** Some projects work directly with ‘innovation’ by supporting the development of new products and services for the market. All projects are expected to be ‘innovative’ by rethinking standard approaches and using the skills, knowledge and experience available in the partnership to develop completely new approaches. In many cases innovative approaches for a partner will involve the transfer of ideas from another partner or ‘tweaks’ to existing solutions but programme funds should not support ‘business as usual’.
- **Based on demonstrating and proving what is possible.** Research is an important part of the programme but it is important to stress that the programme focus is on demonstrating practical developments for the NSR and working through the barriers to making these developments a reality. Projects must therefore focus on demonstrating and testing new ideas. Where projects are based on planning and cannot demonstrate their recommendations (e.g. due to the high cost of the infrastructure involved), projects must be developed and delivered together with the main stakeholders who ultimately make funding decisions in order to ensure support for implementation after the project has ended.
- **Limited and specific in the changes they wish to generate.** Some earlier projects have been over-ambitious in the range of issues they wish to tackle. This tends to lead to a loss of focus. Projects should therefore carefully define the need they will address even where this means that other important issues must be left out.
- **Inspiring national and regional policy and practices.** Programme funding is limited but its ambition is to positively influence the whole programme area. This requires that the positive effects of results are not limited to the project partnership but are communicated to the most important stakeholders in order to secure a durable legacy after the end of the project.

10. Coordination with other EU programmes and funds

The programme has been designed to avoid overlaps with other funds and focus actions where the potential of transnational territorial cooperation is greatest. Thematic links with other programmes at European, national and regional levels will be regularly reviewed throughout the programme period and programme guidance and advice will be modified on this basis. Future projects are also expected to consider links with other relevant Community and national policies, initiatives and programmes at application stage and on an on-going basis throughout implementation.

This chapter explains how coordination will be ensured with relevant Union and national funding instruments. The information is divided according to the EU main programmes and policies relevant to each of the new programme's priorities.

The main policy framework is provided by the aims of EU 2020, territorial cooperation, EU cohesion policy regulations, the partnership agreements, policies and programmes and the Common Strategic Framework (CSF). These policies focus on economic growth with important safeguards for environmental and social values. These links are explored separately in the strategy chapter. Compared to other schemes, transnational cooperation specifically focuses on the territorial integration of the North Sea Region. It addresses current barriers, such as uncoordinated sectoral policies, mismatches between administrative boundaries and functional boundaries, insufficient use of stakeholder knowledge and views, and a lack of long-term visions for planning and objective setting. By taking their starting point in the territory and all of the relevant influencing factors on the territory, transnational projects should transcend administrative and sectoral barriers, and actively pursue horizontal coordination (across sectors) and vertical coordination (across different levels of administration). In this way, transnational cooperation *can* make a real difference by demonstrating what is possible as well as delivering real change through practical action in regional and local communities. This distinct strategic focus should be used to maximise the programme's effect.

Relevant links to national and regional frameworks, including other ETC programmes have been considered through the national consultation process with Member States. The main areas of shared interest with a stronger cooperation potential are: Business development (R&D/innovation support); social cohesion, quality of life, accessibility and environmental protection.

The list presented in this section is not exhaustive but provides an indication of the main EU policies and instruments that complement activities in NSR 2014-2020 (see Annex 25).

The last section includes a description of coordination mechanisms and arrangements at different stages of the implementation process.

10.1 Synergies with Priority 1: Thinking Growth

The priority is focused on business growth and improving the efficiency and effectiveness of public service delivery through innovation.

HORIZON 2020 is the EU Framework Programme for Research and Innovation. The HORIZON 2020 Programme has three main pillars:

1. Societal challenges
2. Excellent science
3. Industrial leadership

HORIZON 2020 is designed to help bring more good ideas to market. The programme will boost job creation, support innovation, stimulate private investment in research and innovation, and tackle societal challenges for a better society. It also supports reliable, clean and efficient energy, efficient use of resources for protection of our planet, safe and secure food supply, and smart, green transport.

Many of these themes are areas of interest for the North Sea Region. The main difference between HORIZON 2020 and the NSR 2014-2020, however, is that HORIZON is based on a non-territorial, non place-based approach. HORIZON 2020 focuses on individual R&D projects, focusing on the whole cycle of innovation. NSR 2014-2020 is much more limited in addressing primarily the demonstration/proof-of-concept and early commercialisation stages on the innovation cycle. It is also, however, wider in the sense of seeking to promote the innovation process in participating regions with specific cases of innovation serving as vehicles for this capacity building. There is also a good potential for the valorisation of HORIZON 2020 research under other themes.

The Programme for the Competitiveness of Enterprises and SMEs (COSME's) aims to strengthen the competitiveness and sustainability of EU enterprises. The COSME programme has four main pillars:

1. Better access to finance for small and medium-sized enterprises (SMEs)
2. Access to markets
3. Supporting entrepreneurs
4. More favourable conditions for business creation and growth.

The main difference between the COSME and the NSR 2014-2020 is that COSME is focused on providing different kinds of financial instruments, such as an equity facility for growth and a loan guarantee facility. Rather than directly supporting individual enterprises with this kind of financial support, NSR 2014-2020 concentrates on the involvement of businesses to test the effectiveness of different innovation support measures, which can then be more widely applied.

The ERASMUS+ programme funds grants for students, teachers, trainers and apprentices to study abroad. It brings together the EU education training and youth programmes Comenius, Erasmus, Erasmus Mundus, Leonardo da Vinci and Grundtvig under a single umbrella. The programme includes a newly established partnership arrangement between teaching institutions and firms. The NSR programme may support the development of vocational training courses to provide specific skills but its focus is not on education as such.

10.2 Synergies with Priority 2: Eco-innovation

The priority is focused on reducing carbon emissions and accelerating the greening of the North Sea Region economy.

The 7th EU Environment Action Programme focuses on making the EU a resource-efficient, green and competitive low-carbon economy. It identifies two major objectives:

1. Promoting nature and strengthening ecological resilience
2. Boosting sustainable, resource efficient, low-carbon growth

The main difference between the 7th European Environment Action Programme and NSR 2014-2020 is that the NSR focuses on raising environmental management capacity throughout the region rather than specific local cases. There are however complementarities and projects should check for potential crossovers with actions on conservation of natural capital and the actions on resource-efficient, green and competitive low carbon economy.

HORIZON 2020 also focuses on secure, clean and efficient energy. Research and demonstration activities focus on buildings, industry, heating and cooling, SMEs and energy-related products and services, which are similar to the NSR 2014-2020. Again though, HORIZON 2020 focuses on research and new technologies while NSR primarily addresses awareness raising and increasing the take-up of new energy technologies and will support the development and/or testing of new technologies only where they can be shown to contribute to this wider process. There is a good potential for NSR to help with spreading successful results from HORIZON 2020.

The European Agricultural Fund for Rural Development (EAFRD) in some cases supports similar activities to the NSR 2014-2020, such as the promotion of resource efficiency and the shift towards a low carbon and climate resilient economy in the agriculture, food and forestry sectors. Similar actions can also be found in terms of restoring, preserving and enhancing ecosystems dependent on agriculture and forestry. Nevertheless, while EAFRD specifically targets farmers and other land managers, NSR takes a wider approach and would only fund work at specific sites as tests cases. Agriculture is not a focus for NSR but a sector that may be relevant because of the need for changed land management practices. Another major difference between the EARDF and NSR 2014-2020 is that the EARDF also supports actions within social inclusion poverty reduction and economic development in rural areas more explicitly.

10.3 Synergies with Priority 3: Sustainable North Sea Region

The priority is concentrated on climate change adaptation, ecosystem conservation and sustainable economic activity.

The European Maritime and Fisheries Fund (EMFF) has four pillars:

1. Sustainable and smart fisheries including inland fisheries
2. Sustainable and smart aquaculture
3. Sustainable development of fisheries
4. Integrated maritime policy

The fund focuses amongst other things on the promotion of climate action in relation to the energy efficiency of fishing vessels, insurance of aquaculture stock with regard to extreme weather events, and the implementation of local development strategies including operations to mitigate climate change. Fisheries are not a specific sectoral focus for NSR although projects may be funded on aspects of fishery management requiring cooperation, and on development of regions strongly linked to fishing. In such cases projects will have to demonstrate that the actions funded do not duplicate EMFF actions.

The LIFE + Programme is divided into two different sub-programmes. The sub-programme for climate action will support efforts on increasing resilience to climate change (climate change mitigation, climate change adaptation and climate governance and information). The sub-programme for environment will support efforts on environment and resource efficiency, nature and biodiversity, and environmental governance and information. The LIFE + Programme and NSR 2014-2020 both focus on pilot, demonstration and integrated projects in the areas of nature, water, waste, air and climate change mitigation and adaption. The focus for LIFE + is to support specific needs for the development and implementation of EU environmental or climate policy and legislation while the NSR focuses on cooperation about how to effectively deliver these policy goals throughout the region. Projects should demonstrate that duplication has been avoided.

The 7th EU Environment Action Programme focuses on climate change, nature and biodiversity, environmental and health and natural resources and wastes. Again, projects should therefore check for potential crossovers with actions on these themes.

10.4 Synergies with Priority 4: Promoting green transport and mobility

The priority is focused on demonstrating where there is a real potential for change in NSR transport systems.

The new European Commission proposal for multimodal transport networks (TransEuropean Networks TEN-T) should deliver (1) safer and less congested travel and (2) smoother and quicker journeys. The Connecting Europe Facility (CEF) will effectively act as "seed capital" to stimulate further investment by Member States to complete missing parts of the TEN-T network and especially difficult cross-border connections and links which might not otherwise get built. CEF assistance is however focused on the core network while support from the NSR focuses on the comprehensive network extending out into the remoter parts of the region. There is very little EU funding for this work and the NSR programme aims amongst other things at activating national, regional and private funds to ensure effective links to the core network. The TEN-T regulation specifically calls for the use of

transnational cooperation as a tool to support these developments and promote coordination between investments. Projects will need to demonstrate that these synergies have been considered.

HORIZON 2020 will fund research on:

- Better mobility, reduced congestion, greater safety and security
- Improvements in the mobility of people and freight
- New concepts of freight transport and logistics.

Again, however, HORIZON 2020 is focused on new research and technologies while NSR focuses primarily on using existing capacities with some support possible for incremental improvements of existing technologies.

The Sustainable Urban Development Programme will address improved urban links and transport in urbanised areas, including environmental improvements.

11. Programme financial table priorities 1 - 4

Priority axis	Fund	Union support (a)	National counterpart	Indicative breakdown of the national counterpart		Total funding	Co-financing rate	Norway
			(b) = (c) + (d))			(e) = (a) + (b)	(f) = (a)/(e)	
				National Public funding (c)	National private funding (d)			Norway
Priority axis 1	ERDF	46,831,112	46,831,112	42,148,001	4,683,111	93,662,224	50 %	5,702,128
Priority axis 2	ERDF	45,158,572	45,158,572	40,642,715	4,515,857	90,317,144	50 %	5,498,480
Priority axis 3	ERDF	36,795,874	36,795,874	33,116,287	3,679,587	73,591,748	50 %	4,480,243
Priority axis 4	ERDF	28,433,175	28,433,175	25,589,858	2,843,318	56,866,350	50 %	3,462,006