

# Interreg North Sea 2021-2027

*DRAFT*

Priorities, specific objectives &  
spotlight themes



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# INTRODUCTION

This document contains the priorities, specific objectives and spotlight themes of the 2021-2027 Interreg North Sea programme. It was first published in October 2021 by the programme to provide an overall framework to the project community for potential project applications and to kick-start new project ideas. This December update reflects small changes made prior to the submission of the programme text to the European Commission, which is expected in January 2022.

***Please note that this is a draft and that the text, while approved by the delegations of the countries participating in the programme, is still under discussion. Therefore, readers can expect adjustments to be made to the document before the programme is finally approved by the Commission, which is anticipated in summer 2022.***

# **PRIORITY 1**

## **Robust and smart economies in the North Sea Region**

Specific objective 1.1: Developing and enhancing research and innovation capacities and the uptake of advanced technologies

### **Territorial needs in the North Sea Region**

Research and innovation are central to robust and smart economies and resilient territorial development in the North Sea region, driving, enabling and accelerating the shift towards a green and digital transition of our society. The region represents the innovation core of Europe, hosting world leading innovative industries next to more traditional sectors. In addition, due to their location around the North Sea, sectors within the Blue Economy are of importance for economic strength and competitiveness in the region. However, innovation performance scores vary between regions, with the urban and intermediate regions performing better than rural regions. Moreover, there are limitations to collaboration between innovative SMEs and the proportion of SMEs introducing marketing or organizational innovations. In order to foster robust economies, enterprises (especially SMEs) should maintain and improve competitiveness through continuous innovation and cooperation.

An innovative, cost-efficient and effective public sector is also an enabler of a robust economy. In many countries, public sector finances are under pressure and there is a need to deliver public services more effectively and efficiently than is being done. Public sector innovation is therefore relevant to ensure the continued attractiveness and competitiveness of the region. The public sector can also stimulate innovation in the wider economy through public procurement and as a broker of innovation networks. Social innovation also contributes to developing social and economic resilience, as a robust economy depends on public authorities and enterprises developing and deploying effective solutions to address social challenges and issues. These goals can best be addressed by including policy-makers, the public sector and civil society in cooperation projects with businesses and researchers.

In order to remain at the innovative forefront in the EU, North Sea region actors need to maintain their pace and spread of innovation. There is a clear need to strengthen innovation capacities in the North Sea region, offer a supportive environment for innovation and foster knowledge and technology transfer. This is also crucial in order to support the green transition and an integrated territorial development of the region.

### **Transnational cooperation actions**

Projects funded under this specific objective will support an innovation-driven smart and robust North Sea region. Innovation is understood in broad terms, encompassing process, product and service innovation and multi-sectoral approaches. It is related to technical solutions as well as public services and societal challenges. Projects will also move beyond networking and knowledge exchange and support research, development and innovation activities that are implemented as demonstration and pilot projects.

The primary goal of this specific objective is to develop transnational processes and procedures to foster innovation capacity and to carve out new innovation-focused economic and social

opportunities. It aims to create effective innovation ecosystems, rather than offer direct support to individual actors and support one-off cases of innovation.

Actions should support the development and strengthening of regional innovation and research that are needed in sectors with innovation potential. They should also support the delivery of innovation by facilitating cooperation and joint initiatives between actors and by stimulating the development of new technologies and innovative solutions. Actions should also support the exploitation of research outcomes, bring research to the market and support the uptake of new technologies and solutions.

In addition, actions under SO1.1 should target areas that benefit from transnational cooperation and that build on the competitive strengths of the region. Support for challenge-driven topics that are in line with the priorities of the North Sea Programme will be prioritized. Particular focus will be on the challenges identified under the priority "Green transition," but activities funded under this objective will also be open to demand-driven projects in other fields. Innovation projects should also build on territorial needs and gaps, such as the urban-rural divide, and contribute to territorial cohesion.

The following is a non-exhaustive list of fields that have potential for transnational RDI cooperation:

- Green economy, e.g. low-carbon solutions, energy transition
- Social and societal innovation
- Waste management, circular economy
- Public sector innovation
- Industrial modernization, Industry 4.0 and manufacturing
- Marine, maritime and blue growth sectors
- Agri + food, bioeconomy, tourism
- Transport, e.g. in relation to smart cities, electrification and automation
- Other focus areas of the region's Smart Specialisation strategies

It should be noted that lower TRLs (Technology Readiness Levels) are not a priority for the programme and TRL1 (basic/fundamental research) is excluded from support, unless linked to higher level applied, demonstration or exploitation activities related to demand-driven business or societal needs. The programme encourages projects to aspire to TRL5 and above.

With regard to spotlight themes as described in chapter 1.2.4, projects are encouraged to consider addressing one or more of the following themes - a) digitalisation, b) rural-urban linkages, c) strengths and challenges in the North Sea basin – in their application in order to highlight and address territorial demands in the North Sea region.

### **Examples of actions supported (non-exhaustive list):**

- Developing innovation support measures and transnational innovation networks and clusters, complementary to networks that already exist,
- Developing and implementing new technologies, products, processes and services in order to address transnational challenges
- Supporting knowledge partnerships of innovation actors and stimulating transnational cooperation between businesses, research institutions, governments and social institutions to develop new or improved links
- Fostering technology and innovation transfer from research to business; stimulating the commercial take-up of research results and entry of innovations onto the market
- Supporting public administrations to use public investments as a driver for innovation, e.g. through better incentives and capacity-building workshops, and facilitating SMEs' participation in (public) procurement processes
- Enhancing the cooperation between innovation actors and civil society that commonly support the uptake of innovation technologies to shape the innovation ecosystem
- Developing transnational support tools for SMEs and entrepreneurs to increase their innovation capacity and incorporate research and technological innovations
- Exploiting new sources of SME growth such as the green economy, health and social services and promoting place-based development opportunities, e.g. in tourism and blue growth
- Improving access to innovation support for actors in rural areas to reduce innovation gaps in region's non-urban areas and reinforce urban-rural linkages in the innovation support field

The types of actions have been assessed as compatible with the Do No Significant Harm principle, since they are not expected to have any significant negative environmental impact due to their nature (EGESIF\_21-0025-00).

### **Impacts**

Projects funded under this specific objective could contribute to one or several of the following impacts:

- improved framework conditions for innovation and reduction of barriers to innovation
- strengthened innovation capacity across the region
- increased interaction between innovation centers and actors
- increased SME/public sector innovation and initiation of new products, services and processes
- increased uptake of novel technologies
- reduced gap in innovation support and performance in non-urban areas

Beyond working towards these impacts, this specific objective might also contribute to wider, more long-term effects, such as the retention and creation of jobs in the North Sea area.

## Specific objective 1.2: Developing skills for smart specialization, industrial transition, and entrepreneurship

### **Territorial needs in the North Sea Region**

The North Sea region societies and labour markets have changed dramatically over recent decades and will continue to be transformed by the impact of the Fourth Industrial Revolution (Industry4.0), the digital, green, and blue transitions, the effects of economic crises and demographic changes. Therefore, a workforce with up-to-date knowledge and improved digital and entrepreneurial skills is needed, especially in SMEs, which serve as the foundation for business competitiveness, innovation and growth in the region. Future sustainable economic and social development will ultimately rely on human capital in the broadest sense: graduates, professionals and job seekers with the knowledge, skills and competences to think creatively and critically.

An important tool to assist European regions to identify and develop their competitive advantages is the Smart Specialisation approach. Smart Specialisation unlocks specific assets and competencies of regional economic structures and knowledge bases through diversification. By connecting skill development to sectors that are of strategic relevance and promoting cross-overs into new or related fields, the North Sea region can secure its strong and innovative knowledge economies for the future.

In addition, improved entrepreneurial skills are needed in SMEs to enable them to act and transform ideas and opportunities into shared economic or social value. In order for SMEs in the region to remain competitive in global markets, there is a need for skills such as risk management, strategic thinking, networking, and problem solving.

Building skills can improve social and economic cohesion between rural and urban areas. Although the North Sea region has a generally highly-skilled workforce, inequalities between urban and rural areas remain, with more highly-skilled workers concentrated in urban areas. To overcome territorial gaps and support an equal territorial development it is essential to ensure a just development of skills, especially those linked to Smart Specialisation strategies.

### **Transnational cooperation actions**

Actions funded under this specific objective will enhance transnational knowledge transfer to develop solutions that improve human capital, especially in common Smart Specialisation focus areas. Improved and new skills will be a prerequisite for the uptake and development of product, service and process innovations. This will ultimately also result in the creation of new and more productive jobs.

Actions funded under this specific objective could have a strategic focus on identifying and developing tools to overcome barriers that create regional skills gaps. Initiatives that create strong regional skill networks and clusters and increase collaboration between different parts and levels of the education system, science, governments, SMEs and end-users are encouraged. Actions could also promote target groups to think outside silos and promote cross-sectoral and interdisciplinary learning.

Joint actions funded under this specific objective could focus on skills development to strengthen regional capacities in common Smart Specialisation focus areas, to prepare for the industrial transition or to foster entrepreneurship. While it is expected that actions will be demand driven and would therefore centre around common Smart Specialisation focus areas, actions may also target other

thematic fields. The following fields have strong potential for transnational cooperation in skills development:

- Energy and environmental technologies, the most common Smart Specialisation focus areas across the NSR
- The areas of food, agriculture and/or bioeconomy, industrial modernisation, additive manufacturing, life sciences and/or health tech, prominent across the NSR in Smart Specialisation strategies
- Maritime and marine fields
- Mobility, transport and logistics
- Circular economy
- Sustainable tourism, especially in rural areas

The list of fields above is non-exhaustive, and it should be stressed that this specific objective has a broad thematic approach, which means that the programme will not be limited to certain focus areas or sectors. Moreover, the programme encourages demand-driven projects that have a cross-sectoral approach. Actions under this priority should address the territorial differences between the cities and regions of the North Sea region. Actions should be inclusive and follow the citizen-oriented approach.

With regard to spotlight themes as described in chapter 1.2.4, projects are encouraged to consider addressing one or more of the following themes - a) digitalisation, b) rural-urban linkages, c) strengths and challenges in the North Sea basin – in their application in order to highlight and address territorial demands in the North Sea region.

#### **Examples of actions supported (non-exhaustive list):**

- Identifying and overcoming skills gaps in green technology sectors (as common Smart Specialisation focus areas) to support the development and uptake of new innovative products and processes.
- Developing knowledge and skills for improved decision making in the transport sector to increase the uptake of alternative fuels and multimodal transport solutions.
- Providing training schemes for entrepreneurial skills to SMEs to support lifelong learning and help them identify and adopt new sustainable and smart business concepts.
- Promoting cross-sectoral learning to close the linear model of producing and consuming goods and services in the transition to a circular economy with a specific focus on the development of rural areas.
- Improving digital skills in the tourism and cultural heritage sectors to prepare for the digital transformation and to develop sustainable housing concepts in touristic areas.
- Improving SME access to digital know-how and technology by providing an incentive to connect with ICT knowledge and service providers.
- Improving educational curricula for maritime and inland waterway shipping crews to meet the growing demand for a workforce trained in new tools or methods.
- Preventing brain drains in rural regions by developing and building on strategic priority areas and developing tools to retain talent and entrepreneurial skills.
- Helping SMEs to access opportunities in the single market, in the global market and to international value chains by developing entrepreneurial skills for internationalisation.
- Supporting citizens to become social innovators by developing their skills and competences related to social entrepreneurship and innovation.

- Developing skills to enhance regional innovation ecosystems (entrepreneurs, public administration, science and civil society) and to support the development and uptake of new products and services.

The types of actions have been assessed as compatible with the Do No Significant Harm principle, since they are not expected to have any significant negative environmental impact due to their nature (EGESIF\_21-0025-00).

### **Impacts**

Projects funded under this specific objective could contribute to one or several of the following impacts:

- Increased and improved human capital in Smart Specialisation focus areas, especially in terms of up-to-date and digital skills and knowledge
- Strengthened entrepreneurial competencies and increased competitiveness in Smart Specialisation sectors and SMEs
- Improved alignment between skills development and labour market demand
- New jobs and increased productivity
- Increased level of education in rural areas
- Increased interaction between different parts of the education system, civil society and the smart specialization sectors, for example in new or strengthened clusters and networks
- Increased cross-sectoral and interdisciplinary learning.

## **PRIORITY 2**

### **A green transition in the North Sea Region**

#### **Specific objective 2.1: Promoting energy efficiency and reducing greenhouse gas emissions**

##### **Territorial needs in the North Sea Region**

A green energy transition is of strategic importance for the North Sea region as countries across the region work to reduce greenhouse gas emissions and become climate neutral by 2050. The North Sea region aims to advance its competitive position by leading on the development of an overall energy framework that will enhance and promote the implementation of the EU's Green Deal and Energy Efficiency Directive (EU/2018/2002). Moreover, the region's countries will contribute to the goals of the European Green Deal's twin policy, the Shaping Europe's Digital Future policy, by capitalizing on strengths in innovative energy savings measures and low emission solutions.

Energy efficiency measures have been recognised as an effective tool for achieving a low-carbon economy. They can lead to numerous additional benefits, such as an increase in employment and GDP, positive effects on public budgets, improved local air quality, and improvements in health and well-being. Energy efficiency can be achieved in traditional green sectors, but other sectors can also play their part. For example, energy reductions can be achieved in the building sector through the renovation and refurbishment of buildings, which are responsible for 40% of the EU's energy consumption and 36% of greenhouse gas emissions. These impacts can be minimized by improving existing buildings' energy ratings.

Increased challenges for the public sector are also identified in the revised Energy Efficient Directive. The key challenge for the public sector is to implement key efficiency measures in various areas such as water, street lighting, transport and buildings. Public bodies will also need to systematically take into account energy efficiency requirements in their procurement of products, services, buildings and works. Similar actions are required by the private sector: companies are encouraged to carry out measures that will help end users increase energy efficiency in their homes. This can include improving the heating system in consumers' residences, installing double glazed windows, or better insulating roofs.

The drive to test solutions to reduce our impact on the climate also continues. The use of carbon capture storage (CCS) is an example of such a solution. CCS involves capturing the carbon dioxide (CO<sub>2</sub>) from power plants or industrial installations, transporting it to designated sites, and injecting it into geological formations from which it cannot escape.

In light of these challenges and developments, there is a clear need to continue to support the key actors in the North Sea region in working towards energy savings and retain the region's strong economic and innovative position in the relevant sectors. This is also in line with the North Sea region 2030 Strategy and the EU's 'Fit for 55' initiative, the aim of which is to reduce emissions by at least 55% by 2030.

## Transnational cooperation actions

Under this specific objective, the programme will support transnational projects that contribute to the reduction of overall energy use and long-term greenhouse gas emissions savings across the North Sea region. This objective builds on the momentum from previous programme periods to increase the uptake of new technologies and processes and take practical steps to reduce energy use and greenhouse gases. The North Sea region continues to be a world leader in green industry and should consolidate its position in order to protect the environment.

Projects under this specific objective can aim for energy efficiency and long-term greenhouse gas reduction in traditionally green sectors or across all sectors in the North Sea region where there is potential for energy savings. Projects can, for example, explore new approaches for reducing energy use in buildings by refurbishment to support healthy and climate smart housing and premises. Focusing on energy efficient buildings will result in lower energy bills and reduced energy demand. These changes will lead to better air quality and improved health. In addition, actions that contribute to the Energy Performance Certificate (EPCs) and the enhancement of the energy performance of buildings are also welcome. Projects under this specific objective are expected to move beyond networking and knowledge exchange and support activities that are implemented as demonstration and pilot projects. However, targeting consumer behaviour and consumer empowerment aspects in promoting energy efficiency can also play a part in this objective. Actions can include incentives for consumers to realise energy efficiency improvements and to tackle high upfront costs and the split incentives problem.

Digitalisation is highly relevant to achieve the aim of this specific objective, as digital solutions can contribute to the improvement of forecasting of asset optimisation, including the on-site use of self-generation. This is also relevant for energy and smart societies – actions towards energy efficiency related solutions linked to bridging the gap between and within cities and rural areas..

Energy is a complex issue with many stakeholders, regulations and various limitations in relation to content. 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.

Actions should be based on fields that offer significant potential for energy savings and long-term emissions reduction in the participating regions and that build on the competitive strengths of the North Sea region. The following is a non-exhaustive list of fields that have potential for transnational cooperation:

- Low-carbon solutions
- Energy efficient and refurbished buildings
- Energy supply chains
- Industrial design and manufacturing
- Carbon Capture solutions
- Rural and urban business- and household energy

With regard to spotlight themes as described in chapter 1.2.4, projects are encouraged to consider addressing one or more of the following themes - a) digitalisation, b) rural-urban linkages, c) strengths and challenges in the North Sea basin – in their application in order to highlight and address territorial demands in the North Sea region.

### **Examples of actions supported (non-exhaustive list):**

- Fostering the deployment of renovation of buildings with a clear added value to already existing initiatives. Supporting the continuous growth of nearly zero-energy buildings (NZEB)
- Stimulating measures for health and well-being and smart technology (smart meters, self-regulation equipment) in new buildings
- Increasing energy efficiency in ports
- Eliminating emissions in logistics chains
- Helping to develop energy supply chains on local and regional levels, e.g. 'waste heat' in urban areas, closed energy supply chains
- Awareness raising of greening methods and results
- Implementing pilots to identify energy resource savings through innovative industrial design and manufacturing processes
- Reducing overall energy use by changing behaviour and increasing take-up of energy-saving technologies
- Encouraging cross-disciplinary, systems-level approaches to secure higher energy efficiency in the urban environment.

The types of actions have been assessed as compatible with the Do No Significant Harm principle, since they are not expected to have any significant negative environmental impact due to their nature (EGESIF\_21-0025-00).

### **Impacts**

Projects funded under this specific objective could contribute to one or several of the following impacts:

- Reduction of greenhouse gas emissions
- Increased uptake of novel technologies in all relevant energy sectors and fields of operations
- Strengthened renovation & refurbishment in an energy & resource efficient way
- Strengthened regional energy cooperation
- Increased readiness for the continuous uptake of digital solutions in relation to energy efficiency and greenhouse gas emissions.

## Specific objective 2.2: Promoting renewable energy in accordance with Directive (EU) 2018/2001, including the sustainability criteria set out therein

### Territorial needs in the North Sea Region

The countries in the North Sea region have traditionally relied heavily on coal, oil, and other fossil fuels for their energy supply, which contribute to high GHG levels. However, the region is now rapidly transitioning towards the use of greener and cleaner energy resources. Increased use of energy from renewable sources plays an important role in tackling climate change and securing a reliable energy supply for the future. In addition, renewable energy technologies provide opportunities for employment and regional development, especially in rural areas, as well as health benefits by reducing pollution emitted during the production of fossil fuel-based energy.

The North Sea region is an innovation leader in renewable energy technologies in fields such as wind, solar, hydrogen, biomass, and blue energy. By 2019, the share of renewable energy in gross final energy consumption was high in some North Sea countries, but substantially lower in others: Norway 74.6%, Sweden 56.4%, Netherlands 8.8%, Germany 17.4%, Denmark 37.2%, Belgium 9.9%, and France 17.2% [19]. Further uptake of renewable energy technologies and processes needs to increase in all countries in order to facilitate a joint transition towards a green economy. This will contribute to achieving the Green Deal objective to become carbon neutral by 2050 and the interim target to raise the share of renewable energy to 40% of final consumption by 2030.

The North Sea has a natural potential for producing offshore energy thanks to shallow water and localized potential for wave and tidal energy. Research has shown that modern offshore renewable energy technologies will be a cornerstone of the clean energy transition in the EU. The EU strategy on offshore renewable energy emphasises the potential scope of such energy, calling it 'among the renewable technologies with the greatest potential to scale up.' An important stakeholder in this effort is the North Seas Energy Cooperation, which supports and facilitates the development of the renewable energy potential in the region. Their work programme for the coming years emphasises the development of cross-border offshore wind projects with the potential to reduce costs and space of offshore developments.

The share of renewable energy has increased and will continue to increase in the region, mainly due to large scale offshore wind energy investments. Two main drivers of this increase are support schemes for renewable energy technologies and shrinking construction and operation costs. Since the world's first offshore wind farm was installed in Vindeby in 1991 off the coast of Denmark, offshore wind energy has become a mature, large-scale technology providing energy for millions of people across the globe. The five European countries with the largest amount of offshore wind capacity border the North Sea. However, off-shore wind farm development in the North Sea should be further accelerated, since under current policies the present and projected installation capacity would lead to only approximately 90 GW in 2050 – well short of the aim of 300 GW, detailed in the EU strategy on offshore renewable energy.

Hydrogen applications are expected to support the transition towards a renewable energy system. The European Commission published its hydrogen strategy for a climate-neutral Europe in July 2020. It sets strategic objectives to install at least 6 GW of renewable hydrogen electrolyzers by 2024 and at least 40 GW of renewable hydrogen electrolyzers by 2030 and foresees industrial applications and mobility as the two main lead markets. The North Sea region will continue to play a pivotal role in this regard.

## Transnational cooperation actions

The aim of this specific objective is to develop or scale-up approaches to promote renewable energy and, in the long-term, contribute to the reduction of carbon emissions. The region should maintain momentum by spreading awareness of practical steps that can already be taken and promoting the take up of innovative technologies and processes. Funded actions are expected to facilitate knowledge exchange on innovative renewable energy solutions in order to support the development, piloting and adoption of technologies and processes across the region. Actions under this specific objective will contribute to the region's transition to a low-carbon economy and support the uptake of clean energy. To this end actions are expected to address the supply and demand of renewable energies on local and regional levels, which is vital to fostering incentives for renewable energy solutions.

Actions could focus on supportive measures for the already commercially operational bottom fixed offshore wind technology or on floating wind turbines, which are at an early technological adaptation phase. Fields such as wave, tidal converters, and solar energy (offshore photovoltaic panels) are also promising fields for cooperation. Additionally, actions could focus on sustainable biomass production which involves activities ranging from the growing of feedstock to final energy conversion.

Another key action area is 'green' or 'clean' hydrogen. Actions in the field of hydrogen funded by the programme are expected to focus on hydrogen in relation to feedstock, fuel or as an energy carrier and storage, which have potential for future large scale deployment. This also includes actions on renewable electricity since this is a key component in the production of green electrolytic hydrogen, for instance in above mentioned sectors such as onshore wind, bottom-fixed and floating offshore wind.

Projects under this specific objective will move beyond networking and knowledge exchange and support activities that are implemented as demonstration and pilot projects; financing of large energy infrastructure or installations is not supported in the framework of the programme.

The following is a non-exhaustive list of fields that have potential for transnational cooperation:

- On- and offshore wind energy
- Solar energy
- Wave and tidal energy
- Hydro energy
- Biomass
- Hydrogen

It should be noted that projects in the field of biomass should comply with the sustainability criteria as set out in Directive (EU) 2018/2001, Article 29(2) to (7).

With regard to spotlight themes as described in chapter 1.2.4, projects are encouraged to consider addressing one or more of the following themes - a) digitalisation, b) rural-urban linkages, c) strengths and challenges in the North Sea basin – in their application in order to highlight and address territorial demands in the North Sea region.

### Examples of actions supported (non-exhaustive list):

- Supporting the uptake of renewable energy technologies through transnational exchange of knowledge and good practices

- Increasing cost-efficiency of renewable energy systems by implementing smart maintenance concepts
- Developing and piloting dual use concepts for offshore wind farms
- Implementing digital solutions in the field of renewable energy
- Developing new demand side concepts to increase the share of renewable energy in the total energy demand of energy consumers
- Exploring the potential for rural regions of novel renewable energy technologies, such as tidal energy
- Supporting the bridge between the technologies of renewable energies of today and those of the future
- Stimulating the increased use and production of fossil-free energy systems

The types of actions have been assessed as compatible with the Do No Significant Harm principle, since they are not expected to have any significant negative environmental impact due to their nature (EGESIF\_21-0025-00).

### **Impacts**

- Increased uptake of renewable energy technologies in all relevant energy sectors and fields of operations
- Increased employment in renewable energy sector
- Improved air quality and public health
- Long-term contribution to the reduction of greenhouse gas emissions (not measurable during programme implementation).

## Specific objective 2.3: Developing smart energy systems, grids, and storage outside the Trans-European Energy Network (TEN-E)

### **Territorial needs in the North Sea Region**

The EU Strategy for Energy System Integration (COM(2020)/299 FINAL) centres on the importance of a well-positioned and well-functioning integrated energy system and calls for the coordinated planning and operation of the energy system 'as a whole'. This is reflected in the needs of the North Sea region's overall energy framework, which increasingly relies on sound energy system integration (grids and storage). There must be capacity not only to produce renewable energy off- and on-shore but also to store it and connect it to the grid that feeds the homes, buildings, and machines that require it. Smart grids maximise efficiency and reduce costs by using digital connections between utility companies and consumers to identify inefficiencies and help prevent outages in the grid through a series of sensors. Batteries form part of the smart grid system by storing the energy, produced at peak times, when demand is low.

The North Sea region is a world leader in offshore wind production and large gains are also being made in the region in the development of green hydrogen as a fuel source. However, the region faces several challenges as advances are made in these areas. One is that the technologies and infrastructure needed for storing energy are at a very early stage of development, while the production of renewable energy charges ahead. Given the volatile nature of renewable energy production, however, it is important to improve the technology of smart grids to produce a reliable flow to consumers. Moreover, due to insufficient storage capacities (such as pumped hydro storage), the region must increase efficiencies as quickly as possible to be able to capture the full benefit of the energy produced. Management of electricity generation, heating (thermal storage) and transport (battery storage) to address short-term energy shortages should allow the use of more renewable energy.

An important long-term benefit of developing smart energy systems is the boost they will give to the development of renewable energy. The advancement of smart energy systems complements the production of hydro, solar and wind energy. This, in turn, will contribute to a reduction in carbon emissions and help achieve the objectives of the EU Green Deal. Moreover, making links, networks and sectors more integrated will allow various energy carriers – electricity, heat, cold, gas, solid and liquid fuels – to collaborate further in developing existing and emerging technologies, processes and business models, such as ICT and digitalisation, smart grids and meters.

### **Transnational cooperation actions**

Under this specific objective, the programme will support transnational projects that contribute to the acceleration of the transition towards a more integrated energy system across the North Sea region. This includes activities related to grid development and energy storage, as well as awareness raising and promotion of the benefits thereof.

Future power supply and distribution networks need to be more flexible, and the programme will support testing of new methods to deliver this flexibility, e.g. by coupling the power supply together with smart grids to improve the match between supply and demand at different times to avoid surges and blackouts. The specific objective also calls for actions that will facilitate energy system integration, which calls for measures that create physical links between energy carriers. Accelerated electrification will require the reinforcement of the grid at both the distribution and transmission points and will

make the system smarter. Actions are also welcome in relation to smart charging and so-called vehicle-to-grid (V2G) services in order to manage grid congestion and limit costly investments in grid capacity.

In close relation to this are new and emerging battery technologies. Pilots, demonstrations and solutions for advanced materials developments to improve current battery technologies at high TRLs (Technology Readiness Levels), including solid state batteries, are welcome. Solutions for new manufacturing techniques and applicability to battery technology, thereby ensuring the “future proof” battery value chain, are also interesting for the programme.

Actions could also include ensuring that customers’ decisions to save, switch or share energy properly reflect the life cycle energy use and footprint of the different energy carriers. Accessible information is essential to helping citizens reduce their energy consumption and switch to solutions that support an integrated energy system. Awareness raising campaigns, as part of projects that focus on pilots and demonstrations, will educate consumers about the various technology options available to them, e.g. digital monitoring and displays of electricity supply and demand (possibly with variable pricing for peak periods), and their associated carbon footprint so they can make informed choices. While the basic requirements for such systems are broadly agreed, transnational cooperation can demonstrate how they work in practice, explain issues like cost, reliability, and effectiveness, lay the ground for more extensive schemes in the future, and build support for them.

Finally, one of the most significant new developments with potential impact across the North Sea region is the establishment of an energy island in the North Sea. Cooperation on energy technology development connected to the creation of this island has been established, and once the planning of the island progresses, there may be opportunities to implement further transnational cooperation projects related to it.

The following is a non-exhaustive list of challenge-driven fields that have potential for transnational cooperation:

- Uptake of smart energy systems
- Smart grid
- Battery technology
- Awareness raising of long-term benefits of green energy production, storage, and transmission

Regarding spotlight themes as described in chapter 1.2.4, projects are encouraged to consider addressing one or more of the following themes - a) digitalisation, b) rural-urban linkages, c) strengths and challenges in the North Sea basin – in their application to highlight and address territorial demands in the North Sea region.

### **Examples of actions supported (non-exhaustive list):**

- Demonstrating the application of smart grid technologies as a way of saving energy and integrating more renewable power in the energy mix
- Supporting the uptake of smart energy systems and technologies in the construction and building sectors
- Developing electrification of the energy system that is in line with the Commission's 'Clean energy for all Europeans package,' i.e. pilots and demonstrations are necessary to define scale, regulatory issues, technical issues, and economical feasibility
- Supporting the energy value chain to ensure that both costs and benefits are kept in the local and regional energy systems

- Implementing pilots and demonstrations on aspects of Power-to-X and other energy transformation technologies
- Supporting the opportunities for companies and individuals to supply to the grid at peak times and use electricity from the grid when needed
- Protecting digital energy systems and supply, including threats to cyber security
- Stimulating a “future proof” energy storage value chain

The types of actions have been assessed as compatible with the Do No Significant Harm principle, since they are not expected to have any significant negative environmental impact due to their nature (EGESIF\_21-0025-00).

### **Impacts**

Projects funded under this specific objective could contribute to one or several of the following impacts:

- Increased readiness for the continuous uptake of digital solutions in North Sea energy systems
- Efficient, sustainable, and reliable grids
- Storage solutions that will increase reliability of electricity supply and increase efficiency
- An increase in solutions between different energy carriers

## Specific objective 2.4: Promoting the transition to a circular and resource efficient economy

### **Territorial needs in the North Sea Region**

The North Sea region has already begun to benefit from the green transition through its focus on innovation. To continue to reduce the environmental impact of production, decrease resource dependency, and reduce the waste problem in the region, it is crucial to further this transition by focusing on the circular economy. There is a clear need to reduce emissions levels in the North Sea region, and aiming for a circular economy in a broad range of sectors enables this.

The aim of a circular economy is to ensure that resources are reused or recycled, thereby eliminating or reducing waste. It moves the emphasis away from a 'take-make-dispose' culture towards one in which organisations and individuals use resources in smarter and more sustainable ways, with the end-goal of closing the loop of product life cycles. Besides the environmental benefits to the region, the focus on circularity creates opportunities for new business models, jobs, services and products. The innovative capacity of the North Sea region can be an asset to the EU's efforts in boosting the circular economy, which is one of the main building blocks of the European Green Deal.

Regions within the North Sea area are at different levels of maturity when it comes to the circular economy. The individual strengths and specialisations of the regions, when explored through transnational projects, can contribute to solid developments in this area. Moreover, the prevalence of employment in the circular economy material providers currently centres around the rural regions of the NSR and the employment for circular technology providers in urban regions, which opens potential for urban-rural cooperation to realise broad uptake of product and process solutions. Rural regions, in particular, can benefit from the further uptake of the circular economy, as newly developed value-chains in the renewable energy sector, for example, could support the sustainability and resilience of these areas. The countries of the North Sea region will benefit in the long-term from the emission reduction and attention to sustainability that the uptake of circular solutions in the region will bring via projects funded by the programme.

### **Transnational cooperation actions**

The promotion of circular products and processes as mainstream requires a supportive environment for a circular economy. It is crucial that SME's, knowledge institutions and governments can develop, test and improve new circular products and services. Also, by stimulating governments at different levels to foster the circular economy in public procurement and in the development of standards and regulation can drive demand for circular products and services. The aim is to make sustainable products and services the norm in the North Sea region.

There is a solid foundation in the region for realising the transition towards a circular economy, and projects are encouraged to aim for scaling up and focusing on the permanent up-take of solutions, products and services. The overall goal is to minimise waste and thereby the associated carbon it produces as well as the environmental impacts of that production.

Projects under this specific objective can encourage entire circular economy systems or focus on a specific aspect of circularity. Projects may target the design aspect of products to last longer, enhance product modular design for easier repair, or link design to end of life. The orientation of projects can be

towards production processes or services such as production on demand, upgradability or increasing recycled content in products. When focusing on the end product, actions can take a broad approach to recycling, including product life extension and recovery of secondary materials. Projects may also target waste responsibility or involve waste or waste prevention in the blue economy. In other areas, such as agriculture, this translates to the recycling of nutrients, the reuse of treated wastewater, or the valorisation of waste in the context of the bioeconomy. Projects can incorporate actions on behavioral change, transformation of consumption patterns and developing or improving networks to stimulate social innovation for a sharing economy. Digitalisation is highly relevant to achieve the aim of this specific objective as it can be an enabler of resource efficiency. Open online product data, for example, can help to increase reparability and improve durability. Projects could also consider circular procurement methods, starting with looking beyond short-term needs and considering the long-term impacts of each purchase.

As a common objective all projects within this specific objective should aim to accelerate a transition to a circular economy and resource efficient economy with a focus on sectors with a sufficient potential to make this transition.

The programme will fund actions in the following thematic fields (non-exhaustive list):

- Circularity in design of products and packaging
- Reparability, durability, and reusability of products
- Circularity in production processes
- Circularity in value- and supply-chains
- Waste management and recycling
- Creating a market for secondary resources
- Circular business models.

With regard to spotlight themes as described in chapter 1.2.4, projects are encouraged to consider addressing one or more of the following themes - a) digitalisation, b) rural-urban linkages, c) strengths and challenges in the North Sea basin – in their application in order to highlight and address territorial demands in the North Sea region.

### **Examples of actions supported (non-exhaustive list):**

- Providing support to pilots, demonstrations and test beds in order to scale-up the use of product and service innovation to support circularity
- Improving land and sea ecosystems by supporting circularity in agriculture and forestry
- Providing improved production methods for packaging that enhance circularity of the material used
- Fostering initiatives on circular procurement methods to encourage long-lasting change
- Encouraging a transition to circular production in rural areas to encourage new business opportunities and reduce the urban-rural divide
- Encouraging circularity of renewable energy infrastructures, e.g. through the dismantling and recycling of wind- and off-shore constructions
- Enhancing the development of new value-chains of circular economy, especially for rural regions
- Utilising open data access to encourage development and accessibility of spare parts
- Recycling of legacy of materials or extraction of hard to recycle substances

- Improving waste management practices to reduce the threat of plastic in the North Sea
- Developing efficient ways to achieve re-use of products or collection and recycling of materials
- Encouraging resource-efficient design, digitalisation or sustainable business models where producers keep ownership of products to encourage attention on durability
- Assisting the phasing out of current conventional technologies and implementing new technologies that fit into circular economy systems

The types of actions have been assessed as compatible with the Do No Significant Harm principle, since they are not expected to have any significant negative environmental impact due to their nature (EGESIF\_21-0025-00).

### **Impacts**

Projects funded under this specific objective could contribute to one or several of the following impacts:

- Improved framework conditions for maintaining the value of products, materials and resources so they are preserved in the economy for as long as possible.
- Reduced environmental impact of resource consumption and improved societal benefits in the long term.
- Reduced use of primary resources (recycling and efficient use of resources).
- Improved utilisation patterns (behavioural and shift in consumption patterns).
- Strengthened regional uptake of circular solution by improved availability and a behavioural shift in consumption patterns.
- New business models

## Specific objective 2.5: Promoting sustainable multimodal urban mobility, as part of transition to a net zero carbon economy

### **Territorial Needs in the North Sea Region**

A climate neutral Europe cannot be achieved without developing and implementing sustainable means of transport. The transport sector is responsible for approximately 25% of GHG emissions in Europe and a major source of pollution. This is especially true in urban areas, but regional and international transport, which lead to and leave from cities, are also quickly growing sources of emissions.

In 2018, the share of passenger travel by car in most North Sea countries was above the EU-27 average. Traffic congestion and the extensive use of public space for parking are common challenges for urban mobility in bigger cities around the region. In addition, most big cities in the region function as ports, which makes them major logistic hubs. This situation – freight and passenger transport needs from and to ports – creates challenges as well as opportunities in urban transport around the North Sea region.

The region's transport sector also provides employment and connects small towns and hinterland areas to urban centers. As urban areas cannot be viewed separately from their hinterlands, the territorial approach of functional urban areas including smaller towns and rural areas applies in the North Sea region. This territorial approach needs to be considered when developing and harmonizing green and multimodal mobility solutions in the NSR. According to the European Commission's Sustainable and Smart Mobility Strategy, it is crucial that mobility is available to and affordable for all, that rural and remote regions are better connected and that the sector offers good social conditions, reskilling opportunities, and provides attractive jobs.

The North Sea region boasts major ports as well as busy urban transport nodes and a significant hinterland area. Optimising the existing transport networks and logistics chains by boosting innovative ideas is key to reducing emissions. Given that the countries in the region are frontrunners in developing low-emission vehicle technologies and infrastructure and supporting green transport modes in urban areas and their connecting hinterlands, the programme is well placed to address the sustainable mobility challenges that the region faces. Thus, the inclusion of sustainable mobility contributes to the need for a cleaner and more liveable North Sea region.

### **Transnational cooperation actions**

Projects funded under this specific objective will support sustainable and multimodal initiatives, including mobility of people and the supply chains of the connected hinterland areas in the North Sea region. Under this specific objective, the programme will enhance transnational cooperation, which will promote climate neutral transport modes, contribute to carbon-effective mobility and encourage the demonstration and use of available or newly developed green transport solutions. Digitalisation will also become an indispensable driver for projects in the modernisation of transport systems, making them seamless and more efficient.

Multimodal mobility (better integration of bus/rail, car and bike-sharing, dial-a-bus service, etc.) will have positive long-term effects such as reduced dependency on car ownership in the region. In addition, it will reduce congestion and air pollution.

Furthermore, it is important to promote sustainable mobility between peripheral, coastal areas and metropolitan areas by supporting public and private transport services for locals, tourists, and enterprises. These could include such initiatives as promotion of the use of zero-emission ferries and buses along the coast, improved mobility services between tourist destinations, transport of people and goods for the last mile, and encouragement of better rail connections. Moreover, it is essential to place a focus on public awareness raising in order to effect a behaviour change towards sustainable modes of mobility. The subject of sustainable mobility also requires awareness of the mobility patterns of both women and men.

Projects under this specific objective will move beyond networking and knowledge exchange and support activities that are implemented as demonstration and pilot projects; however, financing of large fleets of vehicles and/or rolling stock is not supported. Actions should target areas that give added value through transnational cooperation and build on the competitive strengths of the region. Support for challenge-driven topics that are in line with the priorities of the North Sea Programme will be prioritized. Particular focus will be on the challenges identified under Priority 2, but activities funded under this specific objective will also be open to demand-driven projects in other fields.

The programme will fund innovative actions in the following thematic fields (non-exhaustive list):

- Green modes of urban transport and rural-urban linkages
- Greening of local and regional logistical chains
- Intelligent Transport Solutions
- Multi-modal connections
- Demand-driven passenger transport models

With regard to spotlight themes as described in chapter 1.2.4, projects are encouraged to consider addressing one or more of the following themes - a) digitalisation, b) rural-urban linkages, c) strengths and challenges in the North Sea basin – in their application in order to highlight and address territorial demands in the North Sea region.

### **Examples of potential actions supported (non-exhaustive list):**

- Supporting the development of sustainable logistics for urban areas and the interconnected territories by integrating local supply chains and reducing transport distances
- Supporting the development, implementation and monitoring of Sustainable Urban Mobility Plans or other strategy-based sustainable transport development plans
- Enhancing sustainable mobility services in urban areas and their surroundings by developing and testing innovative IT solutions
- Developing “green-accessibility” through soft modes of transport like cycling, e-biking and walking
- Improving the integration of emissions-free transport modes in multimodal mobility by developing/demonstrating new solutions
- Supporting the development of mobility hubs in urban and non-urban areas
- Enabling start-ups and SMEs working in zero-emission transport industries to take advantage of business opportunities by piloting and assessing new initiatives in sustainable mobility measures
- Supporting solutions for electric/alternative propulsion mobility at urban and regional levels by contributing to existing or pilot networks of charging/distribution infrastructures, and testing for potential bottlenecks in the available infrastructure

- Encouraging social innovations in the mobility sector, such as shared mobility and co-creation by boosting capacities and supporting the application of already available concepts
- Improving/upscaling sustainable and locally produced batteries and vehicles and alternative/new fuels
- Improving sustainable mobility between urban and rural areas
- Promoting automation and autonomous transport on land and water by creating awareness of the advantages of these solutions
- Making transport and mobility smarter by using intelligent transport solutions

The types of actions have been assessed as compatible with the Do No Significant Harm principle, since they are not expected to have any significant negative environmental impact due to their nature (EGESIF\_21-0025-00).

### **Impacts**

All actions target the promotion, deployment, and uptake of sustainable transport solutions across the North Sea region. “Greening” of transport means implementing activities that reduce emissions and is key towards the goal of being the first climate neutral continent. The efforts made in the greening of urban transport will have a positive impact on people living in the region through:

- Improved liveability and emission free accessibility in the North Sea region
- Uptake of green and smart technologies in all relevant transport modes
- Decreased traffic congestion in urban areas
- Better transnational integration of future transport demands in spatial development
- Long-term reduction of CO<sub>2</sub> and pollution emissions

## **PRIORITY 3**

### **A climate resilient North Sea Region**

Specific objective 3.1: Promoting climate change adaptation and disaster risk prevention, resilience, taking into account eco-system based approaches

#### **Territorial Needs in the North Sea Region**

Climate change is already causing negative impacts on the North Sea region. Land and sea temperatures have been rising steadily since the end of the 19th century. An effect of this warming has been a rise of 19 centimetres in the "Global mean sea level" (GMSL) since 1900, and the increase is accelerating, according to the European Environment Agency. The North Sea is not immune; significant changes in sea levels are expected in the future. Other changes tied to climate change in the North Sea region include an increase in seasonal extremes in precipitation and more volatile weather patterns.

There is the clear need to act and adapt to climate change, but the effects of climate change vary across the North Sea area. The most vulnerable types of regions in the North Sea area are densely populated coastal regions and mountain regions. Many parts of the programme area lie just above or even below the current sea level. For the lower lying countries sea level rise is a serious threat. Coastal erosion poses a risk for individuals' homes but may also result in the flooding of large sections of low-lying regions and countries. Winter changes in precipitation are extreme in several parts of Scandinavia, as for example mountain areas. Larger extremes and seasonal changes in precipitation throughout the region can have considerable impacts on society, including the built environment, agriculture, industry, infrastructure, and range of vital ecosystems.

Volatile weather patterns can have effects in two major ways. Flooding is one of the major threats caused by the frequency and severity of storms; drought is another, caused by the absence of rain. Flooding of cities, suburbs, and rural areas as well as the occurrence of droughts have significant impacts on the quality and quantity of water. Flooding and drought also impact the services that require fresh water to be made available for agricultural crops, forests, wetlands, supply of clean drinking water and infrastructural networks (harbours, roads, railroads, river transport and hydro-electricity).

#### **Transnational cooperation actions**

The North Sea Commission's 2030 climate adaptation strategy is based on a systems-oriented approach that integrates climate adaptation and water management issues. In the North Sea region, climate adaptation and resilience are closely interlinked with issues and challenges for sustainable water management of catchments, watercourses and rivers and coastal waters. Thus, climate adaptation and sustainable water management should be addressed jointly by the North Sea Programme under this specific objective on climate change adaptation. The objective also targets issues and challenges in relation to freshwater systems and coastal areas. As these issues are interlinked and similar challenges are faced by different regions it makes sense that joint solutions to the challenges are sought through transnational cooperation efforts.

Please note that actions promoting nature protection, biodiversity and green infrastructure, including pollution of the urban and marine environments, must apply under priority 3, specific objective 2.

The programme will fund actions in the following thematic fields (non-exhaustive list):

- flood resilience, including risk management
- investigations of Nature Based Solutions in flood protection
- exploration of flood protection infrastructure in form of blue-green infrastructure
- catchment management of groundwater and surface waters
- ecosystem services in aquatic freshwaters
- specific thematic fields monitoring, managing and preventing natural phenomena triggered by climate change (such as forest-fires, land-slides in mountain areas, urban heat islands, increased nutrient leaching and invasive species etc.).

With regard to spotlight themes as described in chapter 1.2.4, projects are encouraged to consider addressing one or more of the following themes - a) digitalisation, b) rural-urban linkages, c) strengths and challenges in the North Sea basin – in their application in order to highlight and address territorial demands in the North Sea region.

### **Examples of actions supported (non-exhaustive list):**

- Improving protection of coasts, estuaries, rivers against erosion and storm surges by applying Nature Based Solutions
- Integrating water management to mitigate the impact of more intense rainfall events and flooding from rainwater, groundwater, water courses and rivers in, e.g. mountainous and coastal areas
- Improving the management of groundwater and surface waters, including pressures from discharges in riverbeds caused by peak loads
- Strengthening urban resilience by using space in a multifunctional way, as for example by investigating into blue-green infrastructure as part of urban design
- Facilitating the maintenance of soil moisture and supply to ground- and surface waters
- Testing methods and solutions to cope with impacts of sea level rise (such as erosion, flooding, salt water intrusion)
- Initiating nature restoration measures in water management at rivers, lakes, wetlands or groundwater (rewinding of water courses and rivers or rewetting of wetlands)
- Implementing ecosystem services such as carbon storage, soil formation as well as water quality and flows
- Predicting climate change impacts and the effects they have on societal values, and exploring the cost of such measures and stimulating the involvement of business opportunities for SMEs
- Promoting social innovation, e.g. by actively engaging communities, stakeholders and citizen's participation in implementation of pilots and measures
- Piloting small-scale technical solutions as part of integrated coastal zone management
- Mainstreaming of successful measures and monitoring methods in strategies and management guidelines
- Adopting improved methods for tackling other effects of climate change such as drought, heat stress on road infrastructure or energy systems, salinization etc.

The types of actions have been assessed as compatible with the Do No Significant Harm principle, since they are not expected to have any significant negative environmental impact due to their nature (EGESIF\_21-0025-00).

## Impacts

Projects funded under this specific objective could contribute to one or several of the following impacts:

- Uptake of nature-based solutions to manage flooding and water
- Improved resilience against flooding and erosion including land-slides in coastal and mountain areas
- Improved resilience of towns and cities against flooding risks adapted to their location in specific landscapes and sites
- Improved resilience against other climate change related effects, such as heat stress, drought, salinization, land consumption and sealing
- More appropriate protection of fresh-water resources (quality and quantity) for healthy and clean drinking water supplies
- Adapted ground and surface waters to wider fluctuations in seasonal precipitation
- Restored fresh-water ecosystems, including peat soil and wetlands with potential to capture and store carbon

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## Specific objective 3.2: Enhancing protection and preservation of nature, biodiversity, and green infrastructure, including in urban areas, and reducing all forms of pollution

### **Territorial Needs in the North Sea Region**

Biodiversity and ecosystem services, including those in the marine environment, are vital assets for regional development and other benefits in the North Sea region. However, their functions are under stress because of high population density, urbanisation and intensity of use within agriculture, transport and industry. Current trends in climate change aggravate these pressures. Natural resources and ecosystems support the broader well-being of the area; thus, they must be protected due to their value as natural assets.

The natural resources and the ecosystems of the North Sea are important for businesses, regions and communities. Off-shore renewable and fossil energy systems depend on a range of ecosystem services. The services and products stemming from an emerging interest in algae for biomass and food as part of Blue Growth also require healthy marine ecosystem services.

The concept of ecosystem services is developed within the framework of the UN conventions on biodiversity and climate change. They have been applied in various contexts in relation to calculating the value of natural capital and sequestration in carbon in soils as part of EU policies. Biodiversity assets and ecosystem services involve the benefits that flow from nature to people. The European Commission Biodiversity Strategy 2030 suggests that 30% of the EU's land area and 30% of the EU's sea area become legally protected by 2030. This strategy will also increase requirements for nature protection in the North Sea region. The Environment Council of Ministers has endorsed the objectives of the strategy as political guidance for follow up.

Pollution of marine environments in the North Sea poses a threat to the environment and human health. Such pressures are also destroying ecosystem services on which local communities, tourism, aquaculture and offshore wind parks depend.

### **Transnational cooperation actions**

The protection of the North Sea environment is a transnational issue and requires cooperation. Actions under this objective must target marine ecosystems, biodiversity or green linkages in towns and cities and their rural hinterlands. Joint development of methods for environmental monitoring, restoring ecosystem services and managing green corridors will profit from transnational cooperation. Actions should seek to mainstream successful solutions.

EU marine policies and strategies and environmental conventions such as OSPAR provide frameworks for protection. These are important, especially in conjunction with actions related to Maritime Spatial Planning (MSP). The programme supports specific actions that are part of operational follow-up of such policies and strategies and improve the sustainable management of marine ecosystems. The aspect of transnational nature protection must be considered when authorities in the member countries are working on the implementation of the Maritime Spatial Planning Directive.

As the North Sea is a high intensity area on research and development in ecosystem services and because businesses and industries in the region are advanced in high-tech, clean and sustainable technologies with a small ecological footprint, the region's capacities should be used to restore and

maintain healthy ecosystems. The know-how and methods developed can strengthen the competitiveness of the region. They could also connect to European Business for Biodiversity initiatives.

The actions carried out should be in the context of strategies on biodiversity and marine ecosystem strategies, e.g. the directives on Marine Strategy Framework or the MSP. The programme does not expect any overlap with mainstream programmes that administer funds such as the European Maritime Fisheries and Aquaculture Fund, due to the nature of the initiatives they support as well as the focus on transnational cooperation in North Sea Programme projects.

Please note that actions promoting sustainable management and protection of freshwater aquatic ecosystems and climate adaptation must apply under priority 3, specific objective 1.

The programme will fund actions in the following thematic fields (non-exhaustive list):

- long-term sustainable protection and restoration of marine biodiversity, environmentally protected areas
- ecosystems and biodiversity in rural and urbanized landscapes
- ecosystem services in marine and coastal spaces, including reducing polluting substances - such as litter and plastics in the marine environment as well as mitigating risks regarding wrecks and munition
- sustainable management of ecosystems and protection of the environment – i.e. realised through the participation and support of citizen and civil society organisations (e.g. 'citizen science')

With regard to spotlight themes as described in chapter 1.2.4, projects are encouraged to consider addressing one or more of the following themes - a) digitalisation, b) rural-urban linkages, c) strengths and challenges in the North Sea basin – in their application in order to highlight and address territorial demands in the North Sea region.

#### **Examples of actions supported (non-exhaustive list):**

- Testing methods addressing a range of pressures on biodiversity and ecosystems, such as invasive species, marine litter, and contaminants
- Strengthening methods to accommodate off-shore renewable energy production to meet requirements of marine ecosystems - such as potential use of subsea off-shore wind park infrastructure as artificial reefs and breeding grounds for marine species
- Testing nature restoration methods for management of degraded ecosystems
- Deploying new methods and technologies for environmental monitoring and management and mainstreaming successful approaches
- Working with ecological corridors and green infrastructure in rural and urbanized landscapes to improve ecological connectivity and deliver benefits from them
- Implementing environmental measures and improved management of ecosystems by use of participatory processes, involving public authorities, relevant groups of citizens, NGO's, farmers and communities and their organisations in pilots and tests
- Developing and testing solutions for the development and enhancement of green infrastructure in the urban environment
- Initiating cooperation on reducing marine and coastal litter on beaches; contributing to the goal to keep litter under the threshold value as decided by EU experts and outlined in a report by the Commission

- Innovative pilot actions to increase biodiversity in cities with a positive impact on the wellbeing of citizens

The types of actions have been assessed as compatible with the Do No Significant Harm principle, since they are not expected to have any significant negative environmental impact due to their nature (EGESIF\_21-0025-00).

## **Impacts**

Projects funded under this specific objective could contribute to one or several of the following impacts:

- New or improved monitoring methods and technology, such as digital solutions, delivering better quality and/or cost-effective monitoring of North Sea marine or landscape ecosystems. Successful solutions should be mainstreamed.
- Management methods improving conservation and restoration of degraded marine ecosystems
- Ecosystem services integrated in maritime spatial plans in the North Sea
- Joint actions delivering solutions on environmental problems (marine pollution, migrating wildlife)
- Take-up of methods and actions used to restore degraded bio-topes and ecosystems in urbanized and rural landscapes; enhancing ecosystem services of green infrastructure for the public good
- Methods and actions improving protection of threatened species with key functions in ecosystem services (e.g. pollination) that bring a benefit to the region
- Nature based solutions restoring green infrastructure in urban and peri-urban areas.
- Long-term risk management of lost containers from shipping, wrecks, chemical waste from munition and its impact on marine ecosystems, including improved methods for location of such threads fisheries, maritime transport, offshore wind farms.

# **PRIORITY 4**

## **Better governance in the North Sea Region**

### 2.4.1 Specific objective 4.1: Other actions to support better cooperation governance

#### **Territorial Needs in the North Sea Region**

The North Sea region land and sea territories are perfectly poised to tackle joint challenges. Characterized by strong interdependencies, a wide range of stakeholders, including governments, international organisations, the EU, NGOs, private parties and citizens, are well equipped to address complex and demanding governance challenges. These issues exist across all objectives identified for the North Sea Programme.

Of particular interest is the governance of the North Sea basin, which is the most important joint asset of the region. Shipping, renewable energy production, aquaculture, fishing, tourism and recreation are activities that require coordination and, sometimes, a weighted priority in order to achieve a sustainable North Sea. In recent decades the pressure on the marine environment and ecosystems has grown, and competition for space and resources has increased. In this context a core objective of the programme is to exploit maritime and other natural resources in a coordinated and sustainable way. In addition, there is a growing need to better align land- and sea-based activity. Governance and spatial planning of land-sea interaction, as well as integrated coastal management, are important to achieve coherent policies.

There is also a clear need to support integrated territorial development and reinforce urban-rural cooperation in order to overcome gaps and strengthen a green and just development in the North Sea region. Improved governance structures should provide a rural-urban framework for more efficient land use and planning, better provision of public services and public transport, and better and just management of natural resources.

To address both land- and sea based governance challenges, it is necessary to embed and set the stage for individual actions in broadly supported and long-term strategies, action plans and networks. Improved multi-level governance structures that include key stakeholders and increased institutional capacity to participate in these structures will not only improve coordination between actions in the region but will also support actions in order to ensure long-term effects and increase the cumulative impact of the programme. Facilitating and improving multi-level governance is a prerequisite for effectively addressing joint challenges.

#### **Transnational cooperation actions**

While actions in Priorities 1, 2 and 3 should be targeted towards piloting practical solutions, this priority aims to improve the framework conditions that increase the durability and transferability of individual solutions. Actions supported will include the establishment and reinforcement of long-term multi-level governance networks and mechanisms, to combine practical solutions in integrated approaches and set the stage for future projects and initiatives. In addition, the priority will support the capacity building of stakeholders, including citizens, to actively engage in governance processes and decision making and to participate in innovations and transitions. This priority reflects a novel and innovative

approach, and projects are encouraged to experiment and actively bring in new and untested ideas when applying for funding.

All challenge-driven fields mentioned under Priorities 1-3 could be of relevance for governance actions under Priority 4. Governance in marine and maritime fields, such as offshore wind and blue energy, shipping, ports, marine ecosystem protection, aquaculture, fishing and coastal and maritime tourism and recreation, as well as land-sea interactions, are considered to be of particular relevance for the region.

Supported actions should be inclusive and consider all relevant stakeholders (including but also beyond the traditional government actors) to participate in improved governance structures. Projects should bring on board actors that have the competencies and authority to leverage changes in policies.

Projects that deal mainly with governance are expected to apply in this priority, and are welcome to apply for alternative and more experimental types of actions, e.g. to set the scene and test the waters for future cooperation in particular fields. New strategies and action plans developed under this priority could, for example, be the starting point for future mainstream and research projects or other Interreg projects. Priority 4 projects should provide added value by building on existing transnational governance structures and solutions.

The nature of this priority implies that pilots that require substantial budget for investments or equipment will only play a minor role, if any. In general, it is expected that actions in this field build on or set the stage for pilot-based projects supported under the other priorities, in addition to other expertise and initiatives present in the region outside the programme.

With regard to spotlight themes as described in chapter 1.2.4, projects are encouraged to consider addressing one or more of the following themes - a) digitalisation, b) rural-urban linkages, c) strengths and challenges in the North Sea basin – in their application in order to highlight and address territorial demands in the region.

### **Examples of actions supported (non-exhaustive list):**

- Bringing together stakeholders, developing integrated and widely supported strategies and action plans in challenge-driven fields, and addressing regulatory and legal barriers
- Developing innovative concepts and tools that support better transnational coordination between existing and new actors involved in marine and maritime governance, including MSP
- Developing tools to foster citizen knowledge and engagement to improve their position in multi-level governance processes and participation in decision-making
- Building institutional capacity for actors on all levels to adapt to territorial needs and challenges, e.g. marine protection, digitalization, social innovation
- Supporting new and existing networks to translate international strategies and policies into joint transnational action plans
- Bringing together actors to address regulation-free spaces and the absence of adequate regulations in fields such as drones, robots and data-driven innovations in order to develop joint strategies, approaches and standards
- Setting up and fostering transnational partnerships between urban and rural actors as well as civil society and developing strategies to overcome the urban-rural divide in the region
- Building thematic communities for topics addressed in Priorities 1-3 in order to transfer findings and scale-up cooperation around shared issues, with the aim of embedding project results in a wider framework and ensuring take-up

- Developing and promoting new or improved governance mechanisms for upscaling, transferring and mainstreaming key innovations in challenge-driven fields in regional and local economies
- Building platforms for governance actors to harmonise technological standards and certification for (digital) infrastructure and equipment
- Supporting the integrated coastal zone management with maritime spatial planning in conflicting uses of spaces
- Developing measures for public-private partnerships to foster financial incentives that will lead to an increased use of energy efficient technologies
- Implementing participatory processes for winning stakeholder support for environmental measures

The types of actions have been assessed as compatible with the Do No Significant Harm principle, since they are not expected to have any significant negative environmental impact due to their nature (EGESIF\_21-0025-00).

## **Impacts**

Projects funded under this specific objective could contribute to one or several of the following impacts:

- Better coordination through new or strengthened cross-sectoral networks that facilitate multi-level governance
- Improved integration of marine and maritime solutions and activities
- Increased capacity in governance stakeholders to engage in transnational governance processes
- Improved integration and up-take of solutions in challenge-driven fields
- Increased societal support for policy decisions.

## Spotlight themes

The mentioned EU-level policies and frameworks include topics that were identified as strategically relevant for the VIB North Sea Programme. These topics include digitalisation, rural-urban linkages, and strengths and challenges in the North Sea basin. These have been singled out and highlighted as spotlight themes in the VIB North Sea Programme. They are considered relevant in all four priorities; applicants are encouraged to consider how their project could address one or more of the themes in their project, whether the focus of the project is circular economy, innovation or climate resilience (or other), and include activities that support that theme.

References to the themes are made throughout the descriptions of the specific objectives. The inclusion of these themes helps to ensure that connected territorial demands are sufficiently addressed by projects. The spotlight themes are also useful for identifying synergies between projects in different priorities.

### Digitalisation

Digitalisation is a clear strategic priority in the North Sea region, both on national and regional levels. Digital solutions can offer a way to address the various challenges the region is facing, irrespective of specific objective or priority. By including digitalisation as a spotlight theme, the programme aims to ensure that the region's digital transition and its digital technology transformation reach their full and fair potential for people, businesses and public authorities.

Projects are encouraged to make use of up-to-date digital technologies, to implement smart and digital solutions and to foster digital skills. Increasing the connectivity of the region could help to reduce the rural-urban gap, while raising the level of digital skills in most parts of the North Sea region is also an important goal. By including digitalisation as a spotlight theme, the programme aims to promote the digital agenda outlined at EU, national and regional levels across all priorities.

### Rural-urban linkages

In much of the North Sea region area there remains a rural-urban divide that the programme wishes to reduce. The divide can be seen in the advantage of urban areas vis-a-vis rural areas in terms of GDP per capita and innovation levels, in the population decline in some rural areas, in the skills gaps between rural and urban areas and in the limited connectivity of rural areas, both in terms of transport connections and digital connectivity. With these gaps in mind, the linkages between 'rural' and 'urban' become an increasingly important component of inclusive territorial development in the North Sea region. This includes both spatial linkages, such as flows of people, goods and knowledge, social networks and relations that span rural and urban locations, as well as linkages between sectors, for example in the fields of circular economy, manufacturing or agriculture.

By including rural-urban linkages as a spotlight theme, the programme aims to actively attract projects that support the development of such linkages and that foster regional development in an inclusive way, drawing on the skills and capacities of the region. This will support a balanced development of the North Sea region as a whole, in which all regions, regardless of location and capacity, have the opportunity to effectively meet the challenges they are facing, to improve the accessibility of rural areas, to deliver growth and jobs to rural communities and to improve the liveability inside and outside of the urban centres of the NSR.

During the 2014-2020 programme period the majority of beneficiaries participating in North Sea region projects were based outside large urban areas. In order to further strengthen territorial cohesion in the programme area the projects are encouraged to continue this pattern in the new programme period. It needs to be accompanied by projects that actively address rural-urban gaps by implementing sectoral as well as integrated and multi-level governance approaches with a clear focus on local implementation.

## Strengths and challenges in the North Sea basin

The North Sea basin is at the centre of the programme area, and marine and maritime topics are of relevance in all priorities and under all specific objectives. By including 'Strengths and challenges in the North Sea basin' as a spotlight theme, the programme aims to address marine and maritime challenges from different angles by building on the strengths that are already present in the region.

From an economic perspective, the sea basin is an important asset for the region because the activities that take place on and around it help to maintain and strengthen a robust economy. It has been shown that maritime activities such as offshore renewable energy could and should coexist with other activities and that there is, despite conflicting interests and challenges, political will to develop sustainable economic activities in marine protected areas. The development and uptake of innovations in port logistics and shipping, (renewable) energy production, aquaculture, fishing, tourism and recreation are therefore key to increasing both economic and environmental resilience in the North Sea region.

In addition, exploiting offshore sustainable energy resources is important to achieving the EU Green Deal objective to become a climate-neutral continent in 2050. The North Sea has tremendous potential for harnessing renewable energy and producing hydrogen from wind, waves, tide, and currents. This needs to be supported by the development of integrated and reliable offshore energy grids.

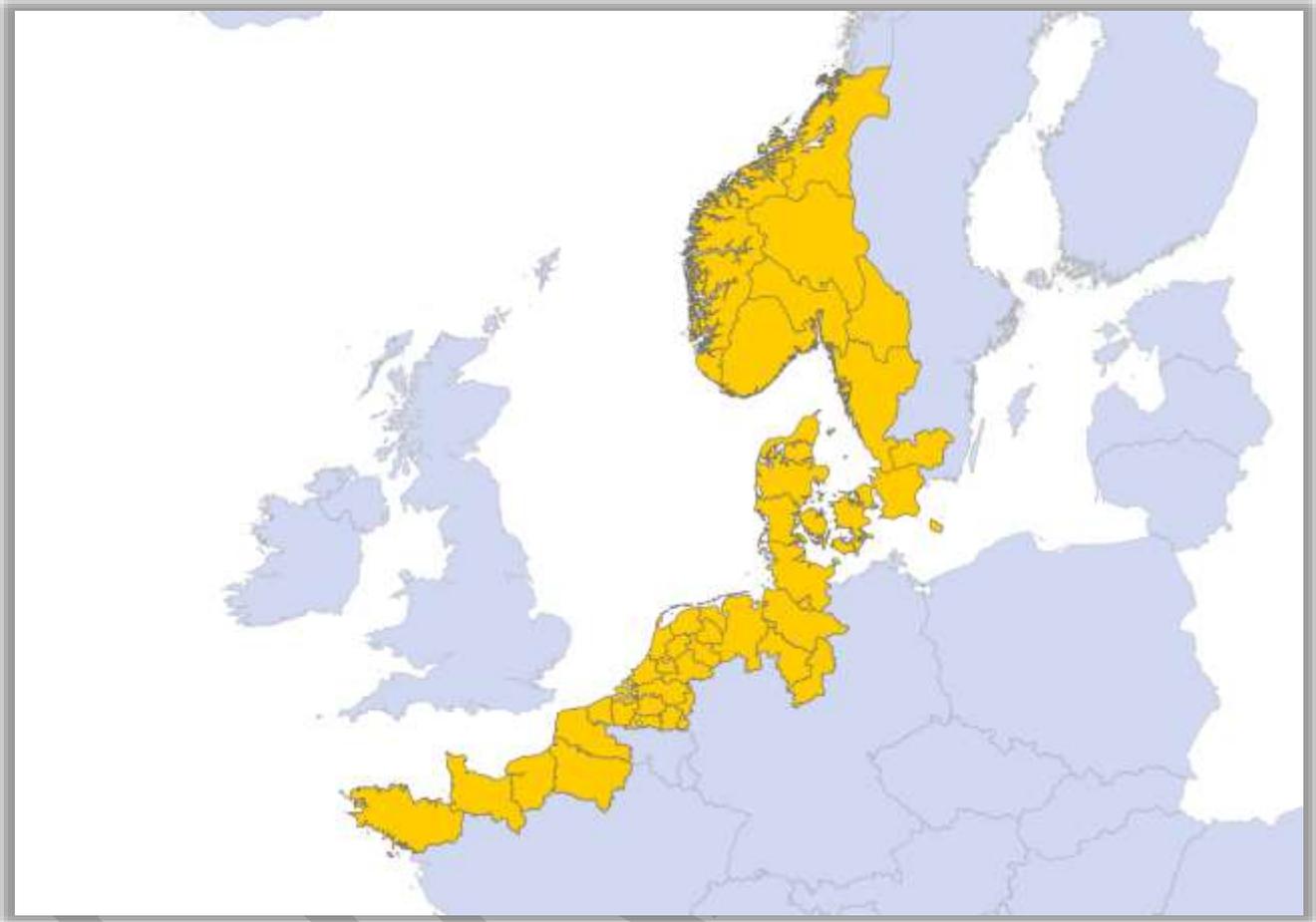
This spotlight theme is not limited to actions that take place on or in the North Sea but may include those that focus on interaction between the land and sea environment. Land-sea interactions include natural processes across the land-sea interface and interrelationships between human activities in this zone, both of which could be relevant for transnational cooperation.

### *Making the spotlight themes operational*

Since spotlight themes will run across priorities, and therefore will not have dedicated indicators like the specific objectives, the programme expects to operationalise the themes in the following ways:

1. While projects will not be required to include any of the spotlight themes, they will be asked in the project application whether any of their activities will be related to one or more of the themes. This will be used as a simple way to monitor the take-up of the themes in projects' plans throughout the programme period.
2. The programme may use targeted calls as a way to bring attention to the spotlight themes during the programme period; for example, a call in which projects focus on rural-urban linkages or centre on digitalisation.
3. Building on the effort to create and build project community networks toward the end of the VB period, the Joint Secretariat will create a similar opportunity for projects along thematic lines, which may include the spotlight themes.

**Appendix 1: Map of programme area and list of NUTS regions**



<b>NUTS ID</b>	<b>NUTS LEVEL</b>	<b>COUNTRY CODE</b>	<b>NUTS NAME</b>
BE21	2	BE	Prov. Antwerpen
BE22	2	BE	Prov. Limburg (BE)
BE23	2	BE	Prov. Oost-Vlaanderen
BE24	2	BE	Prov. Vlaams-Brabant
BE25	2	BE	Prov. West-Vlaanderen
DE50	2	DE	Bremen
DE60	2	DE	Hamburg
DE91	2	DE	Braunschweig
DE92	2	DE	Hannover
DE93	2	DE	Lüneburg
DE94	2	DE	Weser-Ems
DEF0	2	DE	Schleswig-Holstein
DK01	2	DK	Hovedstaden
DK02	2	DK	Sjælland
DK03	2	DK	Syddanmark
DK04	2	DK	Midtjylland
DK05	2	DK	Nordjylland
FRD1	2	FR	Basse-Normandie
FRD2	2	FR	Haute-Normandie
FRE1	2	FR	Nord-Pas de Calais
FRE2	2	FR	Picardie
FRH0	2	FR	Bretagne
NL11	2	NL	Groningen
NL12	2	NL	Friesland (NL)
NL13	2	NL	Drenthe
NL21	2	NL	Overijssel
NL22	2	NL	Gelderland
NL23	2	NL	Flevoland
NL31	2	NL	Utrecht
NL32	2	NL	Noord-Holland
NL33	2	NL	Zuid-Holland
NL34	2	NL	Zeeland
NL41	2	NL	Noord-Brabant
NL42	2	NL	Limburg (NL)
NO02	2	NO	Innlandet
NO06	2	NO	Trøndelag
NO08	2	NO	Oslo og Viken
NO09	2	NO	Agder og Sør-Østlandet
NO0A	2	NO	Vestlandet
SE212	3	SE	Kronobergs län
SE224	3	SE	Skåne län
SE23	2	SE	Västsverige
SE311	3	SE	Värmlands län