

Contracting Authority:

Secrétariat Technique Conjoint INTERREG IV A 2 Mers

# Strategic Environmental Assessment of the INTERREG VA 2 Mers Seas Zeeën 2014-2020 Programme

## Environmental report

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## ACRONYMS

**AQMA:** Air Quality Management Area

**CP:** Cooperation Programme

**EA:** Environmental Authority

**EC:** European Commission

**EU:** European Union

**GPP:** Green Public Procurement

**ICZM:** Integrated Coastal Zone Management

**IP:** Investment Priority

**IUCN:** International Union for the Conservation of Nature

**JTS:** Joint Technical Secretary

**Ktoe:** Thousand tonnes oil equivalent

**MA:** Managing Authority

**MS:** Member State(s)

**Teq:** Tonne Equivalent CO<sub>2</sub>

**NVZ:** Nitrate Vulnerable Zone

**PPG:** Programme Preparation Group

**SEA:** Strategic Environmental Assessment

**SIC:** Standardised Investment Components

**SO:** Specific Objective

**SRADDT:** Schéma régional d'aménagement et de développement durable du territoire

**TO:** Thematic Objective

**WFD:** Water Framework Directive

## INTRODUCTION

This draft Environmental report provides an environmental evaluation of the 2 Seas Programme 2014-2020, in compliance with Directive 42/2001/EC<sup>1</sup> (the 'SEA Directive').

As stated in Article 1 of the Directive *"The objective of this Directive is to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations in the preparation and adoption of plans and programmes with a view to promoting sustainable development [...]"*

The 2 Seas Programme is a cross-border cooperation programme which promotes cooperation between regional and local actors from different territories in 4 Member States (MS), along the North Sea and the Channel; namely the United Kingdom, France, Belgium and the Netherlands.

*"Interregional cooperation should aim to reinforce the effectiveness of cohesion policy by encouraging exchange of experience between regions on thematic objectives and urban development, including urban-rural linkages, to improve implementation of territorial cooperation programmes and actions as well as promoting analysis of development trends in the area of territorial cohesion through studies, data collection and other measures"* (European territorial cooperation goal<sup>2</sup>)

The cooperation Programme contributes to the European Union (EU) cohesion policy for the achievement of EU 2020 Strategy goals.

The Programme will invest in the activities listed in Article 5 of the new Regulation 1301/2013<sup>3</sup>, focusing on innovation, competitiveness and business development in Small and Medium Enterprises (SMEs), climate change adaptation and mitigation, promotion of renewable energy,

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<sup>1</sup> Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment (OJ L 197, 21.7.2001, p. 30).

<sup>2</sup> See recital 7 of Regulation (EU) No 1299/2013 of the European Parliament and of the Council of 17 December 2013 on specific provisions for the support from the European Regional Development Fund to the European territorial cooperation goal (OJ L 347, 20.12.2013, p. 239).

<sup>3</sup> Regulation (EU) No 1301/2013 of the European Parliament and of the Council of 17 December 2013 on the European Regional Development Fund and on specific provisions concerning the Investment for growth and jobs goal and repealing Regulation (EC) No 1080/2006 (OJ L 347, 20.12.2013, p. 281).

biodiversity and environmental infrastructure, sustainable transport and social inclusion. The programme is structured around four operational priority axes:

**Axis 1:** Technological and social innovation. This axis proposes three Specific Objectives (SOs) to *improve the framework conditions for the delivery of innovation, in relation to smart specialisation (SO1.1) increase the delivery of innovation in smart specialisation sectors (SO 1.2) and increase the development of social innovation applications in order to make more efficient and effective local services to address the key societal challenges in the 2 Seas area (SO 1.3).*

**Axis 2:** Low carbon technologies; with one objective to *increase the adoption of low-carbon technologies and applications in sectors that have the potential for a high reduction in greenhouse gas emissions (SO 2.1).*

**Axis 3:** Adaptation to climate change, to *improve the ecosystem-based capacity of 2 Seas stakeholders to climate change and its associated water-related effects (SO 3.1).*

**Axis 4:** Resource-efficient economy. This axis proposes two Specific Objectives (SOs) to *increase the adoption of new solutions for a more efficient use of natural resources and materials (SO 4.1) and increase the adoption of new circular economy solutions in the 2 Seas area (SO 4.2).*

This draft report is based on the topics in Annex 1 of the SEA Directive.

- Programme strategy, through 7 Specific Objectives in the 4 axes, their associated actions and beneficiaries (Section 1);
- Environmental context and situation (Section 2); with a brief description of the main environmental issues of the cross-border area, and proposed macro-indicators to highlight environmental trends over 2014-2020;
- Environmental objectives (Section 3) and coherence with other strategies, plans and programmes (Section 4) relevant to the cooperation area;
- Environmental effects of the Cooperation Programme (CP) based on the different scenarios and hypothesis discussed during the Programming process (Section 5);
- Mitigation measures (Section 6) and the proposal for re-enforcement of the positive effects derived from the implementation of the Programme;
- Environmental monitoring system (Section 7), with specific provisions for environmental monitoring during the implementation phase of the Programme;

- Information on potential alternatives and the decision making process (Conclusion).

After submission to Environmental Authorities and public consultations, this report has been reviewed by the SEA experts and the Managing Authority to integrate feedback and recommendations. In addition, recommendations on the CBC CP from the Commission have also been analysed. This SEA version from section 1 to 7 is related to CP of February 2014. Changes introduced by the last CP version of 14/04/2015 are analysed in the table below. It is worth noticing that no new negative environmental effect derived from the new CP version. Therefore, conclusions from the SEA analysis, especially related to environmental effects, mitigation and indicators are confirmed.

Priority axis	Thematic objective	Investment priorities	Specific objectives corresponding to the investment priorities Version 16/03/2015	Specific objectives corresponding to the investment priorities Version 14/04/2015	Comments	
					Main changes	Conclusion on environmental effects
1. Technological and social innovation	TO1 - Strengthening research, technological development and innovation	1.b)	1.1. Improve the framework conditions increasing the capacities of (local and regional) stakeholders in charge of developing and delivering innovation policies in the priority sectors of shared interest among the 2 Seas regions through the adoption of the quadruple helix paradigm	1.1. Improve the framework conditions for the delivery of innovation, in relation to smart specialisation	No substantial change	No new environmental effect
			1.2. Increase the delivery of innovation, in the priority-sectors of shared interest and relevance for the 2 Seas area	1.2. Increase the delivery of innovation in smart specialisation sectors	No substantial change	No new environmental effect
			1.3. Increase the development of social innovation applications in order to make more efficient and effective local services to address the key societal challenges in the 2 Seas area	<i>idem</i>	No change	No change
2. Low carbon technologies	TO4 - Supporting the shift towards a low-carbon economy in all sectors	4.f)	2.1. Increase the adoption of low-carbon technologies and applications by public and private organisations and citizens in the 2 Seas area in all economic sectors by stimulating cross-border cooperation between relevant entities and stakeholders, and through the testing and demonstration of innovative technologies	2.1 Increase the adoption of low-carbon technologies and applications in sectors that have the potential for a high reduction in greenhouse gas emissions	Reference to renewable energies removed (e.g. wind, solar and biomass) Targeted sectors listed.	No additional negative effect linked to changes introduced by the new SO 2.1. Negative expected effects expected on biodiversity should not materialise. The expected positive impact linked to the use of renewable energy should not materialise.

3. Adaptation to climate change	TO5 – Promoting climate change adaptation, risk prevention and management	5.a)	3.1. <u>Improve</u> the adaptation capacity to climate change and associated phenomena of the stakeholders dealing with this issue particularly in the sectors on which climate change is likely to have stronger impacts	3.1. Improve the ecosystem-based capacity of 2 Seas stakeholders to climate change and its associated water-related effects	New SO version focused on ecosystem-based water-related effects.	No additional negative effect linked to changes introduced by the new SO 3.1. Positive effects identified by the SEA confirmed.
4. Resource efficient economy	TO6 – Preserving and protecting the environment and promoting resource efficiency	6.g)	4.1. Increase the adoption of new solutions for a more efficient use of natural resources and materials which shall facilitate the transition towards a greener and more circular economy, and the development of the blue economy	4.1. Increase the adoption of new solutions for a more efficient use of natural resources and materials	New SO version focused on efficient use of natural resources and materials	No additional negative effect linked to changes introduced by the new SO 4.1. Positive effects identified by the SEA confirmed.
			<i>none</i>	4.2 Increase the adoption of new circular economy solutions in the 2 Seas area	New SO version focused on circular economy solutions	No additional negative effect linked to the new SO 4.2. Positive effects identified by the SEA confirmed.
5. Technical Assistance	Not applicable	Not applicable	5.1. Ensure the smooth and effective management, implementation, monitoring and capitalisation of the programme	<i>idem</i>	No change	No change
			5.2. Assist the emergence of good-quality projects and making sure of their effective contribution to the achievements of programme specific objectives	<i>idem</i>	No change	No change

# 1. FRAMEWORK AND PROGRAMME BACKGROUND

## 1.1 JUSTIFICATION AND OBJECTIVE OF THE STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA)

The likely environmental effects of the 2 Seas 2014-2020 Programme will be assessed in compliance with the SEA legislative dispositions and the explanatory package<sup>4</sup>.

Enforcement of this procedure, regulated by the SEA Directive 2001/42/EC<sup>5</sup>, is justified by:

- the (joint) SEA undertaken in the previous period for the 2 Seas and France (Channel) - England 2007-2013 Programmes;
- the SEA Directive applies to Cohesion policy programmes, and in particular to the 2 Seas Programme which is likely to have significant environmental effects<sup>6</sup>;
- the Managing Authority requires an SEA “*to integrate environmental considerations into the preparation and adoption of the INTERREG V A 2 Seas 2014-2020 with a view to promoting sustainable development.*” (ToR, Art.2)

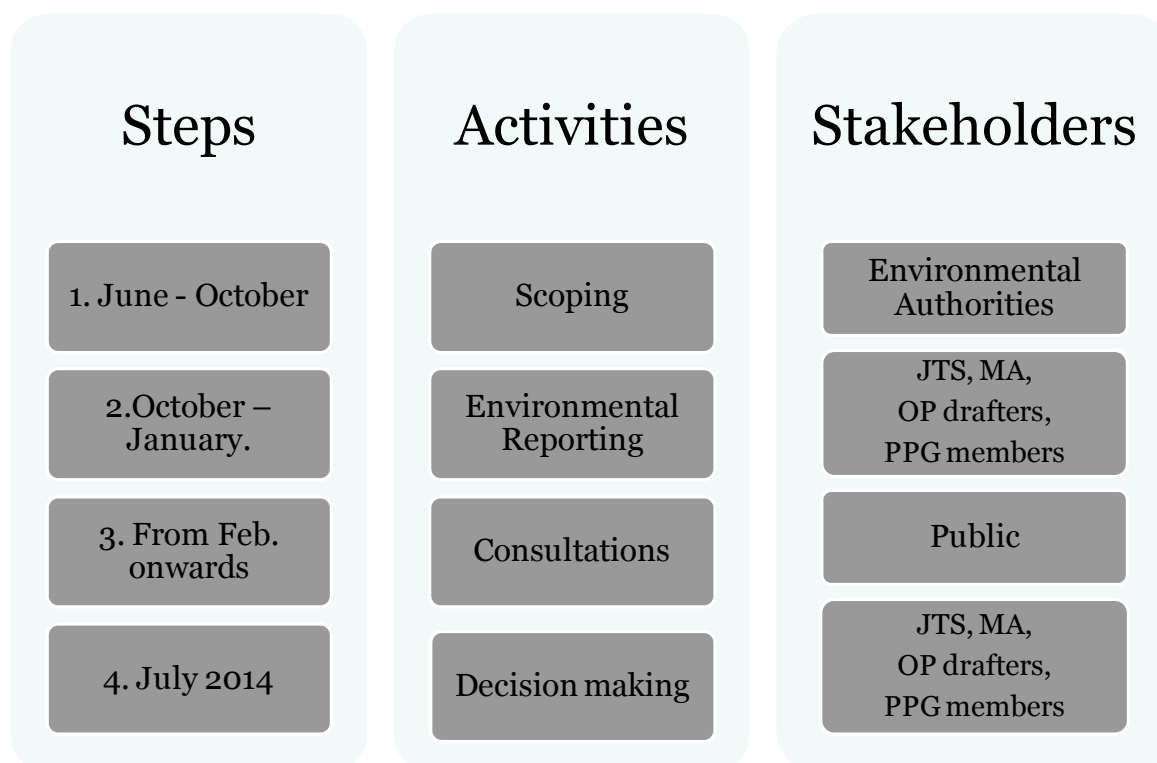
The SEA, in parallel with the 2 Seas 2014-2020 Programming and Ex-ante evaluation, will be implemented in four main steps.

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<sup>4</sup> Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment. OJ L 197, 21.7.2001, p. 30

<sup>5</sup> OJ L 197, 21.7.2001, p. 30

<sup>6</sup> COM(2011) 615 final. Indeed, already six out of 11 proposed Thematic Objectives have direct consequences on the environment.



### Step 1: “Scoping”

This details the scope and level of detail needed for the evaluation, defining the limits of the evaluation. In particular:

a) Geographical areas to be covered
b) Environmental issues, including relevant environmental objectives, to be examined within the SEA
c) Periods of time
d) Depth of assessment
e) Data and information needed (and available)
f) Methods to be considered
g) Alternatives and options
h) Entities and experts to review the SEA report

These questions were answered in the Scoping Report. This report included a brief presentation of the Programme, a proposal of environmental issues, indicators and objectives, a description of the methodology, a presentation of the public consultation process and details on the documents and information sources used.

This preliminary Scoping activity ended after a consultation with the authorities responsible for environment issues in July & August 2013. This consultation improved the environmental context indicators, the relevant environmental objectives for the cooperation area and the level of detail to be included in the Environmental report. Comments of the SEA experts and the way these have been taken into account were detailed in the final Scoping Report of 18 October 2013.

## **Step 2: Elaboration of the Environmental report**

The Environmental Report is integral to the Programme and its entire elaboration and approval process.

According to Article 5(1) of the Directive 42/2001/EC, the Environmental Report shall identify, describe and assess the *“likely significant effects on the environment of implementing the plan or programme, and reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme”*. The information to be included in the Environmental Report is specified in Annex I of the Directive. Eventually, the final report version entails a non-technical summary and the main results of the activities.

The Environmental Report also details the results of the pre-consultation phase with Environmental Authorities and highlights how the contributions have been taken into account.

## **Step 3: Consultation**

Consultation is an important step in the SEA procedure. Its aim is twofold: to inform the public about the likely environmental effects of the Programme and to collect any additional methodological elements and suggestions for changes to the Programme from a wider audience, to achieve high sustainability.

In accordance with the dispositions made by Article 6 of the Directive 42/2001/EC, the draft programme and the environmental report were made available to both the public and the authorities having specific environmental responsibilities as designated by the Member States.

Public consultation took place at the end of the drafting process and under detailed arrangements determined by each Member State.

In the UK, Belgium and the Netherlands, the package for consultation was first sent to the national contact point members of the PPG few days before the beginning of the consultation together with the internet address of the 2 Seas Programme website where documents for consultation may be consulted. The national contact points then provided to regional/local Environmental Authorities documents and information related to the consultation to be published on their website.

In France, the consultation was organized in two steps. First step, to comply with the "*Code de l'environnement*" Article L122-7, the package was directly sent to the Environmental Authority, *Préfecture de Région Nord Pas de Calais*, for delivering an opinion "avis". The opinion has been provided within 2 months' time. After the delivering of the opinion by the Environmental Authority, the consultation was opened to public. The "avis" from the prefecture was enclosed to the the draft programme and the environmental report. As required by the French law (Code de l'environnement R122-22), eight days before the starting of consultation, the Managing Authority published an announcement in local newspapers. The consultation was launched on 28th April and ended up on 28th May 2014. Eventually, the results of the public consultation were published on the 2 Seas' programme website.

#### **Step 4: Decision making and information on decisions**

Article 8 of the SEA Directive states that *"the opinions expressed [...] shall be taken into account during the preparation of the [...] programme and before its adoption or submission to the legislative procedure"*.

At the end of the consultation, SEA experts collected all views and recommendations expressed by the public and will add any improvements or modifications to the Environmental Report and the CP final draft. Two weeks after the end of the consultation, taking national and regional arrangements into account, the SEA experts offered the Managing Authority (MA)/Joint Technical Secretary (JTS) recommendations to be included and discussed these during a meeting with the CP drafters.

The Environmental Report recommendations and the opinions expressed by the Environmental Authorities and the public gathered by the environmental experts have been incorporated,

where relevant, by the PC drafters, as indicated in Annex 2 of the Environmental Report. Based on the environmental analysis carried out by the Strategic Environmental Assessment, the Environmental Report section 8 concluded that the proposed strategy clearly contributes to the improvement of environmental conditions in the cooperation area and therefore must be considered as a good alternative from an environmental point of view. The final documentation and conclusions have been approved by the PPG meeting 20 held on 03 and 04/10/2014 and fully integrated into the final 2014-2020 programme document addressed to the Commission for approbation.

## 1.2 QUALITY CONTROL

The SEA Directive states in article 12(2) "*Member States shall ensure that environmental reports are of a sufficient quality to meet the requirements of this Directive and shall communicate to the Commission any measures they take concerning the quality of these reports*".

Quality control is integral to all activities of the SEA team in preparing the 2 Seas Programme 2014-2020. The objectives are to ensure the transparency of the whole evaluation process, to provide stakeholders with information about the activities and to give them the opportunity of amending or augmenting the contents and information provided in the environmental reports and documents published by the evaluators.

Quality control includes:

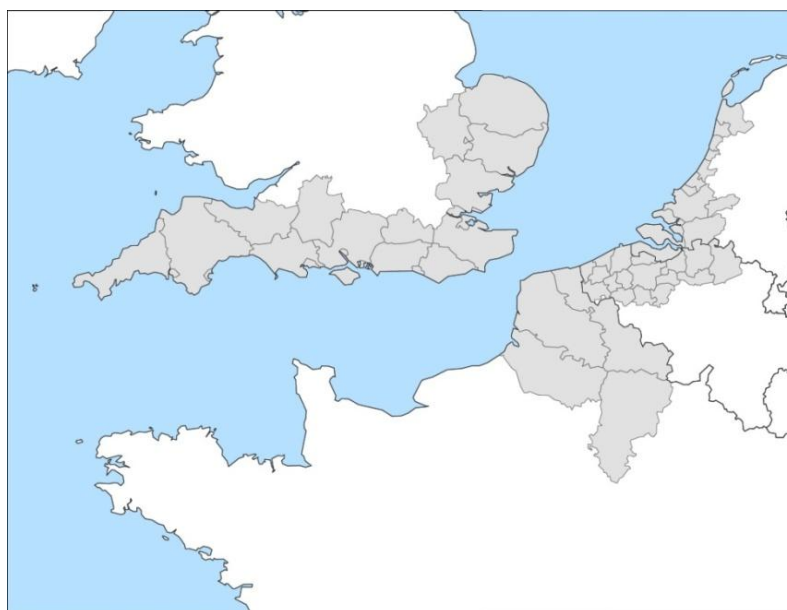
- Involving the Environmental Authorities (EAs) in defining the assessment scope with a consultation in August 2013 based on a Scoping Report prepared by the team of experts. The results of the consultation, including suggestions and comments from EAs, were taken into consideration in this report;
- A permanent exchange of information between the SEA team, the JTS, the ex-ante evaluators and the CP drafters;
- The approval of intermediate documents delivered by the SEA experts, Programme Preparation Group (PPG) members and the JTS ;
- Circulation of the first Environmental draft report among PPG members and stakeholders for their comments in order to complete the analysis proposed by the SEA experts and to prepare the final version for Public consultation.

#### The territory of cooperation

The 2014-2020 2 Seas Cross Border Cooperation Programme extends on both sides of the Channel and the North Sea and includes NUTS3 regions of four Member States (MS):

- *Arrondissementen of Antwerpen, Turnhout, Brugge, Oostende, Veurne, Roeselare, Tielt, Eeklo, Gent, Sint-Niklaas, Mechelen, Turnhout, Diksmuide, Ieper, Kortrijk, Aalst, Dendermonde and Oudenaarde in Belgium/Flanders;*
- French departments of *Nord, Pas-de-Calais, Somme and Aisne;*
- Coastal NUTS3 of *Delft en Westland, Groot-Rijnmond, Zeeuwsch-Vlaanderen, Overig Zeeland, West-Nord-Brabant, Zuid-Oost Zuid-Holland, Leiden and Bollenstreek Agglomeration, Gravenhage Agglomeration, Haarlem Agglomeration, IJmond, Alkmaar and surrounding area and Kop van Noord-Holland in the Netherlands;*
- Coastal NUTS3 areas of *Norfolk, Suffolk, Southend-on-Sea, Thurrock, Essex CC, Brighton and Hove, East Sussex CC, West Sussex, Portsmouth, Southampton, Hampshire CC, Isle of Wight, Medway Towns, Kent CC, Bournemouth and Poole, Dorset CC, Cornwall and Isles of Scilly, Plymouth, Torbay, Devon CC, Surrey, Somerset, Wiltshire CC, Cambridgeshire CC and the unitary authorities of Swindon and Peterborough.*

**Figure 1 - Future INTERREG V A 2 Seas Programme area**



## Brief presentation of the Programme

During a first step in the analysis, SEA experts should provide “an outline of the contents, main objectives of the plan or programme and relationship with other relevant plans and programmes”<sup>7</sup>. Four Priority Axes are proposed in the 2 Seas CP 2014-2020.

<b>Priority Axis 1 - Technological and social innovation</b>		
<i>Investment Priority 1b - Promoting business investment in innovation and research, and developing links and synergies between enterprises, R&amp;D centres and higher education, in particular product and service development, technology transfer, social innovation and public service applications, demand stimulation, networking, clusters and open innovation through smart specialisation supporting technological and applied research, pilot lines, early product validation action, advanced manufacturing capabilities and first production in Key Enabling Technologies and diffusion of general purpose technologies</i>		
<p><b>Specific Objective 1.1</b> Improve the framework conditions increasing the capacities of (local and regional) stakeholders in charge of developing and delivering innovation policies in the priority sectors of shared interest among the 2 Seas regions through the adoption of the quadruple helix paradigm</p> <p><b>Result</b> The intended result is to reach a better and reinforced capacity for innovation in the 2 Seas area. In particular, the Programme aims to reinforce the organisational framework conditions for delivering innovation by introducing and adopting common approaches, collaboration arrangements, joint structures and policy tools supporting innovation capacity. This will lead to increased capacities for technology transfer, development of clusters and increased capacities of innovative companies to engage in international activities. The improved capacity for innovation will enhance the cooperation in the field of innovation according to the “quadruple helix” paradigm by stimulating the cooperation of public and private actors, civil society and research entities. The programme aims at promoting the blue economy in coastal areas of the whole cooperation area (In the context of this CP, the term Blue Economy relates to the opportunities for sustainable growth based on</p>	<p><b>Specific Objective 1.2</b> Increase the delivery of innovation, by facilitating the cooperation throughout the innovation chain, in technology transfer, testing and pilot actions among the key stakeholders in the priority-sectors of shared interest among regions of the area</p> <p><b>Result</b> The intended result is a tighter, more effective and operational cooperation among the key actors involved on the early stages of the innovation chain and later stage of innovation involving testing and pilot actions. The Programme should directly contribute to the development of new or enhanced products, processes and services. Enhanced innovation delivery depends on a better exploitation and transfer of research outcomes for the development of new technologies / products / services generating an impact on the 2 Seas key priority sectors of shared cross-border interest as defined below. The interventions will facilitate cooperation among the key actors: clusters, private sector organisations, public bodies, chambers of commerce, trade associations, research centres, SMEs, civil society. The programme also aims at promoting the blue economy in coastal areas of the whole</p>	<p><b>Specific Objective 1.3</b> Increase the development of social innovation applications in order to make more efficient and effective local services to address the key societal challenges in the 2 Seas area related to health, demographic change, well-being, unemployment, as well as to inclusive, innovative and secure societies.</p> <p><b>Result</b> The expected result is the development of social innovation in order to make more efficient and effective local products and services which address the key societal challenges in the 2 Seas area, in particular related to health, demographic change and well-being, as well as to inclusive, innovative and secure societies. The programme will develop social innovations, including innovations linked to the expression of needs by civil society, by exploiting and adopting the results of applied research through the involvement of the third sector and social enterprises and private and public sector organisation. The programme also aims at promoting the blue economy in coastal areas of the whole cooperation area (in line with the EU strategy "Blue Growth").</p>

<sup>7</sup> Directive 2001/42/EC Annex I(a)

marine and maritime assets, as identified in the EU strategy "Blue Growth").	cooperation area (in line with the EU strategy "Blue Growth").	
<b>Type of Actions</b> Generic actions of cross-border cooperation projects can relate to one or several of the following features: <ol style="list-style-type: none"> <li><b>"Development"</b> - the systematic use of the knowledge or understanding gained from basic research directed toward the eventual production of useful materials, devices, processes, systems, or methods, including the design and development of prototypes and processes.</li> <li><b>"Adoption"</b> or transfer of existing technological/ organisation/solutions in a specific field of application.</li> <li><b>"Establishment"</b> or the concrete set up of a network, facility, service (monitoring system, joint service provider, and collaborative platform).</li> <li><b>"Formulation"</b> which leads to the preparation of a policy document (e.g. common strategy, joint policy actions plan, common sectoral Programme, joint action protocol, common agreement etc..).</li> <li><b>"Prepare investments"</b> where, for example, the intervention will pave the way to new infrastructure or services, but not directly co-fund them (e.g. feasibility study, Preparation of a Technical Study, Socio Economic Demand analysis, etc...).</li> </ol>		
<b>Example of Actions</b> <ul style="list-style-type: none"> <li>Formulation of common development strategies and joint policy action plans to support the innovation capacity of stakeholders</li> <li>Establishment of links between existing clusters (e.g. promotion of interclustering via collaborative platform), in particular maritime-oriented clusters</li> <li>Establishment of new cross-border networks and platforms bringing together clusters or groupings of centres of excellence, higher education institutions, SMEs and the civil society (quadruple helix), in particular on maritime-oriented issues</li> <li>Establishment of joint tools/services to improve framework conditions at cross-border scale</li> <li>Establishment of joint innovation funding scheme, crowd funding, etc.</li> <li>Establishment of piloting actions linking capabilities of several facilities (networking the partners of the quadruple helix)</li> <li>Development of support actions to SMEs to engage in innovation leading to increased activity on international markets.</li> </ul>	<b>Example of Actions</b> <ul style="list-style-type: none"> <li>Development of sustainable technological and applied research, in particular in Key Enabling Technologies</li> <li>Development of sustainable pilots, in particular in Key Enabling Technologies</li> <li>Development of sustainable early product validation actions, in particular in Key Enabling Technologies</li> <li>Development of sustainable demonstration projects testing innovative technologies, products, processes and services</li> <li>Prepare for investments deriving from joint applied research in niche sectors of common interest to several territories in the area</li> <li>Prepare for investments for the joint economic exploitation of new ideas of products, services and processes</li> </ul>	<b>Example of Actions</b> <ul style="list-style-type: none"> <li>Formulation of new joint policy approaches supporting the framework conditions for social innovation</li> <li>Development of joint design and demonstration of new social service delivery mechanisms to address societal challenges in collaboration between enterprises, academia, public authorities and local actors</li> <li>Development of joint design and demonstration of products and services to address 2 Seas key societal challenges in collaboration between enterprises, academia, public authorities and local actors</li> <li>Development of pilot actions for the use of social innovation platforms and observatories (e.g. Social Innovation Europe Initiative) at cross-border scale</li> <li>Development of joint innovative solutions by social enterprises and social incubators</li> <li>Testing and adoption of new solutions (technological and organisational) to deliver innovative social services</li> </ul>
<b>Sectors</b> Priority will be put on the triangulation of key regional and local strategies (Smart specialisation strategies, plans for EU Structural Investment Funds –SIFs- and local strategies) of shared cross-border interest within the selected partnerships. Additionally, they will have to be in line with the cross-analysis included in the socio-economic situation analysis of the area. Further details are mentioned in the selection criteria. Where relevant, the texts of the calls for proposals could also include more specific elements.	<b>Sectors</b> Priority will be put on the triangulation of key regional and local strategies (Smart specialisation strategies, plans for EU Structural Investment Funds –SIFs- and local strategies) of shared cross-border interest within the selected partnerships. Additionally, they will have to be in line with the cross-analysis included in the socio-economic situation analysis of the area. Further details are mentioned in the selection criteria. Where relevant, the texts of the calls for proposals could also include more specific elements.	<b>Sectors</b> Focus on health, demographic change and well-being, as well as to inclusive, innovative and secure societies, including the field of food safety.

<b>Target Groups</b>	<b>Target Groups</b>	<b>Target Groups</b>
Public bodies (e.g. local and regional public authorities.), Public equivalent bodies (e.g. associations, chambers of commerce, research centres, institutes of higher education, networks & clusters) Private sector (e.g. SMEs, private sector organisations) Social enterprises, civil society	Public bodies (e.g. local and regional public authorities.), Public equivalent bodies (e.g. associations, chambers of commerce, research centres, institutes of higher education, networks & clusters) Private sector (e.g. SMEs, private sector organisations) Social enterprises, civil society	Public bodies (e.g. local and regional public authorities.), Public equivalent bodies (e.g. associations, chambers of commerce, research centres, institutes of higher education, networks & clusters) Private sector (e.g. SMEs, private sector organisations) Social enterprises, civil society

## **Priority Axis 2 – Low carbon technologies**

### **Investment Priority 4f - Promoting research in, innovation in and adoption of low-carbon technologies**

#### **Specific Objective 2.1**

Increase the adoption of low-carbon technologies and applications by public and private organisations and citizens in the 2 Seas area in all economic sectors by stimulating cross-border cooperation between relevant entities and stakeholders, and through the testing and demonstration of innovative technologies

#### **Result**

The intended result is a reduced carbon dependency of public/private institutions and citizens in the 2 Seas area, based on the adoption of innovative low-carbon technologies. To this end the programme will stimulate the uptake of innovative low-carbon technologies. The intervention requires the availability of innovative low-carbon technologies and applications that can be applied by target groups in the 2 Seas area. Here, the programme aims to stimulate cross-border cooperation of businesses, knowledge institutes and public sector on the development and uptake of new or state-of-the art solutions in terms of concepts, approaches and processes. Interventions shall also include the testing and demonstration of such new technologies in order to pave the way for their wider uptake.

Particular attention will be given to cooperation that builds on the specific potential for renewable energy generation related to the coastal/maritime location of the 2 Seas area. In view of its high importance in the 2 Seas area, and its high levels of emitted greenhouse gasses, the transport and logistics sector will be addressed with priority in the context of this specific objective with significant positive secondary effects generated by some of the selected projects. The programme also aims at promoting the blue economy in coastal areas of the whole cooperation area (in line with the EU strategy "Blue Growth").

#### **Type of Actions**

Generic actions similar to those mentioned under Priority axis 1 – SO 1.1.

#### **Example of Actions**

- Adoption by actors of identical or similar renewable energy solutions, in particular marine-related ones (e.g. related to off-shore wind, tidal energy, wave energy)
- Adoption by actors of most polluting sectors (e.g. transport and logistics sectors) at different territorial and administrative level of identical or similar innovative low-carbon technologies (e.g. based on electric vehicles for last-mile distribution, shift to short sea shipping, delivery of goods in urban areas).
- Development of comparative pilots actions to test and demonstrate innovative low-carbon technologies and applications (e.g. smart grids, local energy generation systems, sustainable mobility concepts, low energy installations in differing rural and peripheral communities and employment sites, new approaches to travel demand and traffic management that will lead to carbon reduction including use of ICT / transport information)
- Prepare for investments in the further roll-out of low-carbon technologies (for instance feasibility study for investments to reduce the emission generated in ports areas)

#### **Sectors**

Potentially all economic sectors are concerned, such as: renewable energy production (wind, wave, tidal and wind, other marine based renewable), agriculture and fisheries. It is also foreseen that projects could have positive secondary effects on the transport, logistics and building sectors.

**Target Groups**

Public bodies (e.g. public authorities, local and regional public authorities.),  
Public equivalent bodies (e.g. associations, chambers of commerce, research centres, institutes of higher education, networks & clusters)  
Private sector (e.g. SMEs, private sector organisations)  
Social enterprises, civil society

## **Priority Axis 3 - Adaptation to climate change**

### ***Investment Priority 5a - Supporting dedicated investment for adaptation to climate change, including ecosystem-based approaches***

#### **Specific Objective 3.1.**

Improve the adaptation capacity to climate change and associated phenomena of the stakeholders dealing with this issue particularly in the sectors on which climate change is likely to have stronger impacts

#### **Result**

The intended result is an increased preparedness for, and resilience to, climate change and associated phenomena (e.g. coastal erosion, flooding, droughts, and extreme weather) in the cross-border area. Awareness of the potential consequences of climate change and ability to adapt to them and manage them will be improved. In this context, the programme will enable public and private actors in the area to develop a collective or shared approach to adaptation to climate change. This will be integrated into spatial planning (notably of coastal areas), (innovative) solutions for environmental and economic resilience and integrated management of coastal zones (ICZM). A more integrated approach to climate change adaptation will be developed. There will be improved mechanisms for the exchange of information and data and improved coordination of adaptive actions and plans.

It is also intended to reduce damage to, and increase resilience of, the built environment and other infrastructure. It will decrease future pressure on water resources, result in better and more robust and realistic flood and coastal defences, protect biodiversity and decrease the vulnerability of ecosystems in order to increase ecosystem resilience and enable ecosystem-based adaptation.

The programme also aims at promoting the blue economy in coastal areas of the whole cooperation area (in line with the EU strategy "Blue Growth").

#### **Type of Actions**

Generic actions similar to those mentioned under Priority axis 1 – SO 1.1.

#### **Example of Actions**

- Formulation of common strategies, protocols and action plans to optimise ICZM practices in the maritime basins complementary to those developed by national authorities, and in line with the framework of the Integrated Maritime Policy and in the implementation of the Marine Strategy Framework Directive
- Formulation of strategies for climate proofing of economic development areas (e.g. business parks)
- Formulation of common strategies which take into account the social dimension of climate change adaptation
- Establishment of common awareness-raising campaigns aiming at creating the conditions and support for local communities to take local preparedness and adaptation measures
- Establishment of joint measures aiming at reducing the impact and effects of infrastructure works to protect coast lines against erosion/flooding on the activities on coastal waters such as aquaculture, ecosystems
- Establishment of joint measures which address biodiversity loss and climate change in an integrated manner to fully exploit co-benefits and avoid ecosystem feedback issues that could accelerate global warming
- Establishment of better coordinated collective emergency planning and preparedness for flooding (water management, flood risk techniques, awareness-raising on flood)
- Establishment of innovative climate change adaptation solutions (tools / services), including: exploring the potential use of innovative funding measures for adaptation; exploring the potential for insurance and other financial products to complement adaptation measures and to function as risk sharing instruments
- Establishment of integrated tools and technical solutions such as coastal defence lines or concepts (e.g. managed realignment) and flood protection by maintenance and enhancement of marine ecosystems as natural protection and defence lines
- Establishment of better coordinated monitoring systems, e.g. impacts of climate change on eco-systems and biodiversity and transformation of the coastline, etc.

#### **Sectors**

Due to its strong territorial dimension, the indication of targeted sectors is less relevant in this priority. Potentially in any relevant economic sectors, including sectors on which climate change is likely to have strong impacts (e.g. agriculture, tourism, etc.)

## Target Groups

Public bodies (e.g. local and regional public authorities),  
Public equivalent bodies (e.g. associations, chambers of commerce, research centres, higher education institutions, networks & clusters) + utilities (electricity, hospitals, etc.)  
Private sector (e.g. SMEs, private sector organisations)  
Social enterprises, civil society

## Priority Axis 4 – Resource-efficient economy

***Investment Priority 6g Supporting industrial transition towards a resource-efficient economy, [...] promoting green growth, eco-innovation and environmental performance management in the public and private sectors***

### Specific Objective 4.1

Increase the adoption of new solutions for a more efficient use of natural resources and materials which shall facilitate the transition towards a greener and more circular economy, and the development of the blue economy

### Result

The intended result is better and reinforced capacity for the development of a more resource-efficient economy in the 2 Seas area. In particular, the Programme aims to reinforce the institutional framework conditions by adopting and implementing collaborative approaches, structures and policy tools in order to facilitate the transition towards a greener and more circular economy, and towards the development of the blue economy in coastal areas of the whole cooperation area (In the context of this CP, the term Blue Economy relates to the opportunities for sustainable growth based on marine and maritime assets, as identified in the EU strategy "Blue Growth").  
The transition towards a resource-efficient economy will support a green growth model for the Two Seas area and have positive effects on a better preservation of the main natural resources of the area (water, soil, air, biodiversity). Eventually, the adoption of solutions based on eco-innovations and resource efficiency shall contribute to the change on the ground for a greener economy.

### Type of Actions

Generic actions similar to those mentioned under Priority axis 1 – SO 1.1.

### Example of Actions

- Formulation of common agreements and joint action protocols between economic actors (such as ports, logisticians, etc.) for more sustainable and resource-efficient activities
- Formulation of coordinated approaches in terms of green public procurement (GPP), e.g. for waste and water infrastructure
- Establishment of collaborative platforms and services towards the key economic actors to strengthen a greener and resource-efficient economy
- Establishment of joint approaches, based on the concept of the circular economy, on the use of waste and secondary raw materials, on the product life-cycle ("from-possession-to-use" approach).
- Adoption of new technology solutions that reduce the use of natural and material resources of companies and that encourage bio-based products and/or are more adapted for their end-of-life retreatment / recycling
- Adoption by maritime-related economic actors (e.g. ports) of green technologies for sustainable use of marine resources
- Adoption of solutions based on eco-innovations and resource efficiency in sectors such as manufacturing, transport, energy, agriculture, fisheries, tourism, etc
- Prepare pilot actions and investments for future larger-scale sustainable projects, in the further roll-out of green technologies and for the subsequent commercialisation of products with/by SMEs

### Sectors

Potentially any sector, including e.g. manufacturing, transport, energy, agriculture, fisheries, tourism, with direct or positive effects generated by the selected projects.

### Target Groups

Public bodies (e.g. local and regional public authorities)  
Public equivalent bodies (e.g. associations, chambers of commerce, research centres, higher education institutions, networks & clusters)  
Private sector (e.g. SMEs, private sector organisations)  
Social enterprises, civil society

Furthermore, the 2 Seas programme 2014-2020 will be financed by the European Regional Development Fund (ERDF). The provisional overall ERDF allocation to the programme is **€ 256.6 m<sup>8</sup>**. This is a minimum amount, which may change before the programme is definitively adopted.

The provisional breakdown of ERDF allocation per priority axis (%) is set as follows:

Priority Axis	Link with regulatory framework	Number of SOs	Budget share in%
<b>1. Innovation</b>	Thematic objective 1 Investment priority 1.b)	3	42%
<b>2. Low carbon technologies</b>	Thematic objective 4 Investment priority 4.f)	1	20%
<b>3. Adaptation to climate change</b>	Thematic objective 5 Investment priority 5.a)	1	15%
<b>4. Resource-efficient economy</b>	Thematic objective 6 Investment priority 6.g)	1	17%
<b>5. Technical assistance</b>	//	//	6%
<b>TOTAL</b>			<b>100%</b>

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<sup>8</sup> For comparison: the ERDF budget of the 2 Seas 2007-2013 programme was around €166 million. This represents a budget increase of more than 54%.

## 2. ENVIRONMENTAL CONTEXT ANALYSIS

The context analysis has been carried out under Directive 42/2001/EC requirements, the key environmental issues identified during the 2 Seas scoping process, the Programme objectives are in line with the EU 2020 Strategy and the information and data is available at European, national and regional levels. It is worth noting that the analysis has been done at an aggregated scale and mostly considers issues common to the whole cooperation area. The aim of the analysis is mainly to draw a picture of the global and regional environmental context in order to provide a clear baseline for the environmental assessment.

Data and information used in this section have been collected from different local and national sources. A coherence analysis used information provided by the "Situation analysis and Swot" report from Bureau BUITEN consultancy covering the 2 Seas and France (Channel) - England areas of cooperation.

A final section deals with cross-border environmental issues, highlighting the main environmental issues to be tackled in a cross-border context. There is a presentation of the environmental issues, their associate policy background and context in 2 Seas regions and Member States. An analysis based on key indicators provides a global view of the past and current situations and gives some insights on future trends.

For macro-indicators, the following definitions have been used:

- Macro-indicator: an aggregated indicator built up for the 2 Seas cooperation area based on information at national/regional levels. Macro-indicators capture a situation and a general trend at a macro-level;
- State: current situation, based on available information provided by statistical agencies. Must be considered as a baseline for the 2014-2020 programming period;
- Trend: hypothetical trend of the indicator in the near future, based on a scenario where no significant new environmental policies are implemented in the area and 'no changes' in context are monitored;
- Colours associated to states and trends, denoted by arrows, are: red (bad); orange (steady); green (good)

## 2.1 CLIMATE CHANGE AND CONNECTED RISKS

Human influence on climate change is mainly through GHG emissions.<sup>9</sup> Among the primary consequences are increases in average temperature and sea level, a decrease of the average precipitation level and an increasing frequency of extreme weather events such as heat waves, storms and floods. There are also potential increases in pests and diseases due to changes in climate conditions e.g. the northward migration of the tiger mosquito, which transmits numerous pathogens. These could affect human health and agriculture. There may be some positive effects including more sunny days with benefits for sectors such as agriculture and tourism.

### Policy background

Under the Kyoto Protocol, the EU-15 agreed to collectively reduce their emissions to 8% below 1990 levels by 2008-2012. With a 14.9% GHG emission decrease compared to base years (1990 in most cases), EU-15 is on course to over-achieve its Kyoto target. More recently, the EU adopted a climate and energy package. One of the key objectives is a 20% reduction in EU greenhouse gas emissions from 1990 level. At national level, the “burden sharing” agreement set objectives in emission reduction. GHG emissions should be reduced by 12.5% in the UK, by 6% in the Netherlands, by 7.5% in Flanders and should be stabilised in France.

In 2013 the EC also adopted a strategy for adaptation to climate change, presenting key actions to reduce and manage the natural risks from climate change. In particular, the EU Floods Directives requires the reduction of flood risks in areas identified as being at risk (river basins and coasts). Specific policies have been adopted by Member States<sup>10</sup>. In the cooperation area, strategies already exist in all Member States: the UK adopted the *National Adaptation Programme* in 2013; in the Netherlands the *Delta Act* entered into force on 1 January 2012; while Belgium (Flanders) published the *National Climate Change Adaptation Strategy* in 2011. For France the overall adaptation strategy has been designed with the *Plan National d'adaptation aux changements climatiques* published in 2011.

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<sup>9</sup> See the Fifth IPCC report, which confirms the global trends and underline the human responsibility to global warming, available on the International Plant Protection Convention's website at [www.ipcc.ch](http://www.ipcc.ch).

<sup>10</sup> "An EU adaptation to climate change", COM(2013)216 final.

For specific natural risks, Directive 2007/60/EC<sup>11</sup> on the assessment and management of flood risks entered into force on 26 November 2007. It requires Member States to assess all water courses and coast lines to see if they are at risk from flooding and to take adequate and coordinated measures to reduce this flood risk. Since the Flood and Water Management Act (2010) the Environment Agency coordinates UK authorities to reduce this risk.

### **GHG emissions cut**

According to the UN Framework Convention on Climate Change, the six main greenhouse gases are carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydro fluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF<sub>6</sub>).

GHG emissions of the cooperation area remain high. Indeed, the Netherlands (10 tonnes CO<sub>2</sub>-eq per capita in 2011) and Belgium (9.5) are clearly above the EU-27 average (7.4), while the UK (7.4) is at the same level. Only France (5.5) is slightly below.

In Flanders, GHG emissions decreased by 9% from 1990 to 2011. Industry and energy production are responsible for half the GHG emissions and enjoyed the greatest decreases. Transport, trade & services and nature & gardens recorded small but significant increases, mainly from heating buildings.

Carbon dioxide (CO<sub>2</sub>) is the main greenhouse gas, accounting for about 85% of the total UK greenhouse gas emissions. Total UK greenhouse emissions were 19.1% lower in 2008 than in 1990. Average emissions per capita in the UK are between 6 tonnes per capita (London) and 12.5 tonnes (North East), with 7.9 tonnes CO<sub>2</sub>-eq per capita in the South West and 9.7 tonnes in Anglia regions. The cooperation areas are around the UK average. Emissions from the industrial, commercial and domestic sectors and road transport declined, consistent with the national trend. However, emissions from land, land use change and forestry increased substantially in the South West

In the Netherlands, total direct GHG emissions decreased by 9% from the base year of 1990 to 2011.

In France, the Picardy region in 2007 had emissions of 7.6 tonnes CO<sub>2</sub>-eq per capita, which is below the national average. In Nord-Pas de Calais, this figure amounted to 11.2 tonnes. The

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<sup>11</sup> Directive 2007/60/EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks (OJ L 288, 6.11.2007, p. 27).

region has only had a 3% decrease since 1990. In this old industrial region, industries still account for 50% of the GHG emissions, due to the importance of iron and steel manufacturing.

A reduction of GHG emissions has been achieved by all 2 Seas MS in the last 10 years. However, GHG per capita emissions remains roughly above the EU-27 average.

### **Sea level rise**

The global average sea-level has risen by some 120 m since the end of the last ice age. In the 20th century, the average global sea level rose annually by 1.7 mm. However, this phenomenon is now accelerating. The sea level has risen along 2 Seas coasts.

Sea levels around the UK have risen by 1mm/year in the 20th century, accelerating in the 1990-2000 period. The sea level in Newlyn (Cornwall), which has one of the longest sea level records in the UK, has risen by approximately 20 cm since 1920. A similar sea level rise has been observed on the Dutch coast. In South East England, between 1834 and 2006 the sea level at Sheerness, Kent rose by 250 millimetres while actual sea level change (minus land level change) around the Thames Estuary is between +0.9 to 1.2 mm per year. Sea levels have risen on the French coast e.g. 1.7mm/year in Dunkirk and 3,9mm/year in Boulogne-sur-Mer between 1940 and 2000. In Belgium, Ostend, Nieuwpoort and Zeebrugge in particular witnessed a sea level rise from 2.5 to 3.3 mm/year between 1970 and 2010.

### **Coastal erosion**

Along Channel and North Sea coasts, the Programme area is therefore particularly affected by coastal erosion.

The Belgian coast appears to be the most built-up in Europe. In 2000, more than 30% of the 10 km coastal strip was built-up and almost 50% of the strip up to 1 km from the coast. This is to be interpreted in the light of the 25% share of the Belgium coast at risk of erosion. In the Netherlands, 11% of the coast is at risk of erosion.

In France, the Opal Coast is currently coping with a major erosive phenomenon. In particular, the cliffs of Boulogne and the remarkable dunes and estuaries remain the most worrying sector in terms of coastal erosion. The Nord-Pas de Calais coastline is receding the most.

### **Territory or municipality at risk of floods**

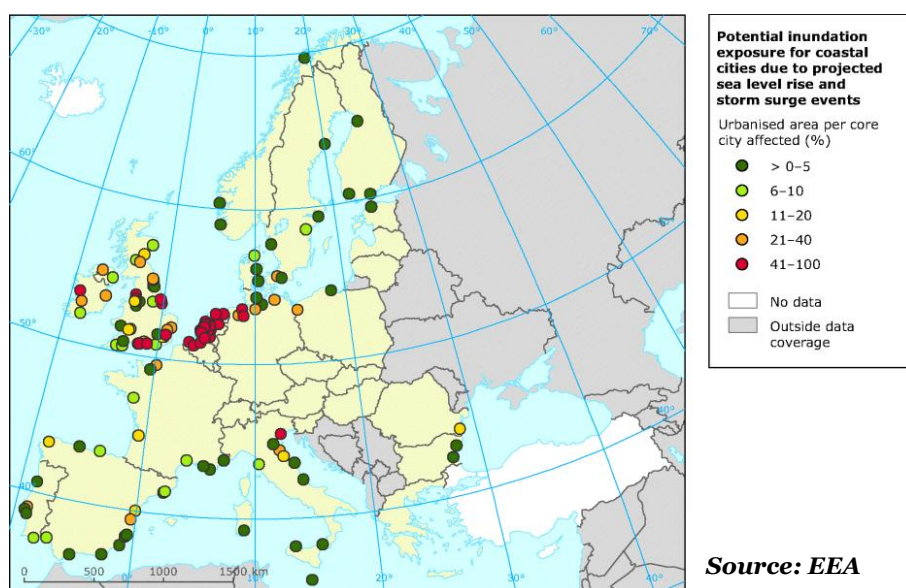
The Netherlands is an example of a country that is highly susceptible to both a sea level rise and river flooding (Figure 2, Figure 3). From EEA maps, one clearly sees that Dutch city deltas are particularly vulnerable since most of them would be more than 40% flooded with a 1 m river rise. Indeed, 26% of the Dutch land surface is below sea level and 59% of the Dutch land surface (i.e. excluding the Wadden Sea, the IJsselmeer and other open waters) is susceptible to inundation, of which 4% is outside the dyke rings and therefore is not protected by dunes, dykes, dams or artificial structures.

In Europe, Belgium appears, after the Netherlands, to be the most vulnerable to floods caused by the rising sea-levels. In Flanders, 15% of the surface area is less than five metres above the average sea level. Moreover, the Belgian coast is amongst the most built-up in Europe. In West Flanders, 33% of the population lives in low-lying polder areas vulnerable to floods caused by the sea.

In England, flood risk takes into account the number of properties at risk of flooding. In South East England, there are almost 900 000 at risk of one or more forms of flooding; while in South West England there are 218 000 properties. 20% of the Anglian region is within the flood plain, including 400 000 properties and 30% of the most productive agricultural land.

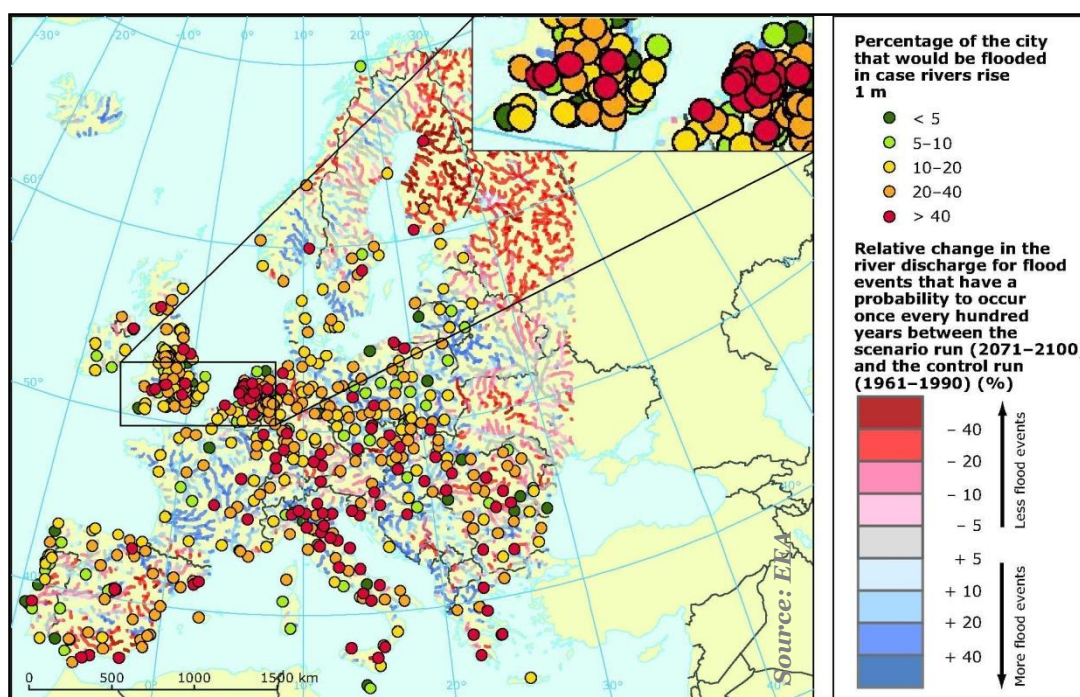
High urbanisation, intensive land use and the low geographical relief mean 73% of the Nord-Pas de Calais municipalities are affected by flood risk. This is amongst the highest in France. In Picardy, 39% of the municipalities are concerned.

**Figure 2 - Projected inundation due to sea level rise**



**Source: EEA**

**Figure 3 - EU's cities vulnerability to floods with a 1 m river rise**



## Situation and trends for the 2 Seas area

For climate change indicators, the 2 Seas situation is quite homogeneous. All regions succeeded in cutting their GHG emissions, from 3% in the Nord-Pas de Calais to 19.1% in the UK. Since all 2 Seas regions are coastal regions either on the North Sea or on the Channel, and some of them additionally entail major rivers, the area is particularly exposed both to flood risks and coastal erosion, partly due to sea level rise. The Netherlands and Flanders are especially vulnerable.

### Macro-indicators for climate change

Indicator	State	Trends
GHG emissions	☺	➡
Floods	☹	⬆
Coastal erosion	☹	⬆
Territory or municipality at flood risk	☹	⬆

## 2.2 ENERGY

The energy issue is a key element addressed by the Europe 2020 strategy. A significant proportion of energy is imported for domestic consumption and dependency on fossil fuel remains high. Reducing fossil fuel consumption is at the heart of the strategy to prevent climate change and to increase resource consumption efficiency. In addition, the development of renewable energy technologies is a key factor for increasing European companies' competitiveness in emergent markets.

### **Policy background**

To reduce dependency on fossil energy in Europe and to promote the development of alternative energy sources at horizon 2020, European institutions elaborated the "energy package": a package of legislative commitments addressing climate and energy issues in the EU<sup>12</sup>. The Europe 2020 strategy set ambitious objectives for EU territories, including an increase of 20% in renewable energy production, an increase of 20% in energy efficiency and a reduction in CO<sub>2</sub> emissions of 20%. Targets have been broken down by MS, to take into account national characteristics, costs and different potential for improvement in energy efficiency.

### **Fossil fuel dependency**

According to the International Energy Agency (World Energy Outlook, 2009), the primary sources of energy worldwide are petrol (34%), coal (27%) and natural gas (21%). In Nord-Pas de Calais renewable energy consumption is only 2% of total energy consumption, solid mineral fuels 3%, petroleum products 28% and gas 29%. Electricity mainly produced by nuclear power plants, counts for a little over 19%. In Picardy percentages are very similar with 35% for petroleum consumption, 34% for gas distribution and consumption and 21% for electricity consumption. Flanders has no known reserves of uranium, crude oil or natural gas and, therefore, imports most of the required primary energy sources i.e. 93% in 2011. UK regions are dependent on traditional fossil fuels for most of their electricity generation.

The energy intensity in Flanders remains high compared to most other EU Member States. In the two French regions energy intensity is rising, with economic performance less dependent on GDP. In 2011, in Flanders the energy sector reduced its greenhouse gas emissions by almost

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<sup>12</sup> The energy package is made up of: Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC, the Effort Sharing Decision, the Renewable Energy Directive and the so-called CCS Directive i.e. Directive 2009/31/EC on the geological storage of carbon dioxide.

20% compared to 2000. Even more than other sectors, in the energy sector 98% of greenhouse gas emissions in 2011 were CO<sub>2</sub>, mainly the result of burning fossil fuels.

### **Renewable energy production and consumption**

The European Renewable Energy Directive requires Belgium to increase the proportion of renewable energy in final energy consumption from 2.2% in 2005 to 13% in 2020. In 2011, the total net production of green power was one-quarter higher than in 2010. The share of green power in the total net electricity production increased from 0.4% in 2000 to 6.1% in 2010 and 8.0% in 2011. However, Flanders still has a long way to go to reach Belgium's 2020 renewable energy target.

In 2009 the UK Low Carbon Transition Plan was launched together with the publication of the UK Renewable Energy Strategy and UK Low Carbon Industry Strategy. In South East England, electricity generated from renewable sources was equivalent to 9.4% of domestic sales and 6.5% of commercial and industrial sales in 2008. There has been an overall increase in electricity generated from renewable sources since 2003, despite a slight decline in 2007 and 2008. The main source of renewable energy in the South East is landfill gas. South West England renewable energy production increased with 470 grids connected (2008/2009) and a total installed capacity of 155 MW. This is enough electricity to power the equivalent of more than 155 000 homes, eliminating 415 870 tonnes of CO<sub>2</sub>. Nevertheless, renewable energy is less than 1% of the region's total energy demand.

The Dutch Government has set a target of 20% of energy from renewable sources. However in 2009, despite incentive schemes running until 2020 and policy agreements, renewable energy was expected to provide only about 5% of the national energy supply in 2020.







In France, electricity production from renewable sources is modest. In particular, Nord-Pas de Calais region has no hydro-electricity, the main source of renewable electricity in France. Wind generation is growing rapidly, however, especially in Pas-de-Calais and in Picardie, which is the leader in installed capacity, with about 14% of the national total. The net electricity generation in Picardie was 235 thousand tons of oil equivalent (ktoe) in 2009 of which 58% was renewable (wind, hydro and photovoltaic). Wind power was nearly half of electricity production. In Nord Pas de Calais, between 2000 and 2006, new facilities contributed to a fivefold increase in electricity production from renewable energy sources (wind, solar, wood, biogas).

### Situation and trends for the 2 Seas area

Although renewable energy production and consumption increased in recent decades, 2 Seas Member States' economies are still very dependent on fossil fuel and derivatives. Energy intensity by sector has increased for years. That trend confirms the major interest particularly in the energy sector, to reduce energy consumption and costs.

In a business as usual scenario, while renewable energy production and consumption should increase their shares in the near future, fossil fuel dependency should remain high and fossil energy costs will weigh on private and public bodies budgets.

#### Macro-indicators for energy

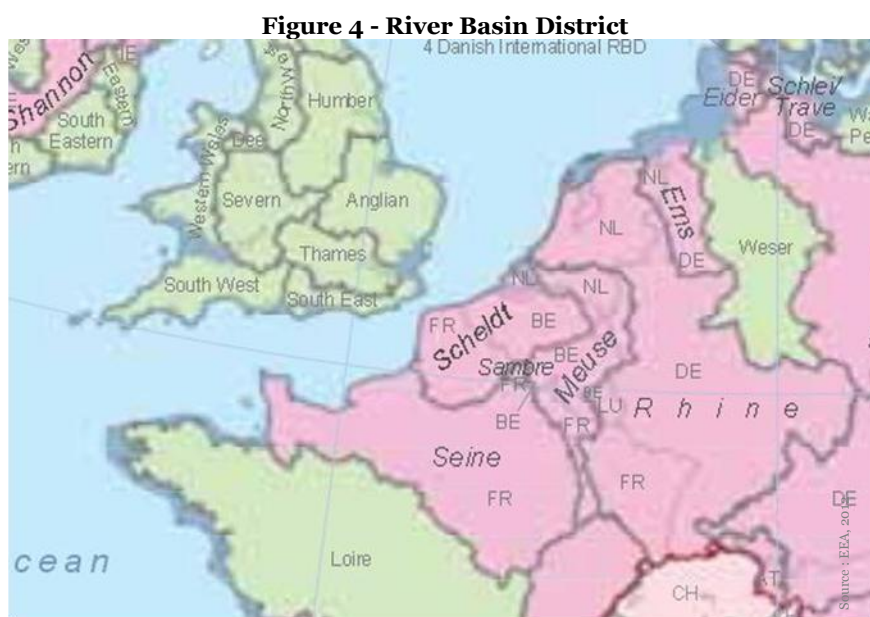
Indicator	State	Trends
Fossil fuel dependency		
Renewable energy production and consumption		
Energy intensity by sector		

## 2.3 WATER QUALITY AND SUPPLY, MARINE ECOSYSTEMS

Water is essential for life, for meeting basic human needs, in sustaining economic and social development and it plays a key role in the climate regulation cycle. As stated by Eurostat (2013), "The management and protection of water resources, of fresh and salt water ecosystems and of the water we drink and bathe in is therefore one of the cornerstones of environmental protection." The continental water issue is addressed in the first sections in its different dimensions of quality and supply. The last section has been drafted to deal with sea waters, estuaries and coastal water and marine ecosystems.

### Policy background

All Programme regions fall under the Water Framework Directive (WFD)<sup>13</sup>. This Directive identifies 111 River Basin Districts across the EU, 9 of which concern the 2 Seas cooperation area (Figure 4).



**Source: Abstract from a map by WRc, UK on behalf of DG Environment, March 2007.**

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<sup>13</sup> . OJ L 327, 22.12.2000, p. 1-73. Directive 2000/60/EC establishing a framework for Community action in the field of water policy (WFD). The WFD is completed by other more specific directives such as EU Groundwater Directive (2006/118/EC), which gives quality targets for groundwater bodies, the EC Urban Waste Water Directive (91/271/EEC), with specific norms in urban waste water discharges, the Drinking Water Directive (98/83/EC) with standards provided in water quality for human consumption and the Bathing Water Directive (2006/7/EC) to protect human health in bathing activities.

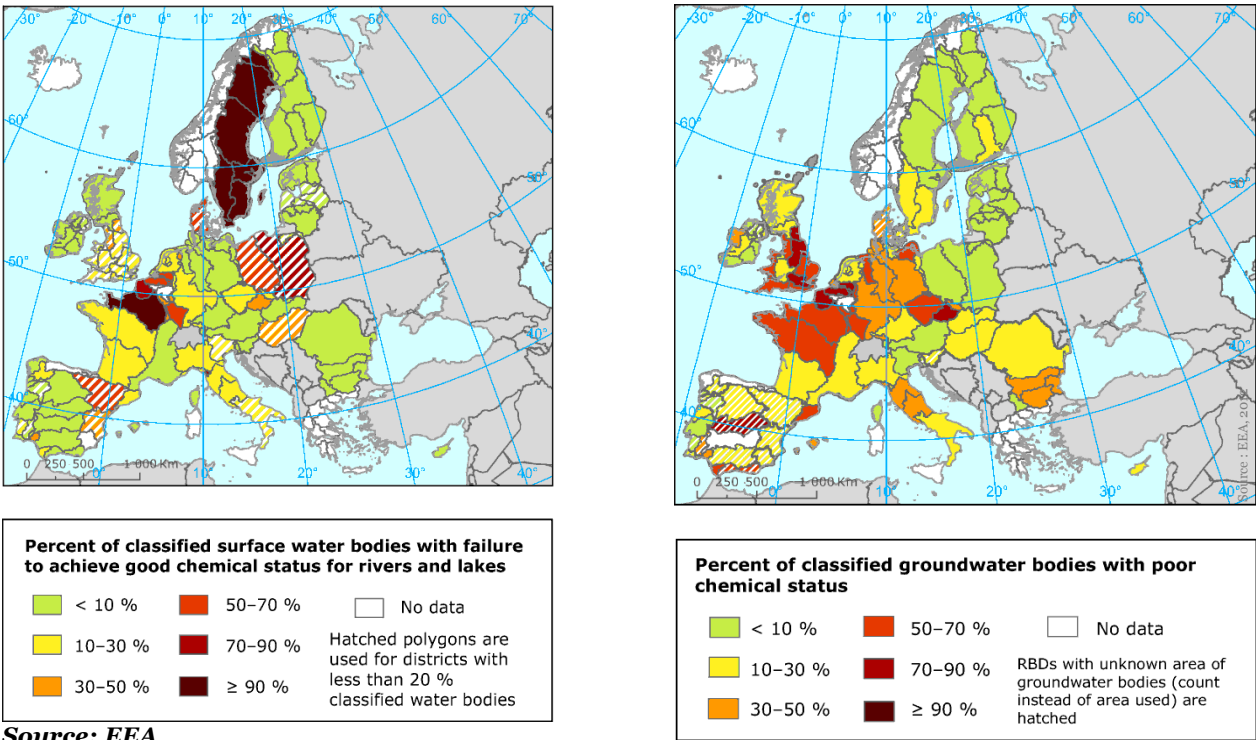
Some of the River Basin Districts are cross-border basins and are jointly managed by Member States. Basin Districts which fall under the scope of the cooperation area are the National River Basin District of South West, South East, Thames and Anglian in England (UK), and the International River Basin Districts of the Seine, Scheldt, Sambre, Meuse, Rhine and Ems.

The WFD’s ultimate objective is to achieve “good ecological and chemical status” by 2015 for all Community waters i.e. surface, ground, transitional and coastal waters. Since 2012 management plans address issues such as the deterioration of surface and ground water bodies, their pollution from discharge and emissions of hazardous substances, and the over abstraction of ground water. Indeed, the main issues concern water quality, but also the pressure put on this vital resource, as well as availability.

### Water quality

Regions belonging to the 2 Seas cooperation have not yet achieved “good ecological and chemical status” for a majority of their waters (Figure 5).

**Figure 5 - Surface and groundwater bodies’ chemical status**



Source: EEA

The biological quality of the water is deemed unsatisfying in Flanders, as well as Programme regions in France and the UK. All water bodies, except one, were estimated to be at risk of not achieving good quality status by 2015 in the Nord-Pas de Calais. In South Eastern England, 21% of the surface water bodies are currently classified as 'good ecological status' and 26% of the groundwater bodies have 'good status' while in Eastern England only 18% of surface waters meet the 2015 target of 'good ecological status'<sup>14</sup>. In particular, large ground waters in Norfolk, Suffolk, Lincolnshire and Essex are classified as 'poor'. In South Western England "*inland and coastal water quality has substantially improved over the last 20 years*" so the region has the lowest percentage of surface water bodies classified as less than good ecological status. In 2007 60-90% of Dutch surface waters met the targets for chemical quality under the Water Framework Directive (WFD). In that year just 1% of surface water met the ecological targets, which have to be achieved by 2015. Implementation of measures proposed in the river basin management plans can bring 25% of the surface water up to the WFD ecological standards by 2015.

Physical modification associated with flood protection, land drainage and urbanisation are all reasons for surface waters not meeting 'good' status, while pollution from agricultural sources is one of the reasons why ground waters do not meet 'good' status.

### **Pressures on the resource**

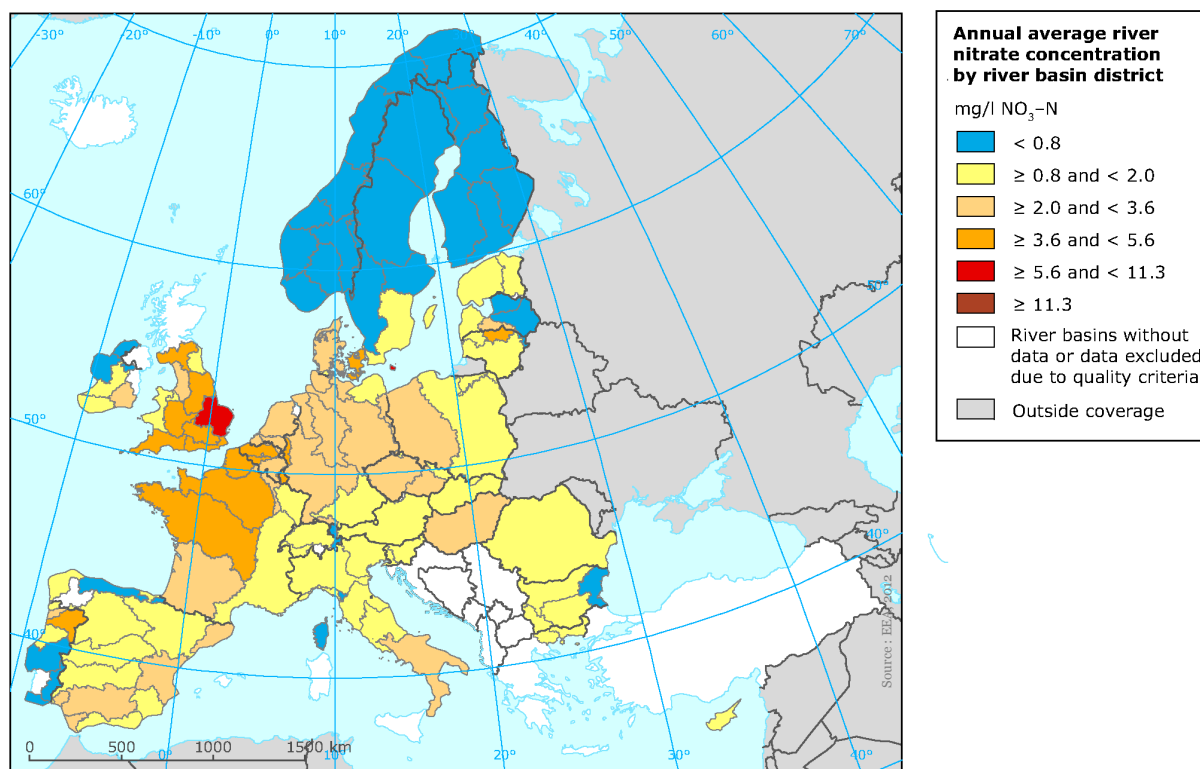
Discharges of pollutants have generally decreased in the recent years. For example, there are 607 sewage works in South East England, discharging approximately 13 billion litres per day of treated effluent into rivers and seas. However, numerous pollutants remain. Phosphates, nitrates, metaldehyde clopyralid and ammonia are commonly found pollutants which often threaten safe drinking water.

Water pollution by nitrates is a widespread European issue. The 2 Seas area, and Eastern England in particular, but also the UK, France and Flanders are particularly affected (Figure 6). A specific Directive, the Nitrates Directive (91/676/EEC), aims at reducing water pollution caused by agricultural inputs. This designated Nitrate Vulnerable Zones (NVZs). In the UK, 90% of the Anglian region (Eastern England) is designated as an NVZ, while in France the whole Nord-Pas-de-Calais region is considered as such.

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<sup>14</sup> The ecological status is defined as the worst level of the physico-chemical and biological status.

**Figure 6 - Water pollution by nitrates**



**Source: EEA**

Eutrophication is the ecosystem response to excessive nutrient levels in water bodies and normally involves excessive plant growth and decay. According to the French regional document, eutrophication is the main ecological environmental problem for the whole regional coastline. The Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention) set baselines for monitoring issues and was signed by the four countries of the 2 Seas cooperation area.

### **Water demand and supply**

Water scarcity is an increasing threat, in particular under the shadow of climate change. Article 9 of the WFD states that, by 2010 Member States should ensure that “*water-pricing policies provide adequate incentives for users to use water resources efficiently*”. All regions already observed a decrease in household water consumption. Flanders has the lowest daily consumption of the area with 99l/day/inhabitant. Averages in Britain and France are higher,

around 120-150l. In England, demand is expected to reduce with metered households, which reduces consumption by 23 l/day/inhabitant on average. Such measures are needed to ensure that there is enough water for people and the environment in the future. Water over-abstraction is an issue for most regions in the 2 Seas area, especially since additional pressure is foreseen from climate change. For now, 25% of the South West surface waters are either over-abstracted or over-licensed, this share reaches 60% of Anglian surface freshwater, while a South East document highlights that “*water is a scarce and often over-committed resource*”. Groundwater abstractions have reduced by 75% in the Artois-Picardy Basin. Still, some ground waters suffer from chronic overexploitation. The careful management of water abstraction is thus a major objective.

### **Coastal and maritime ecosystems**

To address marine issues and improve the quality of marine and coastal ecosystems, the Commission has provided a clear framework of intervention in the EU marine areas, the *Marine Strategy Framework Directive* (Directive 2008/56/EC)<sup>15</sup> with the objective of preserving the natural resources upon which human activities depend. The Commission also underlined the opportunity offered by the *Blue economy strategy (Blue growth COM (2012) 494 final)*<sup>16</sup> and the potential for the development of marine activities in a sustainable way.

Member States belonging to the 2 Seas area of cooperation are all characterised by long coast lines: hundreds of kilometres of beaches, cliffs, estuaries and human infrastructure along the Channel and North Sea coasts.

Pressures and environmental impact from human activities and settlements have increased along the Channel and North Sea in the last century; many are now well-known and reported in statistical compendia and environmental reports provided by national agencies. The main issues are related to water pollution and eutrophication, pressures on biodiversity from overfishing, increasingly artificial coastlines (harbours and protective infrastructure), urbanisation and the reduction of the size and the number of natural areas and ecosystems in estuaries and coastal areas.

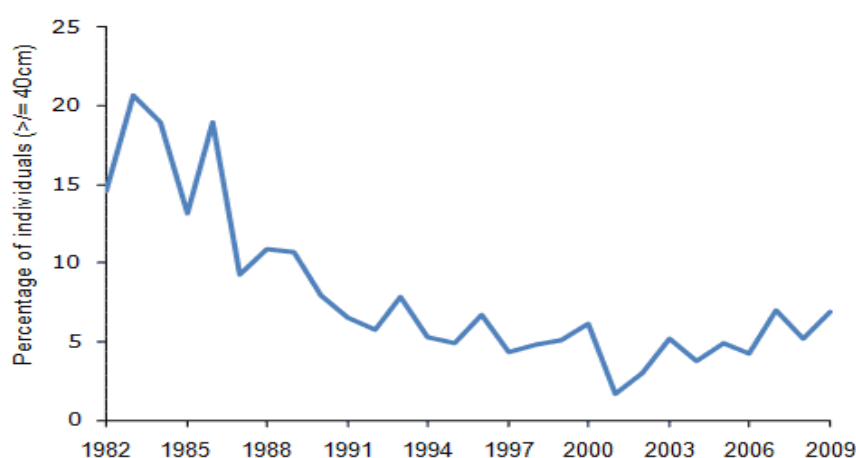
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<sup>15</sup> Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive) (OJ L 164, 25.6.2008, p. 19).

<sup>16</sup> *Blue growth COM (2012) 494 final*.

For example, the stock and size of the fish population in the North Sea over the last 20 years has dramatically declined, particularly because of overfishing (Figure 7). At a more aggregate level, Eurostat reports<sup>17</sup> that total catches in France, the UK, Belgium and the Netherlands have declined by more than 20% in the last decade. This reduction is a sign of a more general collapse in marine resources in the 2 seas. The fish population is also changing in its composition with warmer sea waters, as a result of climate change. Cold-loving species (including plankton) are now migrating north in search of colder waters and there are more warm-loving species.

**Figure 7 - Proportion of large fish (equal to or larger than 40cm), by weight, in the northern North Sea, 1982 to 2009**



**Source: Defra, 2010**

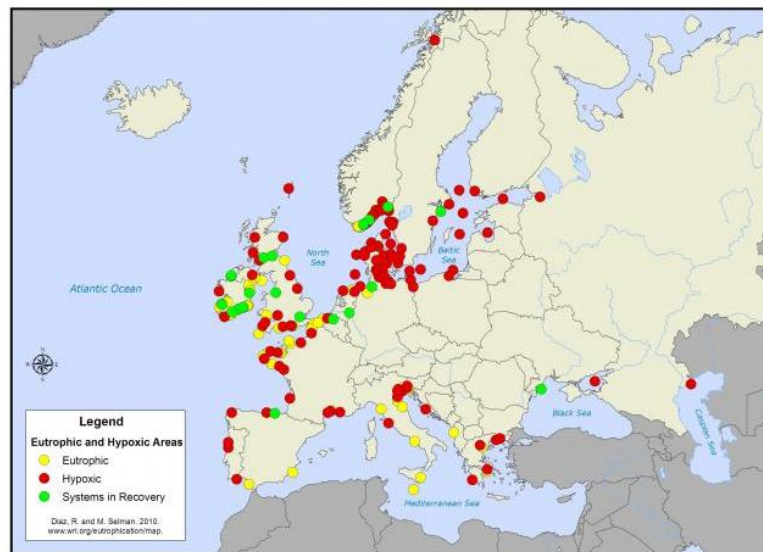
In France and other countries of the cooperation area, the eutrophication of coastal water increased in the last 20 years, mainly as the result of nitrogen discharges from agriculture and phosphorus from urban water releases. There is growing interest in this problem (Figure 8) in the Channel and southern part of the North Sea. The adverse impacts of eutrophication on ecosystem functioning, marine biodiversity and water quality are numerous. Tourism is also negatively affected, especially when algae blooms occur on beaches.

Increasingly artificial coasts are becoming especially prevalent on the continent. In France, Belgium and the Netherlands many built-up areas account for more than 45% of the total coastal line (Figure 9). These artificial coasts increase the risk of floods and coastal erosion by reducing the buffer of ecosystems and natural areas.

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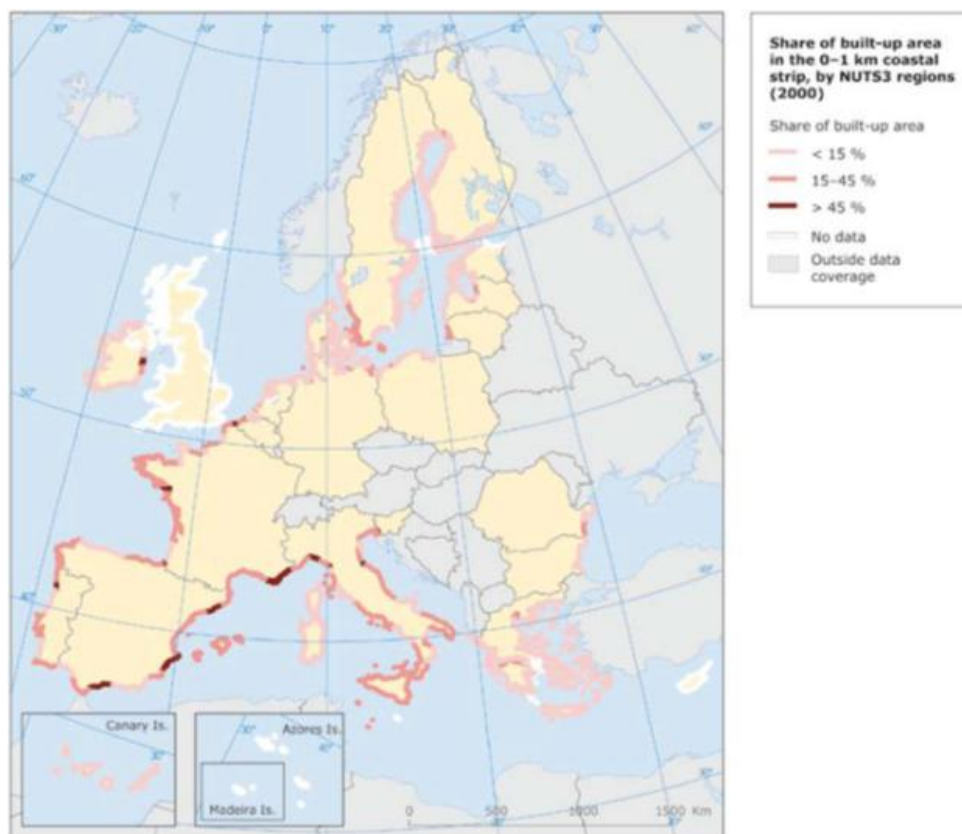
<sup>17</sup> Eurostat, Catches by fishing area (fish\_ca)

**Figure 8 - Eutrophication of coastal waters in European seas**



**Source: WRI, 2010**

**Figure 9 - Share of built-up area in the 0-1 km coastal strip**



**Source: EEA, 2006**

## Situation and trends for the 2 Seas area

There are hot spots for bad water quality and water supply in all regions covered by the Programme. The whole area is characterised by high human pressure on water, exacerbated by demographic trends, infrastructure and urban settlements, industrial investment and intensive farming. There are risks from climate change in many areas, including water shortages, floods and drought. However authorities are implementing water policy and control at various governance levels (national, regional and district basins) in all Member States.

Risks from climate change are expected to increase, together with water shortages, pressures on water supply (especially in the summer) and a degradation of water quality in many areas. There are also risks of uncontrolled marine pollution from accidents affecting coasts and harbours. On the other hand, a better understanding of water dynamics and cycles, together with an improvement of governance tools for water management and risk controls on water quality is also expected.

### Macro-indicators for water

Indicator	State	Trends
Water quality	☹️	➡️
Water pollution by nitrates	☹️	➡️
Water supply	😊	⬇️
Marine ecosystem health	☹️	➡️

## **2.4 AIR QUALITY**

Air quality is a significant issue with important consequences for people's health, especially in urban and populated areas where traffic is important and industrial zones are numerous. In the 2 Seas cooperation area, a majority of people live in urban centres and therefore are subject to air pollution, such as ozone and fine particulate matter (PM<sub>10</sub>).

### **Policy background**

Directive 2008/50/EC<sup>18</sup> of the European Parliament and the Council, of 21 May 2008 on ambient air quality and cleaner air for Europe entered into force on 11 June 2008. Also relevant for this marine-oriented Programme, the Directive 2012/33/EU<sup>19</sup> address sulphur and particulate matter emissions from marine shipping. Since the Channel and the North Sea are considered a fragile ecosystem, the maximum sulphur content of marine fuels will be limited to 0.1% by 2015. Many Members States have successfully pursued air quality policies since the 90s' e.g. the UK with the Environment Act 1995 and France with the law on air and rational use of energy (LAURE) of 30 December 1996.

### **Ozone concentration in urban centres**

Ozone precursors, mainly NO<sub>x</sub> (NO and NO<sub>2</sub>), NMVOCs and to a lesser degree CO and CH<sub>4</sub>, play a role in photochemical air pollution. In Flanders, ozone precursors emission decreased by 37% between 2000 and 2011. Dutch emissions of ozone precursors fell by about 20% between 2007 and 2010. Adoption of local air quality policy and implementation of the 'National Cooperation Programme on Air Quality' (Nationaal Samenwerkingsprogramma Luchtkwaliteit, NSL) should mean that NO<sub>2</sub> concentrations will also fall sharply up to 2015.

### **Air quality index**

In order to protect public health the European Air Quality Directive<sup>20</sup> sets targets for ozone concentrations and air pollutant emissions for the protection of public health. The maximum 8-hour average ozone concentration in ambient air must not exceed 120 µg/m<sup>3</sup> on any one day.

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<sup>18</sup> OJ L 152, 11.6.2008, p. 1–44

<sup>19</sup> Directive 2012/33/EU of the European Parliament and of the Council regarding the sulphur content of marine fuels (OJ L 327, 27.11.2012, p. 1–13)

<sup>20</sup> OJ L 152, 11.6.2008, p. 1–44

National emission ceilings (NEC)<sup>21</sup> from the European Commission have applied since 2010. French and British authorities have set their own air quality index.

In France, an ATMO index ranking air quality from 1 (very good) to 6 (very bad) has been established for the biggest cities. In the Nord-Pas de Calais region, air quality is relatively good for most of the year. Between 2004 and 2006 industrial releases, which predominate in the region, have decreased and NO<sub>x</sub> has stabilised, inspite of an increasing in the traffic and the number of vehicles.

In the UK, Air Quality Management Areas (AQMA) have been set up where pollution levels exceed standards. In South East England, 5 out of the 44 AQMA were declared in 2009. An increase in ozone precursors has also been observed. In the Anglian region 29 of the 52 local authorities have been declared AQMA, with the majority targeting nitrogen dioxide. Particulate matter is also an issue in several areas. On the contrary, South West England shows relatively good air quality. However, 33 local Air Quality Management Areas (AQMA) have been designated in 17 local authorities in 2010, 88% were established due to high levels of nitrogen dioxide as a result of traffic.

### **Situation and trends for the 2 Seas area**

Air quality in the cooperation area has increased in all Member States in recent years. In particular, ozone precursor emissions have decreased. However, some areas are still struggling to master traffic and industrial emissions. Air pollutant mobility is high so the problem has to be tackled at all levels: local, national and global.

The trends are towards a greater decrease of air pollutants and better emissions control. However hot spots will still remain across the cooperation area, especially for emissions from transport and air quality in urban centres and high populated territories.

#### **Macro-indicators for air quality**

Indicator	State	Trends
Ozone concentration in urban centres	☹️	➡️
Air quality index	☹️	➡️

## 2.5 WASTES MANAGEMENT

Waste production is a source of major pressures on the environment. It contributes to the overconsumption of natural resources and is a source of pollution for soil and water and, as a result, increases the ecological footprint of economic activities. Better waste management e.g. recycling, lowers the costs of waste disposal, and helps reduce the impact of economic activities on ecosystems.

### Policy background

Three main documents guiding waste managements have been adopted at EU level. The Waste Framework Directive<sup>22</sup> sets basic concepts and definitions related to waste management and lays down some basic waste management principles. Finally, Commission's decision 94/3/EC<sup>23</sup> establishes a list of waste, while Council Directive 99/31/EC<sup>24</sup> frames the landfill of waste.

In Member States, the legislative framework has been completed. England and Wales by the Waste Regulations that came into force on 1 October 2012, in France the legislative framework is based on the *décret du 11 juillet 2011* a transposition of the directive 2008/98/EC; while the Netherlands has a *National Waste Management Plan* for 2009-2015. In Flanders the *Waste Management Plan* for 2008-2015 sets the three following objectives: more environmentally beneficial consumption, no more than 560 kg of waste per capita per annum and no more than 150 kg of residual waste per capita per annum.

### Household waste production

Flanders is still one of the leaders in Europe. In 2010 448 kg/inhabitant of household waste were collected in Flanders, excluding construction and demolition waste. This is a great deal less than the EU-27 average of 502 kg/inhabitant. Construction and demolition waste included, Flanders already attained its 2015 target of 150 kg/inhabitant of residual waste, which has stabilised since 2009. In the Netherlands, household waste per capita has stabilised at about 550 kg a year for more than a decade.

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<sup>22</sup> Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (OJ L 312, 22.11.2008, p. 3).

<sup>23</sup> Commission Decision 94/3/EC of 20 December 1993 establishing a list of waste pursuant to Article 1a of Council Directive 75/442/EEC on waste (OJ L 5, 7.1.1994, p. 15).

<sup>24</sup> Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste (OJ L 182, 16.7.1999, p. 1).

In England, statistics mainly refer to “municipal waste” which is waste collected by local authorities, mainly domestic. Since 2007 England enjoyed a year on year fall to 431 kg/inhabitant of household waste per year in 2011 i.e. 22.9 million tonnes. France also refers to "municipal waste". Production in France went up from 2001 to 2005. In 2005, 2.59 million tons of municipal waste was collected in the Nord-Pas de Calais region i.e. 647 kg/inhabitant, which represents an increase of 7.7% compared to 2001. This confirms the upward trend in the amount of waste produced, as seen in the previous period. In Picardy, from 1999 to 2009 the annual tonnage of household waste increased by more than 36% (647 kg/inhabitant against 470 kg/inhabitant).

Figures in all four MS are not comparable because of different collection years. French and Dutch household waste production is above the EU average, with French waste production still increasing. At the other end, English regions and Flanders are below the EU average and additionally enjoy steady decreases in household waste production.

### **Industrial waste production**

In 2010, Flanders produced 17.3 million tonnes of primary waste. The largest components were construction and demolition waste (22%), sludge (13%) and contaminated soil (11%). Between 2004 and 2010, the amount of primary industrial waste excluding construction and demolition waste, sludge and contaminated soil, decreased by one-fifth. 15.5 million tonnes of waste were produced by Dutch industry in 2010.

In England in 2009, 48 million tonnes of waste were generated by businesses. The industrial sector accounted for 24 million tonnes and the commercial sector 24 million tonnes. Out of this 48 Mt, 12 were mixed waste, 12 were non-metallic waste. Industrial waste production in Nord-Pas de Calais and Picardy is difficult to measure since there is no systematic monitoring. However, Nord-Pas de Calais has a lot of specific waste from industrial activities, representing 20% of the national total. Industrial waste production, in particular dangerous waste, has tended to decrease in this region though.

Even though industrial waste production in the 2 Seas area remains significant, this production has reduced recently. Another way forward is the better monitoring and higher recycling rate of the overall waste production.

### **Recycling by category of waste**

Recycling enjoyed a major step forward in the whole 2 Seas area for both households and industrial waste. In 2011 in Flanders 45% of household waste was recycled. A total of 70% went

to one form or another of materials recovery, this is better than the EU-27 average for 2010 of 40%.

Nearly 90% of Dutch industrial waste is reused e.g. for basic metal industry, or incinerated to generate energy. 99% of waste is recycled.

In England in 2011, 43% of household waste was recycled. This is the highest recycling rate and has increased continuously in recent years. Recycled, composted or reused waste outweighed landfilled waste for the first time in 2011. In 2008 39% of the household waste in South East England was recycled or reused. 52% of industrial and commercial waste was recycled or reused in 2009 and 24% was sent to landfill.

In the Nord-Pas de Calais region waste recovery was 59% in 2005. In Picardy this was 43% in 2009.

### **Landfill deposit**

In 2011 in Flanders, less than 4%, or 118 ktonnes, of household waste was sent to landfill. In 2010 in the Netherlands the comparable figure was about 1%, or 72 ktonnes.

In 2008, 46% of household waste was sent to landfill in South East England and 56% in South West England. Landfill capacity in the South West is reaching its limit. In 2005 in Nord-Pas de Calais about 31% of the municipal waste was still sent to landfill, in Picardy in 2009, this share reached 45%.

French and English regions are still resorting to landfill deposit a lot, while Flanders and Dutch regions mostly favour waste recycling and recovery. However, landfill constitutes an alternative to fly-tipping, which is still an issue in several regions.

## Situation and trends for the 2 Seas area

In recent years waste collection and processing has generally been upgraded, both for the amount of waste collected by local public services and the share of waste recovery compared to landfill. However there is still room for improvement particularly for British and French regions, respectively regarding the amount of waste produced and the share of recovered or recycled waste. On this issue the 2 Seas cooperation area is not homogeneous.

The overviews have a neutral to positive trend regarding all waste management indicators.

### Macro-indicators for waste management

Indicator	State	Trends
Household waste production	☹️	➡️
Industrial waste production	☹️	➡️
Recycling by category of waste	😊	⬆️
Landfill deposit	☹️	⬇️

## 2.6 BIODIVERSITY

Biodiversity is the richness of life and the diversity of its forms. The Convention on Biological Diversity defines biological diversity as “the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems” (Article 2).

Biodiversity also provides ecosystem services which are, following the definition of the Millenium Ecosystem Assessment, “the multiple benefits supplied by ecosystems to humankind”. These include the production of food and water, the control of climate and disease

as well as spiritual and recreational benefits.

Despite its importance, it is threatened everywhere and biodiversity loss is accelerating all over Europe. Recent European studies, in particular the SOER 2012 thematic assessment (EEA, 2010), and the EU 2010 Biodiversity Baseline (EEA, 2010), assessed the current status, trend and key drivers.

## **Policy background**

European strategies and policies addressing the problem have been implemented during recent decades. The most recent is the EU Biodiversity Strategy to 2020<sup>25</sup> that aims to halt the loss of biodiversity and ecosystem services in the EU by 2020. It sets targets on nature conservation and restoration, sustainable agriculture, forestry and fisheries and control of alien species. Definitions of a protected area and threatened species vary a lot between countries and regions, inventories are not regular and information is limited to specific areas and periods of time.

An important tool for biodiversity protection is the Natura 2000 network, based on the Habitats Directive<sup>26</sup> and Birds Directive<sup>27</sup> to protect habitat and species of peculiar importance. The aim of the network is to assure the long-term survival of Europe's most valuable and threatened species and habitats. Natura 2000 is based on management and assessment tools and not on strict reserves. It works for the sustainable management (both ecological and economical) of ecosystems.

## **Nationally designated protected areas**

According to the International Union for the Conservation of Nature (IUCN) definition, a protected area is a “defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature”. Since the beginning of the 20th century, protected areas have been used as instruments of nature conservation. The major intensification in policies designating areas occurred at the end of the century and now the number of protected sites is increasing.

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<sup>25</sup> EC, COM(2011) 244 final

<sup>26</sup> Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (OJ L 206, 22.7.1992, p. 7).

<sup>27</sup> Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds (OJ L 103, 25.04.1979)

**Table 1 - Surface of protected designed sites in 2 Seas area**

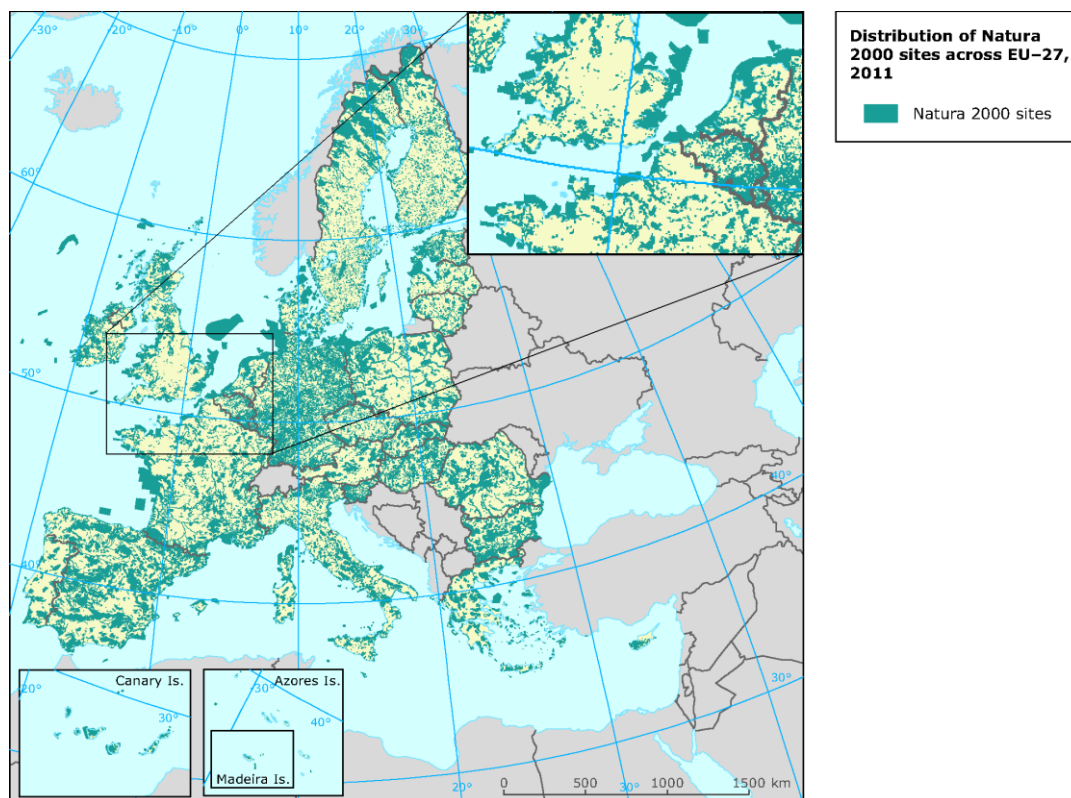
NUTS	Protected area (ha)
BE2	159 523
FR22	64 848
FR30	305 943
UKH	299 000
UKJ	930 237
UKK	892 952
NL*	1 725 030

\*data only available at country level

### **Natura 2000 Network**

The Natura 2000 network includes Special Areas of Conservation (SAC) designated by Member States under the Habitats Directive, and incorporates Special Protection Areas (SPAs) which are designated under the 1979 Birds Directive. Natura 2000 it is not based on prohibitions but drives the use of social and economic activity as instruments for conservation. This allows conservation goals to be integrated into ordinary management and improves ecological connectivity between separated protected areas (Figure 10).

**Figure 10 - Natura 2000 network**



**Source: EEA, 2011**

## Species conservation

In Flanders, Netherlands and France the past century was characterised by a rapid loss of biodiversity, due to changes in agriculture practices (intensification), land cover and urbanization. As a result, the territory registered drastic reductions in the number of species and the collapse of some habitats typically associated with the pre-industrial era. Linking of Natura 2000 sites, creating wildlife corridors and helping species crossing borders is crucial for biosecurity, protecting species and for sustaining habitats. The protection and promotion of green infrastructures is important towards this goal.

In the 20th century Netherlands lost a large part of its biodiversity, in particular endemic flora, fauna (including domestic breeds) and ecosystems associated with extensive and traditional agricultural practices. Some species disappeared entirely from the Netherlands, varying from about 5% of birds and vascular plants to about 25% of butterflies. Overfishing, combined with pollution, has also reduced the stock and size of the marine fish catch, especially in the North

Sea.

In Flanders over the last 100 years of the total number of species on Red Lists, 111 species became locally extinct. 422 native species are vulnerable to extinction if necessary measures are not taken. Only one third of the species has a favourable conservation status. For a small number of species the conservation status is inadequate, and for more than one third the status is bad. The status of conservation of aquatic species is of particular concern.

Nord-Pas de Calais shows similar trends to its neighbours. Biodiversity has dramatically reduced because of the changes in traditional farming introduced over decades and as a result of industrialization and the urbanization of entire territories. Biodiversity reached a minimum at the end of the 20th century. Nowadays, about 59% of the regional native flora is threatened in the long term, and more than a quarter (26%) is at risk in the short or medium term. Of 84 species of mammals in the region, 35 species are included in the regional Red List.

Picardy also has a rich natural heritage, with numerous sites of ecological interest, as classified at national and European levels. However a lot of ecosystems and native species are at risk. This is of particular concern for plants, but also for the 34 species of animals in the region. The flora has regressed a lot over the past two centuries. More than 200 species of vascular plants disappeared from the region and 44% of the remainder are considered threatened or vulnerable. Habitats are also under pressures, for example 90% of the calcareous grasslands and heaths of Picardy have disappeared in less than 100 years.





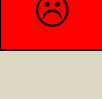

In the United Kingdom, an assessment based on 371 listed priority species shows that the state of conservation is declining for about the 37% and increasing only for 13%. Nevertheless, the comparison between assessments in 1999 and 2008 shows an improvement in the general situation.

### Situation and trends for the 2 Seas area

The 2 Seas area has highly diverse landscapes and ecosystems including marine and coastal ecosystems, wetlands, traditional agricultural land, large areas dedicated to intensive agriculture and urban areas. The number of protected areas and Natura 2000 sites is comparable to other EU regions, but ecosystem fragmentation and endangered species represent a critical aspect for the area. Pressures remain high, in particular intensive agriculture in France, the Netherlands and Flanders, as well as industry and urban extension in other areas. Estuary, marine and coastal ecosystems have problems mainly relating to overfishing, development of ports and related infrastructure, pollution, waste generation and the consumption of resources and raw materials (see the section below).

The loss of species and the decline in the conservation status of priority species is a critical aspect shared by all 2 Seas regions. Nevertheless, the increased number of protected areas, the realisation of the Natura 2000 network and progress in policy making (in EU Directives and national legislation), monitoring (indicators) and defining integrated strategies at local levels, have reduced this decline.

#### Macro-indicators for biodiversity

Indicator	State	Trends
Nationally designated protected areas		
Natura 2000 network		
Species conservation		

## 2.7 SOIL QUALITY AND LANDSCAPE

Soils provide physical support to economic activities especially space for buildings, human settlements and urban infrastructure. Soils also provide numerous ecological services including fertility for farming, regulation of the water cycle, nitrogen and carbon, a carbon sink and they provide life support systems for many species of animals and plants. For years soils have been under human pressure in the 2 Seas cooperation area. Specific policies should be implemented to deal with this situation.

### **Policy background**

Soil is defined as the top layer of the earth's crust. Soil is a non-renewable resource with many vital functions. The Soil Thematic Strategy<sup>28</sup> sets the basis for a framework Directive and an Impact Assessment on this issue at EU level.

### **Artificial soils and surfaces**

Artificial soils differ from agricultural or natural soil. Artificial soils are sealed soils including buildings and roads. Sealing entails a loss of ecosystem functions and adversely affects biodiversity. Increased soil sealing can also amplify the heat island effect in cities with higher localised temperatures in urban areas compared to neighbouring (rural) areas (Figure 11).

In Flanders, 176 000 ha or 13% of the soil was sealed in 2007-2009. Belgium, with 7.4% of sealed soil, has the second greatest rate of artificial surface in Europe. In some Flemish municipalities this share reaches 20% in the city regions of Bruges, Roeselare, Ghent and Antwerp. Therefore, new Flemish spatial planning measures will be taken to avoid and offset new soil sealing. In the UK the same measures protect greenfield sites from development, following their introduction, 75% of homes were built on brownfield land. The Netherlands faces the same problem, all the more since the country's soil sealing rate is also one of the highest in Europe. France and in particular the Nord-Pas de Calais region faces the problem too. This industrial region is 15% artificial zones, which is above the French average.

125 quarries were under exploitation in 2005 in Nord-Pas de Calais while Picardy had 180 at the end of 2009.

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<sup>28</sup> COM (2006) 231

## **Contaminated sites**

Various human influences contaminate soils with environmentally hazardous substances, such as heavy metals, organic materials and pesticides.

In Flanders, 85 000 soil areas are estimated to be at risk, where activities are or will be carried out that can possibly cause soil pollution. In South East England, the number of serious land pollution incidents has declined since 2002. In France, and in particular in the Picardy and Nord-Pas de Calais regions, contaminated sites abound. In 1993, Nord-Pas de Calais had half of French industrial wasteland. In 2006, more than 5 000 hectares of brownfield land have been upgraded. With 549 sites identified in 2007, three quarters of which are located in the department of Nord, Nord-Pas de Calais is France's second most affected region after the Rhône-Alpes, with 14% of national sites.

## **Development of surfaces in organic farming**

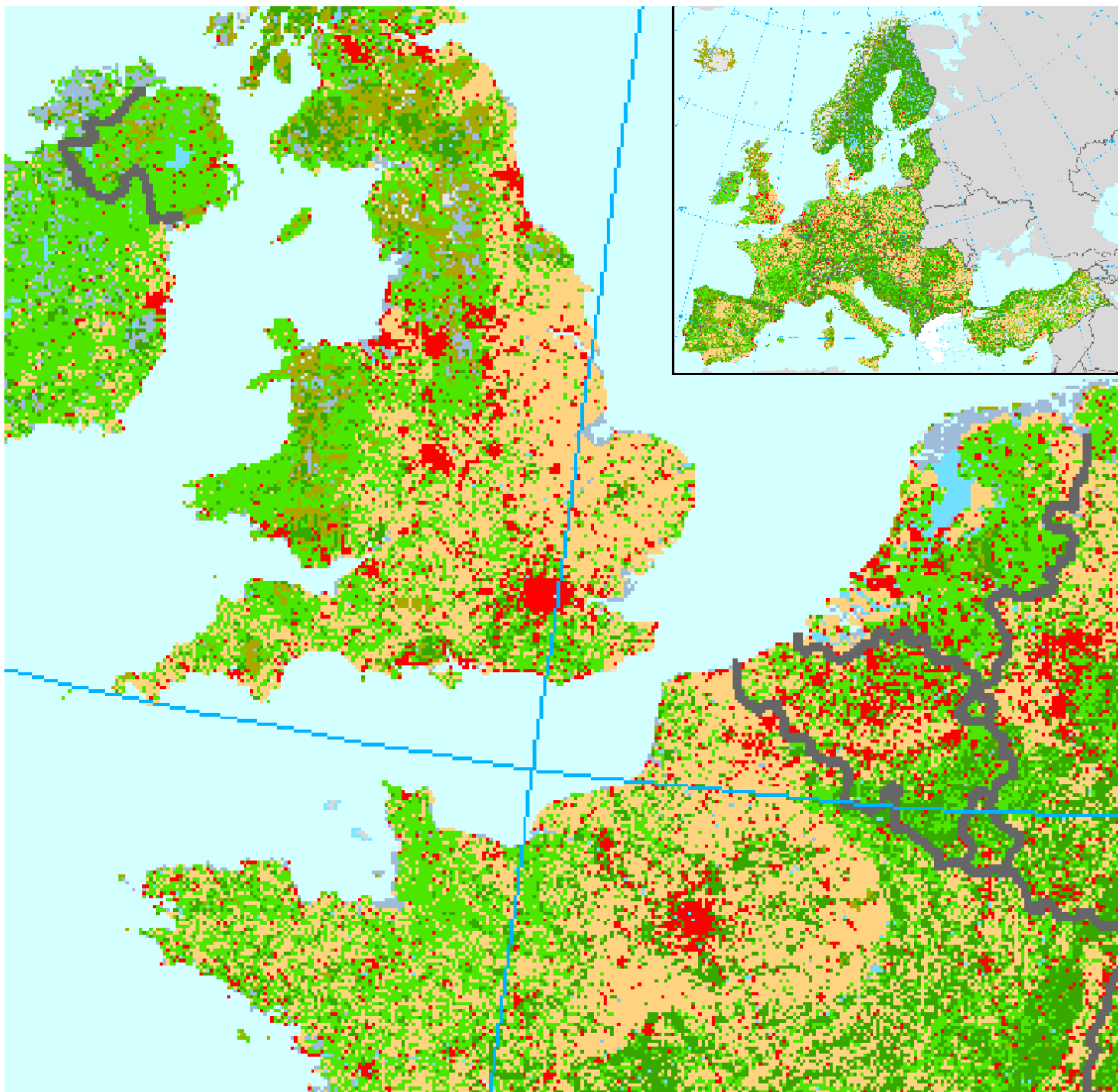
The organic agricultural area in Flanders was 4 563 ha in 2011, an increase of 19% on 2010 and 45% on 2005. The area thus reached its highest level since 1994 and now represents 0.7% of the total agricultural area. The share of organic agriculture in the Flemish agricultural land area in 2010 was 0.6%, below the European average of 5.3% (EU-27).

## **Evolution of the rate of organic matter in agricultural soils**











Loss of soil organic matter severely reduces soil quality, affecting the supply of nutrients and making it more difficult for plants to grow.

In France, a decrease in organic carbon in agricultural soils was observed between 1950 and 1980. This is mainly due to permanent grassland reversal and tillage depth. However, since the 1992 CAP reform, such practices have decreased by 10-25%. The UK is also affected by loss of organic matter, which represents a loss of soil carbon.

Figure 11 - Soils types in 2 Seas cooperation area and European level



**Corine Land Cover types – 2006**

- |   |                                 |   |                        |
|---|---------------------------------|---|------------------------|
|  | Artificial areas                |  | Open spaces/bare soils |
|  | Arable land and permanent crops |  | Wetlands               |
|  | Pastures and mosaics            |  | Water bodies           |
|  | Forested land                   |  | No data                |
|  | Semi-natural vegetation         |  | Outside data coverage  |







Source: EEA

## Situation and trends for the 2 Seas area

Soil and landscape quality in the 2 Seas cooperation area is clearly endangered. It is threatened by soil sealing and contamination, by both agricultural practices and industry.

Most partner countries have realised the importance of greenbelts and are now setting limits for urban development, which is one of the main factors in soil sealing. 2 Seas regions also favour soil decontamination, using brown fields in new development projects. However, there is still a loss of organic matter in agricultural soil, putting future production at all the more risk since soil is a non-renewable resource which performs many vital functions.

### Macro-indicators for soil and landscape quality

Indicator	State	Trend
Artificial soils and surfaces		
Contaminated sites		
Evolution of organic matter rates in agricultural soils		

## 2.8 TECHNOLOGICAL RISKS

Technological risks refer to specific industrial activities such as chemical plants, energy production sites and the transport of hazardous substances. Issues in the 2 Seas territories especially include the shipping of harmful products by sea, energy production, including nuclear energy and industrial chemical sites. Of outmost relevance is the presence of populated areas and public infrastructure close to at-risk industrial sites.

### **Policy background**

All Programme regions fall under the Seveso Directive of 24/06/1982 concerning the prevention of major industrial accidents.

Adopted following the accident at a chemical plant in Seveso, Italy, in 1976, the 'Seveso' directive applies to industrial establishments handling or storing dangerous substances in large quantities, mainly in the chemicals, petrochemicals, storage, and metal refining sectors.

Three successive Seveso Directives have been adopted, broadening the Directive's scope<sup>29</sup> each time.

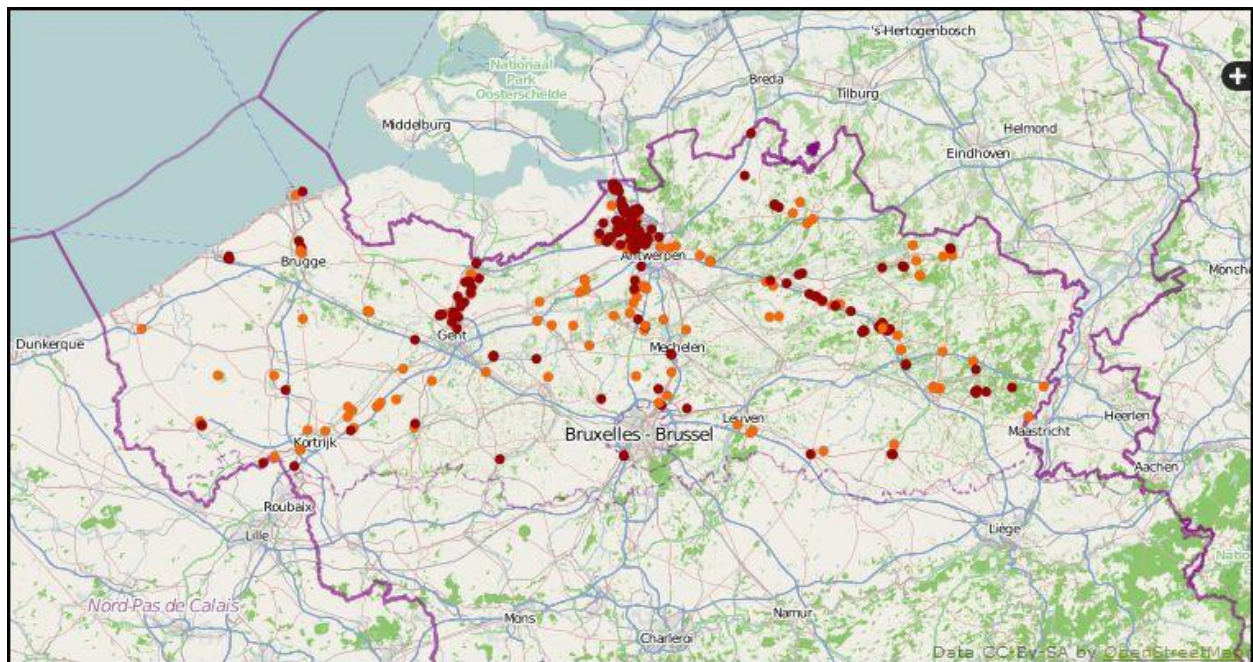
### **IPCC and Seveso Sites**

Flanders counted some 280 Seveso plants in 2009, 140 lower tier and 140 upper tier (Figure 12). In the Netherlands in 2010 there were 434 Seveso companies (2010), 255 upper and 179 lower tier, while the Nord-Pas de Calais region had 81 Seveso plants in 2005, 32 lower and 45 higher tier. The Picardy Region estimated a total of 34 lower and 30 higher tier plants in 2009.

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<sup>29</sup> OJ No L 230 of 5 August 1982 Council Directive 82/501/EEC on the major-accident hazards of certain industrial activities (Seveso); Council Directive 96/82/EC on the control of major-accident hazards ( Seveso II); OJ L 197, 24.7.2012 Directive 2012/18/EU of the European Parliament and of the Council of 4 July 2012 on the control of major-accident hazards involving dangerous substances

**Figure 12 - Seveso higher tier (red) and lower tier (orange) plants in Flanders**



*Source: Abstract from a map published on the Departement Leefmilieu, Natuur en Energie website*

## **Accidents and associated damages**

The Catholic University of Louvain, Belgium feeds the OFDA/CRED International Disaster Database, systematically collecting and analysing data on international disasters. They collect information on technological risks based on 4 criteria: 10 or more people reported killed, 100 people reported affected, a call for international assistance and a declaration of a state of emergency.

Following these criteria, in the last ten years i.e. 2004-2013, there were no reported accidents in England, the Netherlands or Flanders.

Figures for France are a bit more precise. Between 1996 and 2006, 464 accidents occurred in plants in the region. Their intensity varied between level 0 to level 5 on a scale of severity developed by the European Union and the OECD, which goes by order of increasing severity of 0 to 6. The majority of listed events are of low severity, but accidents can be serious. An average of 88.3 accidents occurs every year in this region.

## Situation and trends for the 2 Seas area

Even if the cooperation area is quite well endowed with Seveso plants, in particular big seaports and hinterland industrial areas, few major accidents were listed in the past ten years.

Seveso plant density in the very coastal part of the cooperation area is high e.g. Dunkirk, Antwerp. If progress is made towards better technological risk management when a third Seveso Directive is transposed into national legislation by June 2015, changing climatic conditions could further threaten these installations.

### Macro-indicators for technological risks

Indicator	State	Trends
IPCC and Seveso Sites	😊	n.c
Accidents	😊	n.c
Associated damages	😊	n.c

**n.c : unpredictable events and/or trends unknown**

## 2.9 HEALTH, SANITARY RISKS AND NUISANCES

Health, sanitary risks and nuisance are difficult to monitor; the situation very much depends on local conditions and people, who are differently impacted according to age, origin and behaviour. In the 2 Seas cooperation area, a majority of people live in urban centres and therefore are subject to air pollution, such as ozone and fine particulate matter (PM10). The issue will be dealt with in this report only at an aggregated level and mainly based on a qualitative analysis.

### Policy background

All Programme regions fall under the NEC Directive on national emission ceilings (Directive 2001/81/EC).

### Exposure to pollutants

Environmental pollutants significantly affect health in all Programme regions. When measuring the number of loss of live years due to death or illness, Flanders found that particulate matter is a major pollutant in the burden of disease. Noise and atmospheric tobacco smoke are the second and third most important environmental factors in the calculation of the burden of disease. Particulate matter is mainly produced by traffic pollution, particularly from diesel engines. Emissions tend to be concentrated in urban areas and along major roads. The 2 Seas Programme area has within its border, or is close to, the major EU agglomeration. No wonder that these regions have particulates as one of the key air pollutants to be closely monitored. Less known however, is that the damage to human health from local air pollution is more closely associated with exposure to fine particulate matter from combustion processes (combustion aerosols) than exposure to PM10 or NO2. Reducing exposure to combustion aerosols would therefore deliver greater health benefits at lower costs.

In the Netherlands, the number of years of life lost due to fine particulate matter has been cut by more than 20% since 2000, and will fall by a further 10% by 2020.

### **Exposure to noise**

Besides the emission of particulate matter, traffic also exposes people to noise. About 30% of the Dutch population suffer from noise annoyance, which is a long lasting and hard-to-solve problem. Similar and more comprehensive figures have been produced for Picardy. In this region, 40% of the population considered noise pollution a daily trouble. One out of 6 persons say they are constantly or often disturbed by noise at home. This reaches 30% with people living in apartment buildings.

## Situation and trends for the 2 Seas area

The area is relatively homogeneous regarding health, sanitary risks and nuisances. Major risks such as particulate matter emission and exposure to noise are clearly affecting the whole territory, all the more since the cooperation area is densely populated and endowed with major international communication axes.

Trends are towards a decrease in atmospheric pollution and better monitoring of emissions. However hot spots still remain, dispersed over the cooperation area, especially related to transport emissions in urban centres and highly populated territories. Air pollutant mobility is high and therefore the problem has to be tackled at all scales: local, national and global. Finally, no improvements are foreseen regarding noise pollution.

### Macro-indicators for health, sanitary risks and nuisance

Indicator	State	Trends
Exposure to pollutants	☹️	↓
Exposure to noise	☹️	→

## 2.10 NATURAL AND CULTURAL HERITAGE

Natural and cultural heritage are constitutive of the landscape, as well as sources of recreational, aesthetic or historic values for inhabitants and people visiting them. Such heritage includes buildings, monuments, gardens and parks, battlefields and all the surrounding natural and built-up areas which give them value and sense. Tourism takes particular advantage of the presence of natural and cultural heritage sites.

### Policy background

The European Landscape Convention is also known as the Florence Convention. It was adopted on 20 October 2000 in Florence (Italy) and came into force on 1 March 2004. The convention promotes European landscape protection, management and planning and it organises European co-operation on these issues.

## **Outstanding sites and hotspots**

South East England possesses outstanding historic, archaeological and architectural interest. There are 76,000 listed buildings, 368 registered parks and gardens, 2 World Heritage Sites and 2 national parks. South West England has some of the country's most important historic towns and cities. Almost 40% of the region is protected as National Parkland or as an Area of Outstanding Natural Beauty and 6% of England's Heritage Coast is in the South West. Among others, the region also has 88,616 listed buildings (over a quarter of the English total), 293 registered historic parks and gardens and four World Heritage Sites; Stonehenge and Avebury, the City of Bath, the Jurassic Coast and the Cornwall and West Devon Mining Landscape.

Flanders also has four World Heritage sites: the historic centre of Brugge, the Plantin-Moretus Museum, Flemish Béguinages and Belfries of Flanders and the North of France. Indeed, in the Nord-Pas de Calais region belfries have been protected too. There, building heritage is rich and varied with five artistic and historic cities; Cambrai, Boulogne-Sur-Mer, Saint-Omer, Roubaix, and Lille. It also has two cities of art in Arras and Douai. It has many military and remembrance sites and traces of an industrial and mining history, coalfields from the Pas-de-Calais department have recently been included on the UNESCO World Heritage list. Two thirds of the coast is considered a natural area of high ecological value while the coastal region is the most protected in France with more than 30 km acquired by the *Conservatoire du Littoral*. Picardy too has important historical monuments and an archaeological heritage with cathedrals, estates, castles, abbeys, towers, Roman roads, archaeological remains and Second World War (WWII) sites. Picardy has 73 listed sites, covering 90,630 ha in late 2010. In late 2010, 1 587 monuments were registered or listed.





Three World Heritage Sites are included the Dutch regions of the 2 Seas cooperation area: the Mill Network at Kinderdijk-Elshout, the Seventeenth-century canal ring area of Amsterdam inside the Singelgracht and the Defence line of Amsterdam.

## Situation and trends for the 2 Seas area

Landscape qualities often come off worse in regional decision-making. Cultural and natural heritage landscape values have to face several threats from urbanisation, infrastructure development, agricultural production, as well as habitat creation and restoration projects. All the more since the cooperation area lies in the centre of the EU's economic heart and is one of the most densely populated.

Quality of life is of growing importance in the 2 Seas cooperation area. Measures for protecting natural and cultural landscape are being implemented and are taken into account more and more in development strategies.

### Macro-indicators for natural and cultural heritage

Indicator	State	Trends
Protected sites under landscape statutory protection		
Outstanding site and hotspot		

### 2.11 CROSS BORDER ISSUES

A high number of environmental issues are cross-border and are particularly relevant for the Programme. Specific cross-border environmental issues should be identified under:

- common ecosystems, such as marine or cross-border river basins, seen as 'receptacles' for pressure from all the regions belonging to the cooperation area.
- common issues, such as risk management (flood control), when shared by all member states can be seen as more 'cross-border relevant';
- economic sectors (high growth potential sectors) or economic activities with a cross-border dimension and with potentially strong environmental impact, such as shipping or tourism. Actions which develop or support these sectors is also supposed to have wider

environmental effects (negative or positive) spread over the whole cooperation area and must be considered, even if indirectly, as having a cross-border dimension.

Strong cross-border dimension issues which meet all three criteria are: water quality, including marine ecosystems, climate change and risk management (natural hazards), all of which relevant under the EU 2020 Strategy. Significant at a cross-border scale, meeting two criteria are: biodiversity, energy, air quality, soil quality and landscape, as well as natural and cultural heritage. From a cross-border perspective, waste management and health or sanitary risks and nuisance are relevant because they are joint environmental issues shared by Member States. See the matrix analysis below with the status of each cross-border dimension (Table 2).

**Table 2 - Matrix analysis of the cross-border dimensions**

<b>Environmental issues</b>	<b>Common ecosystem/function</b>	<b>Common environmental issues</b>	<b>Common pressures from cross-border activities</b>
Climate change and Natural hazards	X	X	X
Energy		X	X
Water and marine ecosystems	X	X	X
Air quality	X		X
Waste management		X	
Biodiversity		X	X
Soil quality and landscape		X	X
Technological risks		X	X
Health, sanitary risks and nuisances		X	
Natural and cultural heritage including architectural and archaeological heritage		X	X

### 3. ENVIRONMENTAL OBJECTIVES OF THE COOPERATION AREA

The Environment Report takes account of “*the environmental protection objectives, established at international, Community or Member State level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation*”<sup>30</sup>.

The main environmental and sustainable objectives of the area are underlined and listed by environmental theme. Objectives at national and European levels should consider:

- European policies and the Europe 2020 strategy, including the EU climate and energy package and the Roadmap for moving to a low-carbon economy in 2050;
- The resource-efficient Europe flagship initiative including the roadmap for a resource-efficient Europe;
- Biodiversity conservation and management policy objectives, including those related to Natura 2000 networks and to the EU Biodiversity Strategy to 2020;
- Targets on internal and sea water quality, fixed under the Water Framework Directive<sup>31</sup> and Marine Strategy Framework Directive<sup>32</sup>;
- Industrial risk management rules fixed under directives IPPC<sup>33</sup>, REACH<sup>34</sup> and SEVESO;

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<sup>30</sup> Directive 2001/42/EC Annex I(e)

<sup>31</sup> Directive 2000/60/EC establishing a framework for Community action in the field of water policy

<sup>32</sup> Directive 2008/56/EC establishing a framework for community action in the field of marine environmental policy

<sup>33</sup> Directive 2008/1/EC of the European Parliament and of the Council of 15 January 2008 concerning integrated pollution prevention and control (OJ L 24, 29.1.2008, p. 8).

<sup>34</sup> Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC (OJ L 396, 30.12.2006, p. 1)

Part of the information on environmental objectives should be collected directly from SEA experts together with Environmental Authorities, e.g. during the consultation process, taking into account Directives, Decisions and Rules adopted by the Commission and other relevant national and regional institutions in the field of sustainability and environmental protection during the last 10 years.

General objectives are also disaggregated into specific objectives, to better integrate local characteristics of the areas under analysis.

**Table 3 - Environmental objectives**

<b>Environmental issues</b>	<b>General environmental objectives</b>	<b>Specific environmental objectives</b>
<b>Climate change and associated risks</b>	Reduce GHG emissions in all sectors	Reduce CO2 emissions
	Reduce and manage risks from climate change (extreme events)	Increase green infrastructure and access to the natural environment to improve resilience to climate change
		Prevent and manage risks due to drought, heat waves, sea level rise, floods, storms, forest fires
<b>Renewable energy</b>	Promote renewable energies	Promote bio-fuel
		Foster CO2 neutral materials in buildings
		Promote wind, water and geothermal energy
<b>Energy efficiency</b>	Improve energy efficiency	Control energy consumption
<b>Water and marine ecosystem</b>	Improve or maintain water quality (underground, surface and coastal)	Reach "good status" for a high % of water bodies by 2015
	Improve efficiency in water management	Improve water usage efficiency particularly in residential areas
	Reduce pressure on fresh water and marine ecosystems	Reduce the impact of agriculture pollution (especially nitrates)
		Reduce water consumption
<b>Air quality</b>	Improve Air Quality	Reduce emissions from industry and transport

Environmental issues	General environmental objectives	Specific environmental objectives
<b>Waste management</b>	Promote dry recycling and recovery of organic waste including composting	Promote the creation of raw materials from waste
	Promote the Waste Hierarchy	
	Improve efficiency in hazardous waste management	Reduce use of primary materials;
	Reduce per-capita waste generation	
<b>Biodiversity (flora and fauna)</b>	Halt the loss of biodiversity and the degradation of ecosystem services	Protect wetlands, rivers and maritime zones
	Restore degraded ecosystems and their associated services	Protect dunes, limestone hills and cliffs
	Protect and preserve the diversity of species	Maintain and extend ecological corridors
		Protect migratory fishes and birds
<b>Soil quality, landscape and cultural heritage</b>	Reduce the pressure on soil, land and ecosystems	Promote an intensive use of land
	Restore contaminated soils and lands	Expand surfaces of depolluted soils
	Improve efficiency in soil and land management	
	Decrease nutrient releases and eutrophication	
	Preserve landscape and cultural heritage	Protect, restore and enhance the historic environment, heritage assets and their settings
<b>Natural risks and technological hazards</b>	Reduce flooding risks	Improve land management to reduce surface water run-off and erosion
	Reduce coastal erosion	Limit property development in areas exposed to flood risks
	Prevent technological risks	Prevent risks induced by hazardous substance transport
<b>Health and sanitary risks</b>	Promote high standard for drinking and bathing water	
	Limit the adverse effects of chemicals on health	
	Decrease noise pollution	

## 4. EXTERNAL COHERENCE

As mentioned by PPG members, the 2 Seas Strategy under preparation will lead to a “green CP”. Indeed, 3 out of the 4 Programme axes pursue environmental objectives. Axis 2 “Low carbon technologies”, Axis 3 “Adaptation to climate change” and Axis 4 “Resource-efficient economy” firmly set the Programme sights on the environment.

Under Annex I of the SEA Directive<sup>35</sup> an external coherence analysis compared the 2 Seas Programme with other key plans or strategies that cover the cooperation area and that deal with environmental issues covered by the Programme strategy.

Coherence was analysed at the level of the 2 Seas Programme *Specific Objectives* and related *Investment Priorities* using a dedicated assessment matrix (see below). The external coherence analysis built on the list of relevant national and regional documents drawn up by the SEA experts and completed by the EAs, and is already included in the Scoping Report.

The following coherence levels were established using a joint-methodology developed with the ex-ante evaluators:

- CONTRAST (C): when the Programme strategy could potentially clash with local stakeholder interests or the Programme differs from strategic goals;
- NEUTRAL (N): when the Programme strategy and the key plans and strategies have no common fields of interaction, neither at target group level nor at objective level;
- COHERENT (S/O): when the Programme strategy and the key plans and strategies share similar strategic goals, actions and target groups.

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<sup>35</sup> “the environmental protection objectives, established at international, Community or Member State level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation”.

#### 4.1 HOW THE PROGRAMME TAKES INTO ACCOUNT COMMUNITY-LEVEL POLICIES

Analysis of the draft CP revealed that Thematic Objectives (TOs), Strategic Objectives (SOs) and associated actions address a high number of environmental issues. These include water quality, risk management, climate change adaptation, renewable energy and energy efficiency, waste, air quality and eco-innovation related to European legislation and strategies adopted during the last 10 years in the European Union (see Tables below). Furthermore:

- Most proposed actions have more than one environmental thematic reference, e.g. water quality and risk prevention, energy management and climate change, eco-innovation and waste reduction, etc.
- The proposal covers a large number of key economic sectors in the cooperation area with significant environmental impact including transport systems, maritime infrastructure and shipping, energy resource management, agro-food industry and SMEs.
- Actions with clear added value in terms of cross border cooperation are proposed. These include eco-innovation for SMEs (promote and adopt similar solutions), maritime risk prevention and management (develop common tools to reduce implementation costs and ensure better integration of national and regional risk management systems), water quality in marine ecosystems (find solutions to common problems and reduce monitoring costs), air quality and waste emission prevention (find common innovative solutions to lower implementation costs), adaptation to flood and natural risks due to climate change (innovate and test new approaches and solutions to shared problems).

However, it is worth noting:

- the lack of specific actions supporting the European Strategy on Biodiversity related to the management of Natura 2000 sites;
- that no specific actions have been taken regarding natural and cultural heritage;
- the need to develop – through a cross border approach – monitoring, management and information tools for natural and cultural heritage.

At the EU level, the 2 Seas draft second CP version should integrate well with EU environmental-related policies and programmes.



**Table 4 - Priority Axis 2 external coherence analysis matrix**

Investment priority	Specific Objectives	Actions	Links with environmental European strategies, policies and legislation
<p><b>Priority Axis 2 – Low carbon technologies</b></p> <p><b>Investment Priority 4f - Promoting research in, innovation in and adoption of low-carbon technologies</b></p>	<p>SO 2.1: Increase the adoption of low-carbon technologies and applications by public and private organisations and citizens in the 2 Seas area in all economic sectors by stimulating cross-border cooperation between relevant entities and stakeholders, and through the testing and demonstration of innovative technologies</p>	<ul style="list-style-type: none"> <li>• Adoption by actors of identical or similar renewable energy solutions, in particular marine-related ones (e.g. related to off-shore wind, tidal energy, wave energy)</li> <li>• Adoption by actors of most polluting sectors (e.g. transport and logistics sectors) at different territorial and administrative level of identical or similar innovative low-carbon technologies (e.g. based on electric vehicles for last-mile distribution, shift to short sea shipping, delivery of goods in urban areas).</li> <li>• Development of comparative pilots actions to test and demonstrate innovative low-carbon technologies and applications (e.g. smart grids, local energy generation systems, sustainable mobility concepts, low energy installations in differing rural and peripheral communities and employment sites, new approaches to travel demand and traffic management that will lead to carbon reduction including use of ICT / transport information)</li> <li>• Prepare for investments in the further roll-out of low-carbon technologies (for instance feasibility study for investments to reduce the emission generated in ports areas).</li> </ul>	<ul style="list-style-type: none"> <li>• Flagship initiatives: "Resource efficient Europe" and "An industrial policy for the globalisation era"</li> <li>• "Roadmap for moving to a low carbon economy" and "Roadmap resource efficient Europe" (associated to the previous flagship initiatives).</li> <li>• European Energy Efficiency Plan 2011 (COM (2011) 280 Final)</li> <li>• White paper on sustainable transport (COM(2011) 144 Final)</li> <li>• Offshore Wind Energy (COM(2008) 768 final)</li> <li>• EU Climate and energy packages (Regulation (EC) No 443/2009, Directive 2009/28/EC, Directive 2009/29/EC, Directive, 2009/30/EC Directive 2009/31/EC, Decision No 406/2009/EC)</li> </ul>

**Table 5 - Priority Axis 3 external coherence analysis matrix**

Investment priority	Specific Objectives	Actions	Links with environmental European strategies, policies and legislation
<p><b>Priority Axis 3 - Adaptation to climate change</b></p> <p><i>Investment Priority 5a - Supporting dedicated investment for adaptation to climate change</i></p> <p>.</p>	<p>SO 3.1. Improve the adaptation capacity to climate change and associated phenomena of the stakeholders dealing with this issue particularly in the sectors on which climate change is likely to have stronger impacts</p>	<ul style="list-style-type: none"> <li>• Formulation of common strategies, protocols and action plans to optimise ICZM practices in the maritime basins complementary to those developed by national authorities, and in line with the framework of the Integrated Maritime Policy and in the implementation of the Marine Strategy Framework Directive</li> <li>• Formulation of strategies for climate proofing of economic development areas (e.g. business parks)</li> <li>• Formulation of common strategies which take into account the social dimension of climate change adaptation</li> <li>• Establishment of common awareness-raising campaigns aiming at creating the conditions and support for local communities to take local preparedness and adaptation measures</li> <li>• Establishment of joint measures aiming at reducing the impact and effects of infrastructure works to protect coast lines against erosion/flooding on the activities on coastal waters such as aquaculture, ecosystems <ul style="list-style-type: none"> <li>• Establishment of joint measures which address biodiversity loss and climate change in an integrated manner to fully exploit co-benefits and avoid ecosystem feedback issues that could accelerate global warming</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• An EU Strategy on adaptation to climate change (COM(213) 216 final) and related Guidelines</li> <li>• Regulation (EU) No 1255/2011 establishing a Further Programme to support the development of an Integrated Maritime Policy</li> <li>• Directive 2002/84/EC amending the Directives on marine safety and prevention of pollutions</li> <li>• Directive 2007/60/EC on the assessment and management of flood risks</li> <li>• Decision 2007/779/EC establishing a Community Civil Protection System</li> <li>• Marine Strategy Framework Directive 2008/56/EC</li> </ul>

Investment priority	Specific Objectives	Actions	Links with environmental European strategies, policies and legislation
		<ul style="list-style-type: none"> <li>• Establishment of better coordinated collective emergency planning and preparedness for flooding (water management, flood risk techniques, awareness-raising on flood)</li> <li>• Establishment of innovative climate change adaptation solutions (tools / services), including: exploring the potential use of innovative funding measures for adaptation; exploring the potential for insurance and other financial products to complement adaptation measures and to function as risk sharing instruments</li> <li>• Establishment of integrated tools and technical solutions such as coastal defence lines or concepts (e.g. managed realignment) and flood protection by maintenance and enhancement of marine ecosystems as natural protection and defence lines <ul style="list-style-type: none"> <li>• Establishment of better coordinated monitoring systems, e.g. impacts of climate change on eco-systems and biodiversity and transformation of the coastline, etc.</li> </ul> </li> </ul>	

Table 6 - Priority Axis 3 external coherence analysis matrix

Investment priority	Specific Objectives	Actions	Links with environmental European strategies, policies and legislation
<p><b>Priority Axis 4 – Resource-efficient economy</b></p> <p><b><i>Investment Priority 6g Supporting industrial transition towards a resource-efficient economy, [...] promoting green growth, eco-innovation and environmental performance management in the public and private sectors</i></b></p>	<p>SO 4.1 Increase the adoption of new solutions for a more efficient use of natural resources and materials which shall facilitate the transition towards a greener and more circular economy, and the development of the blue economy</p>	<ul style="list-style-type: none"> <li>• Formulation of common agreements and joint action protocols between economic actors (such as ports, logisticians, etc.) for more sustainable and resource-efficient activities</li> <li>• Formulation of coordinated approaches in terms of green public procurement (GPP), e.g. for waste and water infrastructure</li> <li>• Establishment of collaborative platforms and services towards the key economic actors to strengthen a greener and resource-efficient economy</li> <li>• Establishment of joint approaches, based on the concept of on the circular economy, on the use of waste and secondary raw materials, on the product life-cycle (“from-possession-to-use” approach).</li> <li>• Adoption of new technology solutions that reduce the use of natural and material resources of companies and that encourage bio-based products and/or are more adapted for their end-of-life retreatment / recycling</li> <li>• Adoption by maritime-related economic actors (e.g. ports) of green technologies for sustainable use of marine resources</li> <li>• Adoption of solutions based on eco-innovations and resource efficiency in sectors such as manufacturing, transport, energy, agriculture, fisheries, tourism, etc</li> <li>• Prepare pilot actions and investments for future larger-scale sustainable projects, in the further roll-out of green technologies and for the subsequent commercialisation of products with/by SMEs</li> </ul>	<ul style="list-style-type: none"> <li>• Flagship initiatives: "Resource efficient Europe" and "An industrial policy for the globalisation era"</li> <li>• "Roadmap resource efficient Europe" (associated to the previous flagship initiative)</li> <li>• Marine Strategy Framework Directive 2008/56/EC</li> <li>• Water Framework Directive 2000/60/EC</li> <li>• Directive on ambient air quality and cleaner air for Europe (2008/50/EC);</li> <li>• Thematic Strategy on Air Pollution Com(2005) 446 final</li> <li>• EU's Integrated Product Policy (IPP)</li> <li>• Eco-innovation Action Plan (2011)</li> <li>• Taking sustainable use of resources forward: A Thematic Strategy on the prevention and recycling of waste (COM(2005) 446 final)</li> <li>• Regulation (EC) No 1221/2009 on the voluntary participation by organisations in a Community eco-management and audit scheme (EMAS III)</li> <li>• EU Eco label (Regulation 66/2010)</li> </ul>

## 4.2 PROGRAMME CONTRIBUTION TO NATIONAL AND REGIONAL STRATEGIES

The 2 Seas Programme was also checked for coherence with other strategies implemented at local and regional levels in all four Member States.

For Axis 2 and its Specific Objective 2.1 *“Increase the adoption of low-carbon technologies and applications by public/ private organisations and citizens”*, national strategies have set similar objectives e.g. the Flemish Strategy on sustainable development includes the goal to *“evolve into a low carbon, energy efficient, knowledge-based, thriving and fair economy”* while the UK’s Carbon Plan launched a framework in 2012 for *“households and businesses [to] have the opportunity to improve their energy efficiency”*. The UK’s Carbon Plan and the Dutch roadmap for a carbon neutral economy (‘Duurzaamheidsagenda’) also focus on technological possibilities and economic opportunities. Finally, two key documents in France – the Schéma Régional Climat Air Energie and the Schéma Régional d’Aménagement et de Développement Durable du Territoire emphasise the need to use the best available technology for eco-efficiency in regional productive systems. In particular, Nord-Pas de Calais believes very much in a third Industrial Revolution which could open the door to a post-fossil energy era. The 2 Seas Strategy is coherent with strategies in its Member States.

Axis 3 and its Specific Objective 3.1 *“Improve the adaptation capacity of public and private actors to better coordinate their climate change adaptation actions for stronger resilience”* is a strong concern shared by 2 Seas Member States. One of the most at-risk countries is the Netherlands which has implemented the so-called Delta Programme, chaired by a special government commissioner who maintains cohesion between all involved authorities. Other countries also took dedicated measures. The UK adopted a Flood and Water Management Act in 2010 which specifies the English and Welsh management authorities and their functions regarding flood and coastal erosion. The Flemish strategy on sustainable development wants to make sure that *“all decisions on food, energy, building and living [...] take climate change into account”* and that *“negative environmental impact is no longer displaced to other systems, countries or regions”*. Nord-Pas de Calais and Picardy’s Schéma régional d’aménagement et de développement durable du territoire (SRADDT) both acknowledge that climate change will significantly affect their regions and that, from now on, it is necessary to establish adaptive strategies. To conclude, Picardy’s SRADDT acknowledges that only integrated policies can address the risks and damage caused by global warming and that interregional cooperation around coastal and marine issues is of outmost importance.

Axis 4 and its Specific Objective 4.1 *“Strengthen the efficient use of natural resources and*

*materials through the adoption of new solutions for a greener economy*” is a matter of interest in the four MS of the 2 Seas Program. In Picardy, many hopes are placed on the concept of Industrial Ecology to optimize and share the use of energy resources between or within the territory while Nord-Pas de Calais is willing to support technological breakthroughs in industry, particularly in raw materials to promote sober carbon production modes with a low ecological footprint. Zeeland’s Environmental Plan has a similar ambition, exploiting opportunities for sustainable energy and a reliable energy-efficient use of resources. At national level, the Sustainability Agenda sets out the government's priorities and key actions for creating a green economy, together with companies and other parties in society. Improving efficiency in the use of any energy source to evolve into a low carbon, energy efficient economy is a goal shared by both Flanders and the UK.

External coherence analysis demonstrated that the 2 Seas Programme is quite coherent with other strategies implemented at local and regional levels in all four MS.

**Table 7 - SEA External coherence analysis results**

COUNTRY	DOCUMENT	AXIS 2 "Low carbon technologies"	AXIS 3 "Climate change adaptation"	AXIS 4 "Resource efficient economy"
BE	Flemish strategy sustainable development 2014 Flemish Government, 2010	S/O	S/O	S/O
UK	Climate Change Act 2008 - Parliament of the United Kingdom – 2008	S/O	S/O	S/O
UK	Marine Policy Statement – 2011	S/O	S/O	S/O
UK	The Carbon Plan: Delivering our low carbon future – 2011	S/O	S/O	S/O
NL	Sustainability agenda summary ('Duurzaamheidsagenda')	S/O	S/O	S/O
NL	Omgevingsplan Zeeland 2012-2018	N	N	S/O
FR	SRADDT Picardie, 2011	S/O	S/O	S/O
FR	SRCAE Picardie 2020-2050 (Rapport et document d'orientation)	S/O	N	S/O
FR	SRADDT Nord-Pas de Calais volet Climat, Novembre 2012	S/O	S/O	S/O
FR	Synthèse du Master Plan de Jeremy Rifkin "La troisième révolution industrielle en Nord-Pas de Calais"	S/O	N	S/O
FR	SRCAE Nord-Pas de Calais 2050 (Rapport et document d'orientation), 2012	S/O	S/O	S/O

Legend:

S/O: Coherent; N: Neutral

## 5. ENVIRONMENTAL EFFECTS ANALYSIS

### 5.1 APPROACH USED FOR EFFECTS ANALYSIS

The Directive requires the evaluation of the likely significant effects on the environment of the Cooperation Programme. According to Directive 2001/42/EC Annex II (2), the evaluation must consider in particular the direct and indirect impacts, their probability, scale, frequency, duration, reversibility, the cumulative nature of their effects and their cross-border dimension.

Past evidence and experience from other Programmes belonging to the cooperation objective show three possible changes: integration-related (measured through capturing changes in behaviours and attitudes), governance-related (measured through organisational performance) and investment-related (similar to investment in growth and jobs).

According to the Regulation, actions planned for territorial cooperation are much more related to networking and information sharing than infrastructural investment with significant short term and direct effects on the environment. Table 8 shows environmental effects of actions under ERDF funding, following Article 3 in the ERDF Regulation. Many expected effects of the Programme are intangible and indirect.

**Table 8 - Type of action**

Type of action	Environmental effects	Time horizon
<b>Investment in infrastructure</b>	Direct, localised and certain, non-reversible	Short, long term
<b>State aid and support for innovation projects</b>	Indirect, localised, non-reversible	Medium, long term
<b>Information and communication</b>	Indirect, intangible, non-localised, reversible	Short, medium
<b>Networking, cooperation and exchange of experience</b>	Indirect, intangible, non-localised, reversible	Short, medium

Analysis of the effects has three steps. Firstly, the environmental objectives identified in Part of the information on environmental objectives should be collected directly from SEA experts together with Environmental Authorities, e.g. during the consultation process, taking into account Directives, Decisions and Rules adopted by the Commission and other relevant national and regional institutions in the field of sustainability and environmental protection during the last 10 years.

General objectives are also disaggregated into specific objectives, to better integrate local characteristics of the areas under analysis.

Table 3 were matched with the proposed actions and eligible activities planned by the Cooperation Programme. Actions with a potential effect on a specific environmental objective are shown with an “X” while unknown effects are “?” and actions with no environmental effect “n.e.”<sup>36</sup>

Secondly, the SEA experts estimated the effects’ intensity on a scale illustrated in Table 9. The characteristics listed in Annex II of SEA directive (probability, duration, reversibility, geographic extent) were weighted and used to attribute significance to the effects. If the environmental effect is critical, this is included in the evaluation of significance.

**Table 9 - Scale for measuring positive and negative effect**

Positive effects	<i>Scale to measure the intensity of the effects</i>	Negative effects
++	Very significant effects	--
+	Significant effects	-
?	Unknown effect	?

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<sup>36</sup> “?”: some actions planned by the Programme could have an indirect impact that is difficult to estimate. E.g. innovation or R&D could have environmental effects depending on many different factors, such as technology, market conditions or implementation, that are unknown at the beginning of the program. “n.e” is indicated when actions are deemed to have no environmental effects, e.g. communication plans are not related to the environment.

n.s.	Not significant effects	n.s.
------	-------------------------	------

This gives a map of the effects with their associated colours. Such a representation helps the reader to quickly identify those effects which are relevant to the Programme and those without any particular significance. To ensure that the assessment is open and transparent, additional comments provide a clear explanation or justification of the likely effects, including their type and significance for each action against each objective.

Thirdly, the information is organised to assess the cumulative and cross-border effects of each action planned by the Cooperation Programme. The cumulative impacts are ordered by environmental theme.

It is worth noting that the methodology used to evaluate the effects will be based on both literature, especially for environmental impact assessment, and the personal experience of the SEA experts.

In the following subsections the effects for each Priority Axis are further analysed.

**Table 10 - Evaluation matrix**

<i><b>Environmental issue</b></i>	<i><b>Environmental objectives</b></i>	<i><b>SO 1.1</b></i>	<i><b>SO 1.2</b></i>	<i><b>SO 1.3</b></i>	<i><b>SO 2.1</b></i>	<i><b>SO 3.1</b></i>	<i><b>SO 4.1</b></i>
<b>Climate change and associated risks</b>	Reduce GHG emissions in all sectors	X	?	n.e.	X	n.e.	n.e.
	Reduce and manage risks due to climate change (extreme events)	X	n.e.	n.e.	n.e.	X	n.e.
<b>Energy</b>	Promote renewable energy	X	X	n.e.	X	n.e.	n.e.
	Improve energy efficiency	X	X	n.e.	X	n.e.	X
<b>Water and marine ecosystems</b>	Improve or maintain water quality (underground, surface and coastal)	?	?	n.e.	n.e.	n.e.	X
	Improve efficiency in water management	X	X	n.e.	n.e.	?	X
	Reduce pressure on fresh water and marine ecosystems	X	n.e.	n.e.	n.e.	n.e.	n.e.
<b>Air</b>	Improve Air Quality	?	?	n.e.	X	n.e.	n.e.
<b>Waste</b>	Promote dry recycling, and recovery of organic waste including composting	?	X	n.e.	n.e.	n.e.	X
	Promote the Waste Hierarchy	n.e.	n.e.	n.e.	n.e.	n.e.	X
	Improve efficiency in hazardous waste management	n.e.	X.	n.e.	n.e.	n.e.	n.e.
	Reduce per-capita waste generation	n.e.	n.e.	n.e.	n.e.	n.e.	X

<i>Environmental issue</i>	<i>Environmental objectives</i>	<i>SO 1.1</i>	<i>SO 1.2</i>	<i>SO 1.3</i>	<i>SO 2.1</i>	<i>SO 3.1</i>	<i>SO 4.1</i>
<b>Biodiversity (flora and Fauna)</b>	Halt the loss of biodiversity and the degradation of ecosystem services	?	n.e.	n.e.	n.e.	X	n.e.
	Restore degraded ecosystems and their associated services	n.e.	n.e.	n.e.	n.e.	X	X
	Protect and preserve the diversity of species	n.e.	n.e.	n.e.	X	X	n.e.
<b>Soil quality and landscape and cultural heritage</b>	Reduce pressure on soil, land and ecosystems	n.e.	n.e.	n.e.	n.e.	X	n.e.
	Restore contaminated soil and land	n.e.	n.e.	n.e.	n.e.	n.e.	n.e.
	Improve efficiency in soil and land management	n.e.	n.e.	n.e.	n.e.	?	n.e.
	Decrease nutrient releases and eutrophication	n.e.	n.e.	n.e.	n.e.	n.e.	n.e.
	Protect, restore and enhance the historic environment, heritage assets and their settings	?	n.e.	n.e.	n.e.	X	n.e.
<b>Natural risks and technological hazards</b>	Reduce flood risks	n.e.	n.e.	n.e.	n.e.	X	n.e.
	Reduce coastal erosion	n.e.	n.e.	n.e.	n.e.	X	n.e.
	Prevent technological risks	n.e.	X	n.e.	n.e.	n.e.	n.e.
<b>Sanitary risks</b>	Promote high standard for safe drinking and bathing water	n.e.	n.e.	n.e.	n.e.	n.e.	n.e.
	Limit the adverse effects of chemicals on health	?	?	n.e.	X	n.e.	n.e.

<i><b>Environmental issue</b></i>	<i><b>Environmental objectives</b></i>	<i><b>SO 1.1</b></i>	<i><b>SO 1.2</b></i>	<i><b>SO 1.3</b></i>	<i><b>SO 2.1</b></i>	<i><b>SO 3.1</b></i>	<i><b>SO 4.1</b></i>
	Decrease noise pollution	?	?	n.e.	?	n.e.	n.e.

From the above table, it can be concluded that:

- Less than 20% of the effects are significant; that means that more than 80% of the potential effects of the Programme on the cooperation area are either unknown (10%) or not significant (70%);
- Roughly 50% of the total significant effects are under SO 3.1 and 4.1;
- SO 1.3 has no significant effects on the environment while unknown effects are mainly registered in SO 1.1 (nearly 27% of the environmental objectives) and SO 1.2 (nearly 9%).

A brief description of the environmental effects of each priority axis is given in the following sections.

## 5.2 LIKELY SIGNIFICANT EFFECTS ON THE ENVIRONMENT

### 5.2.a *Effects on the environment from Priority Axis 1*

Priority Axis 1 – Technical and social innovation, is devoted to promote business investment in innovation and research and to develop links and synergies between enterprises, R&D centres and higher education. Sector beneficiaries are mainly related to "high potential growth" sectors, most of them promoting green growth. The main instrument for Axis 1 is networking, even if several kinds of actions within the three specific objectives are implemented. This tool cannot directly affect the environment as relevant direct investment does. Nevertheless, some types of action can have localised environmental effects, such as support to applied research or pilot lines.

The first specific objective concerns governance. Even without being aware of cooperation at project level, one can expect positive indirect interactions on environmental resources subject to cross-border effects.

The second specific objective is focused on pilot products or technologies, so that localised effects from reduced emissions or consumption are possible.

The third specific objective is devoted to social innovation. Even though important, this objective has no direct or indirect effect on environmental resources and cannot be considered relevant for the SEA process.

Table 11 lists the possible effects and their significance for Priority Axis 1. Some of the effects are “unknown”, because there are too many variables. These include the object of the actions, the type and magnitude of interaction between activity sector, human activities and environmental components. So significance to the likely interaction cannot be determined. The unknown effects of SO 1.2 on GHG emission is the same. Here the focus on the innovation chain and on testing pilot actions in pre-commercial phases of SO 1.2 can lead to an improvement in production efficiency and, as a possible consequence, to a reduction in the consumption of primary resources. A reduction in GHG emission is possible, but its likelihood and significance cannot be determined. Similarly, the consequences of SO 1.1 and 1.2 on air quality or human health can be an indirect consequence of actions promoting innovation. SO 1.2 focuses on cooperation in innovation and also considers best practices for innovation governance. There may be positive consequences, but of unknown type or magnitude, on biodiversity or landscape.

The other effects are insignificant. They are all indirect effects i.e. consequences of innovation promotion, which not certain and reversible. They are widespread because they derive from cooperation and they concern the 2 Seas area.

**Table 11 - Priority Axis 1: significance of environmental effects**

<i><b>Environmental issue</b></i>	<i><b>Environmental objectives</b></i>	<i><b>SO 1.1</b></i>	<i><b>SO 1.2</b></i>
<b>Climate change and associated risks</b>	Reduce GHG emissions in all sectors	n.s.	?
	Reduce and manage risks due to climate change (extreme events)	n.s.	
<b>Energy</b>	Promote renewable energy	n.s	n.s
	Improve energy efficiency	n.s	n.s
<b>Water and marine ecosystems</b>	Improve or maintain water quality (underground, surface and coastal)	?	?
	Improve efficiency in water management	n.s.	n.s.
	Reduce pressure on fresh water and marine ecosystems	n.s.	
<b>Air</b>	Improve Air Quality	?	?
<b>Waste</b>	Promote dry recycling, and recovery of organic waste including composting	?	n.s.
	Improve efficiency in hazardous waste management		n.s.

<b><i>Environmental issue</i></b>	<b><i>Environmental objectives</i></b>	<b><i>SO 1.1</i></b>	<b><i>SO 1.2</i></b>
<b>Biodiversity</b>	Halt the loss of biodiversity and the degradation of ecosystem services	?	
<b>Soil quality and landscape, cultural heritage</b>	Protect, restore and enhance the historic environment, heritage assets and their settings	?	
<b>Natural risks and technological hazards</b>	Prevent technological risks		n.s.
<b>Sanitary risks</b>	Limit the adverse effects of chemicals on health	?	?
	Decrease noise pollution	?	?

### 5.2.a *Effects on the environment from Priority Axis 2*

Priority Axis 2 promotes research and innovation in low carbon technologies. Positive effects on climate change and energy issues are taken for granted. Indirect interactions with other environmental issues are also expected. SO 2.1 explicitly seeks to increase the adoption and application of low-carbon technologies by public and private institutions and citizens. Therefore, there are significant positive effects on GHG emission reduction and on renewable energy and energy efficiency promotion. These are direct effects because they result from actions imputed to the environmental objective. They are certain and widespread. Many SO 2.1 actions concern sustainable mobility. In this sense, a positive direct effect on air quality is likely and a positive (indirect) effect on the reduction of pollution for human health must be included.

A possible consequence of mobility measures is a reduction in traffic noise, but this effect is too indeterminate to be assessed. The only feasible negative but not significant effect from SO 2.1 is on biodiversity, from the realisation of pilot actions on off-shore wind plants. This effect is unlikely because it is linked to the hypothetical realisation of specific projects in sensitive areas. Nevertheless, it is important to point out uncertain negative effects in the SEA procedure in order to provide guidance for the CP throughout implementation. Table 12 sums up the environmental effect of SO 2.1.

**Table 12 - Priority Axis 2: significance of environmental effects**

<i><b>Environmental issue</b></i>	<i><b>Environmental objectives</b></i>	<i><b>SO 2.1</b></i>
<b>Climate change and associated risks</b>	Reduce GHG emissions in all sectors	++
<b>Energy</b>	Promote renewable energies	+
	Improve energy efficiency	+
<b>Air</b>	Improve Air Quality	+
<b>Biodiversity</b>	Protect and preserve the diversity of species	n.s.
<b>Sanitary risks</b>	Limit the adverse effects of chemicals on health	n.s.
	Decrease noise pollution	?

### 5.2.b *Effects on the environment from Priority Axis 3*

Priority Axis 3 is devoted to climate change adaptation. This seeks to increase preparedness for, and resilience to, climate change and associated phenomena including coastal erosion, flooding, droughts and extreme weather in the cross-border area, through common strategies, integrated management and other policies. Positive effects on risks related to climate changes are likely.

A very significant effect will derive from SO 3.1 to reduce and manage risks due to climate change. Indeed, local stakeholders with responsibilities are expected to coordinate better their planning and mitigation actions against risks. The very nature of the SO makes the effect certain, direct, widespread and long lasting. Similarly positive direct effects on flood risks and coastal erosion are expected. Lesser significance is attributed to causes other than climate change which can generate these problems. Actions aimed at reducing floods and coastal erosion might also have indirect effects including better protection of cultural sites, such as archaeological sites, from extreme climate events.

SO 3.1 includes actions addressing biodiversity loss and climate change in an integrated manner, to fully exploit benefits and avoid negative ecosystem feedbacks that could accelerate global warming.

This leads to an obvious positive effect on biodiversity and ecosystem restoration, enhancing the ecological services of natural resources. The effect is significant, as it is direct, certain and widespread.

Adaptation to climate change measures could also result in reduced pressure on water and an improvement in water management. This could lead to an insignificant indirect positive effect on water.

Lastly, among the governance tools for adapting to climate change is soil management. However the effect on soil and landscape are too indeterminate to be assessed.

**Table 13 - Priority Axis 3: significance of environmental effects**

<b><i>Environmental issue</i></b>	<b><i>Environmental objectives</i></b>	<b><i>SO 3.1</i></b>
<b>Climate change and associated risks</b>	Reduce and manage risks due to climate change (extreme events)	++
<b>Water and marine ecosystems</b>	Improve efficiency in water management	n.s.
<b>Biodiversity</b>	Halt the loss of biodiversity and the degradation of ecosystem services	+
	Restore degraded ecosystems and their associated services	+
	Protect and preserve the diversity of species	+
<b>Soil quality and landscape, cultural heritage</b>	Reduce the pressures on soil, land and ecosystems	?
	Improve efficiency in soil and land management	?
<b>Natural risks and technological hazards</b>	Reduce flooding risks	+
	Reduce coastal erosion	+

### 5.2.c *Effects on the environment from Priority Axis 4*

Priority Axis 4 aims at achieving green growth through a resource-efficient economy. SO 4.1 contains actions for the optimisation of recycling processes and the use of waste and secondary raw materials. Direct positive effects on the waste sector are expected.

In addition, some SO 4.1 actions focus on the reduction of energy consumption and on Green

Public Procurement (GPP). This can result in positive insignificant, indirect effects on water management and energy consumption.

A significant positive effect on marine ecosystems is linked to the sustainable use of marine resources. The significance of this effect is linked to its likelihood and its extensive application. The promotion of green technologies to maritime-related economic actors, such as ports, also reduces pressure on coastal water, which has an indirect positive effect.

**Table 14 - Priority Axis 4: significance of environmental effects**

<i><b>Environmental issue</b></i>	<i><b>Environmental objectives</b></i>	<i><b>SO 4.1</b></i>
<b>Energy</b>	Improve energy efficiency	n.s.
<b>Water and marine ecosystems</b>	Improve or maintain water quality (underground, surface and coastal)	n.s.
	Improve efficiency in water management	n.s.
<b>Waste</b>	Promote dry recycling, and recovery of organic wastes including composting	+
	Promote the application of the Waste Hierarchy as a priority	+
	Reduce per-capita waste generation	+
<b>Biodiversity</b>	Restore degraded ecosystems and their associated services	+

### 5.3 ASSESSMENT OF CUMULATIVE AND CROSS-BORDER EFFECTS

#### 5.3.a General assessment

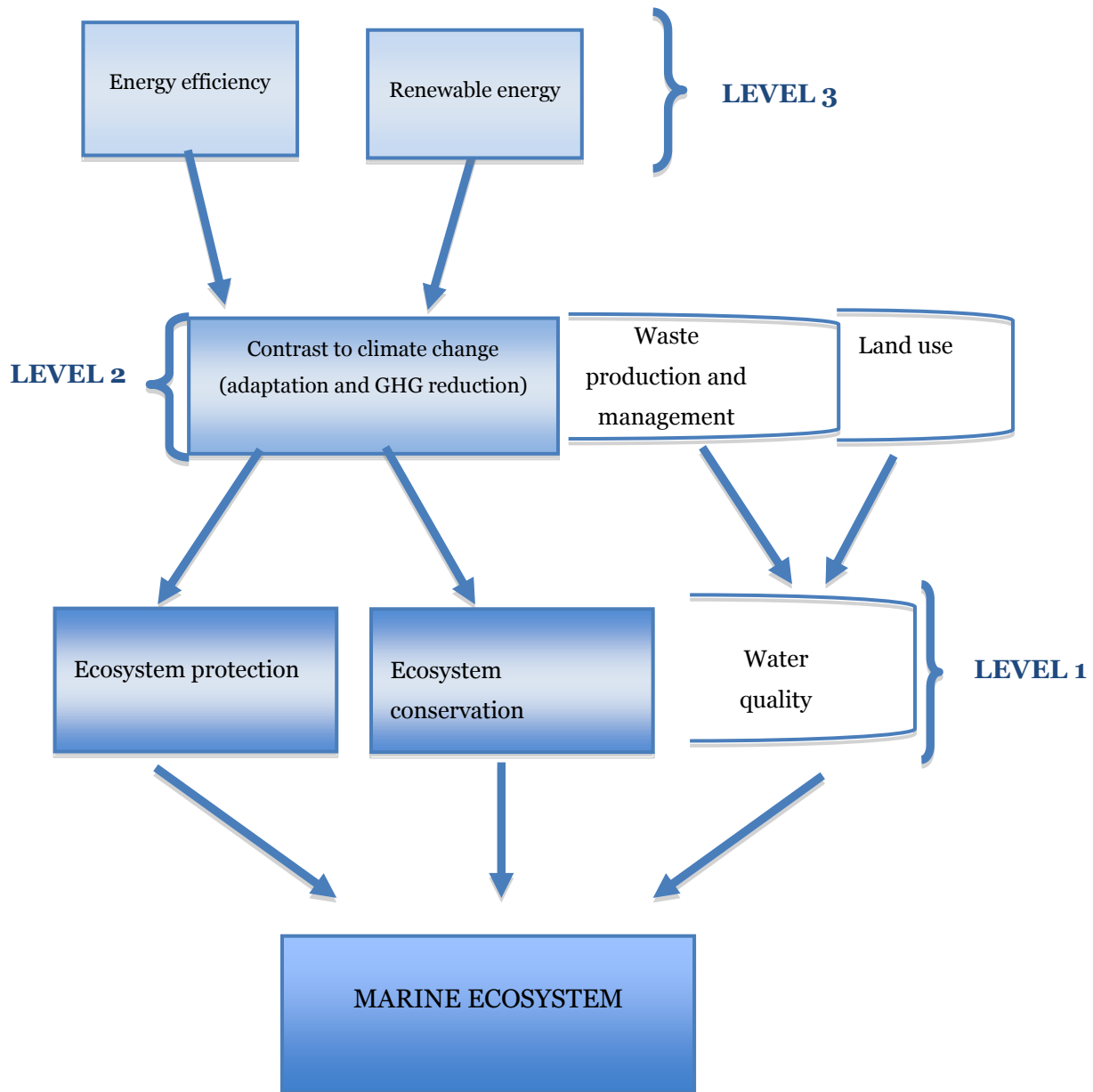
The cumulative effects on each environmental theme have been analysed combining information from Section 3 and considering all possible causal relationships leading to an impact on that theme.

First, possible interactions between environmental components have been pointed out using a logical tree approach (Figure 13). Three levels contributing to the cumulative effect are considered:

- The first includes effects from different actions directly influencing the environmental issues (and related objectives).

- The second adds the contribution of other environmental components to the objective.
- The third order effects act on the second order ones.

**Figure 13 - Example of relation chain for the cumulative effect assessment**



All the effects on the environmental components are then combined for all SOs, to get an assessment of the overall significance. The single effects were weighted in relation to their level, i.e. their contribution to the final environmental theme.

Some effects are cross-border because they involve extensive environmental components or because they result from sectors with a broad environmental interface. In particular, the cross-border effect can derive from:

- The geographical sharing of common environmental components such as marine ecosystems or cross-border water basins that represent a "receptacle" of cumulative effects. Cross border cooperation represents an opportunity to tackle these problems by applying joint solutions and technology;
- Common environmental issues such as risk management in coastal areas. In this case cross-border cooperation implies opportunities for sharing solutions and lowering costs;
- Sectors with a widespread environmental interface, such as tourism, agriculture and fisheries. Cross-border cooperation can be relevant to manage the environmental side effects and opportunities linked to the development of these sectors in an environmentally friendly way.

The cross-border nature is stressed in the following tables of the cumulative effect analysis for each environmental issue.

<b><i>Climate change and related risks</i></b>	<b><i>Cumulative effect</i></b>
	++
<b><i>Relevance to the cooperation area</i></b>	
Climate change is of primary importance for the cooperation area, especially regarding sea levels. Most coastal areas are subject to erosion and large parts of the territories are vulnerable to floods. All contributions to adaptation are essential.	
<b><i>Cumulative effects</i></b>	
<p>Climate change issues are fully considered in the CP. First order effects on environmental objectives for climate are adaptation and GHG reduction. Energy consumption is a major cause of GHG emission. Effects on energy efficiency and renewable energy (second order) are also considered. Biodiversity and natural resources, through ecological services, is an important instrument of climate change adaptation (second order). Since water quality and management, soil use and waste management can contribute to biodiversity defence and ecosystem conservation they are included in the cumulative effect (third order). The effects on natural risks, while not necessarily directly deriving from climate change, have been also included (as a second order).</p> <p>Cumulatively there are very significant positive effects. The main contributions are from the direct positive effect on climate change objectives (SO 1.1, 2.1 and 3.1). Effects on biodiversity and ecosystems (SO 3.1 and 4.1) also play an important role.</p>	
<b><i>Cross-border effects</i></b>	
Climate change is a classic example of a cross-border issue. Wherever the issue originates its consequences are widely distributed. GHG reduction efforts will have global effects. Climate change impacts common environmental components or areas, with no consideration for man-made boundaries; it is inherently cross-border. So, it is crucial to contemplate adaptation objectives using cooperation instruments, as the CP does.	

<b>Water and marine ecosystems</b>	<b><i>Cumulative effect</i></b>
	++
<b><i>Relevance to the cooperation area</i></b>	
<p>The resource shows hot spots in term of quality and supply in all regions covered by the Programme. The area is characterised by high human pressure on water. The positive effects of the CP act concomitantly with the current effort of local authorities to implement water policy and control at various governance levels (national, regional and district basins) in all Member States.</p>	
<b><i>Cumulative effects</i></b>	
<p>Cumulative effects on water primarily come from actions to improve water quality, water reduction and water management promotion. The CP's positive effect on marine ecosystems is also important. Ecological services supplied by ecosystems contribute to water quality, so that effects on biodiversity and natural ecosystems (second order) have been considered. Effects on soil quality and management and on waste production and management have been included (second order) because of their influence on water quality. Climate change effects (second order) and related energy issues (third order) also influence water management.</p> <p>The cumulative effect is very significant and mainly due to the second order effects on climate change and biodiversity of Priority Axes 2 and 3.</p>	
<b><i>Cross-border effects</i></b>	
<p>In the cooperation area, cross-border basins are jointly managed by Member States: the National River Basin District of South West, South East, Thames and Anglia in the UK, and the International River Basin Districts of the Seine, Scheldt, Sambre, Meuse, Rhine and Ems. These basins suffer different environmental effects that are consequently cross-border. The marine ecosystem is another shared environmental resource. The focus on cooperation that characterises the CP means this environmental issue can be tackled with integrated solutions.</p>	

<b><i>Air</i></b>	<b><i>Cumulative effect</i></b>
	+
<b><i>Relevance to the cooperation area</i></b>	
Even if air quality in the cooperation area has tended to improve in recent years, many areas are still struggling to master traffic and industrial emissions. Air pollutant mobility is high, so the problem needs to be tackled at local, national and global levels.	
<b><i>Cumulative effects</i></b>	
The cumulative effect on air quality is affected by GHG reduction, energy efficiency and renewable energy. Also the reduction of waste production and waste management improvement are taken into account (second order). Ecosystem and biodiversity are included for their mitigation of pollution (second order).	
The main contribution to the significant positive effect is from Priority Axis 1 (mainly SO 1.2 on innovation and SO 4.1 on mobility).	
<b><i>Description of cross-border effects</i></b>	
The scattered nature of environmental components implies cross-border effects. Obviously actions focused on a limited administrative scale will have localised effects, whereas cooperation and networking on, for example, sustainable mobility, will have real cross-border effects.	

<b><i>Biodiversity</i></b>	<b><i>Cumulative effect</i></b>
	++
<b><i>Relevance to the cooperation area</i></b>	
<p>The 2 Seas area has very diverse landscapes and ecosystems. However ecosystem fragmentation, in particular by infrastructure, is a critical issue for endangered species. Furthermore, habitat fragmentation is increasingly important to all actors, including landowners, communities and visitors.</p>	
<b><i>Cumulative effects</i></b>	
<p>Several CP actions should directly contribute to biodiversity conservation and ecosystem protection. SO 3.1 actions address biodiversity loss and climate change in an integrated manner. Effects on adaptation to climate change and on confronting natural risks (second order) have been considered in the cumulative effect, in addition to those regarding soil, water and air protection. The reduction of waste production and impact has been included (second order) as it is likely to contribute to reduced pressure on (marine) ecosystems.</p>	
<b><i>Cross-border effects</i></b>	
<p>The cross-border nature of this environmental component is not strictly related to the resource itself, but rather to the ecological services it provides. In addition, several activity sectors, such as fishing and tourism, which could affect biodiversity and natural resources are cross-border. The CP promotes coordination in activities and sectors such as innovation and coastal management, which strongly influence biodiversity. Particularly important is the marine ecosystem, a characteristic element of this cooperation area. Since the maritime dimension has been identified as a cross-cutting theme, appropriate cross-actions have been integrated in several SOs.</p>	

<b><i>Natural and Cultural Heritage</i></b>	<b><i>Cumulative effect</i></b>
	+
<b><i>Relevance to the cooperation area</i></b>	
Cultural and natural heritage and landscapes in the cooperation area have to face several threats including urbanisation and infrastructure development. The high population density of the area exacerbates the problem.	
<b><i>Cumulative effects</i></b>	
Cultural heritage protection needs to minimise any adverse impact on heritage assets and setting. An important role is then played by adaptation measures and by actions to tackle natural risks (second order effect). Air quality is important for monument conservation and is therefore taken into account (second order). Soil management could contribute to the cultural element in natural heritage (landscape) and ecosystems are intimately related to landscape (both of second order).	
The cumulative positive significant effect is primarily linked to ecosystem protection and natural risk prevention (including SO 3.1 in an integrated manner). Priority Axes also contribute through their effect on cultural heritage (SO 1.3, innovation in social solution) and risk reduction (SO 1.1).	
<b><i>Cross-border effects</i></b>	
Natural and cultural heritage are by definition in particular areas or locations. Nevertheless they can be affected, also positively, by cross-border activities, primarily tourism. The CP is not focused on cultural heritage, but some recommendations can improve the performance of the Programme for this during its implementation.	

<b><i>Soil quality and Landscape</i></b>	<b><i>Cumulative effect</i></b>
	+
<b><i>Relevance to the cooperation area</i></b>	
Soil and landscape quality in the 2 Seas cooperation area are clearly threatened. They are exposed to soil sealing and contamination by both agriculture practice and industry.	
<b><i>Cumulative effects</i></b>	
Almost every SO in the CP has positive effects on soil, because its quality is influenced by other environmental components. Therefore, SO 4.1's positive effects on waste and SO 3.1's positive (second order) effects on water and biodiversity contribute to a significant cumulative positive effect.	
<b><i>Cross-border effects</i></b>	
Some aspects of soil quality, such as the release of nutrients, are cross-border. In addition, soil is strongly influenced by human cross-border activities, such as agriculture. The CP does not put any particular emphasis on soil among the objectives, still this could represent an opportunity e.g. soil management as an instrument for climate change adaptation.	

<b><i>Natural hazards and technological risks</i></b>	<b><i>Cumulative effect</i></b>
	+
<b><i>Relevance to the cooperation area</i></b>	
Even though the cooperation area has a lot of Seveso plants, in particular around the EU's largest seaports and hinterland industrial areas, few major accidents were recorded in the past ten years.	
<b><i>Cumulative effects</i></b>	
The CP tackles natural risks under SO 3.1 (first order effect) that is focused on risks related to climate change (floods and coastal erosion). In addition, positive effects on soil and water management and on ecosystem conservation (SO 1.1, 1.2, 3.1 and 4.1) also contribute to the final cumulative effect (second order). Positive effects on technological risks could also derive from innovation in Priority Axis 1.	
<b><i>Cross-border effects</i></b>	
Technological risks are mainly due to human activities at risk of accidents, such as the transport of hazardous substances. The Programme might underpin innovation in Axis 1 to promote safe technologies in sectors at risk and provide control systems to prevent accidents or monitor damage in large areas.	

<b><i>Health and Sanitary risks</i></b>	<b><i>Cumulative effect</i></b>
	+
<b><i>Relevance to the cooperation area</i></b>	
The cooperation area entails and/or is surrounded by the EU's largest cities. Moreover, major cities are particularly affected by particulate matter emission and exposure to noise. The whole 2 Seas territory is therefore clearly affected by these issues.	
<b><i>Cumulative effects</i></b>	
Human health depends on environmental quality. The cumulative effect on this issue is significant since it is linked to air and water quality and soil pollution (the whole CP concerns them). Exposure to noise could be reduced through SO 2.1 with measures related to mobility and transport.	
<b><i>Cross-border effects</i></b>	
Health could be considered a cross-border issue because it is strongly influenced by environmental quality. In spite of the significant cumulative effect, the CP does not emphasise this aspect. Cooperation represents an opportunity to tackle this problem in an integrated and more efficient manner, in particular in relation to air quality.	

<b>Waste</b>	<b><i>Cumulative effect</i></b>
	n.s.
<b><i>Relevance to the cooperation area</i></b>	
On this issue the 2 Seas cooperation area is not homogeneous, even though waste collection and processing has generally improved recently.	
<b><i>Cumulative effects</i></b>	
<p>Waste management is not properly an environmental component but a sector of management with a strong environmental implication. Hence environmental components such as water, air and biodiversity do not affect this issue but are, rather, affected by it. For cumulative effects we considered only interactions between CP and objectives concerning waste.</p> <p>The cumulative effect is mainly due to actions in SO 4.1 (green procurement, optimisation of recycling process and solutions, and so on).</p>	
<b><i>Cross-border effects</i></b>	
Even if waste is not narrowly defined as a cross-border issue, an integrated approach to the problem in the cooperation area is an opportunity. The CP, through SO 4.1., aims at cooperation and networking for impact reduction and management improvement.	

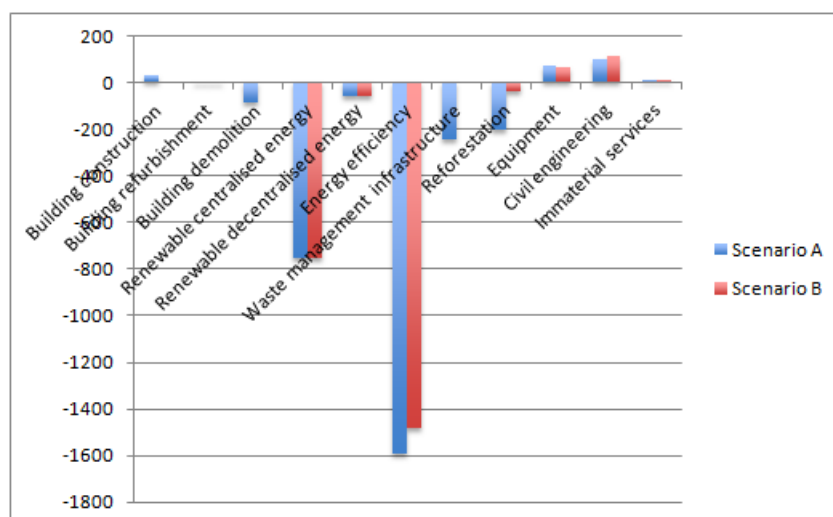
<b><i>Energy</i></b>	<b><i>Cumulative effect</i></b>
	+
<b><i>Relevance to the cooperation area</i></b>	
<p>The cooperation area still has a strong dependency on fossil fuel, even if the share of renewable energy production and consumption has increased in recent decades. Economic sectors are interested in reduced energy consumption.</p>	
<b><i>Cumulative effects</i></b>	
<p>Cumulative effects for energy have been evaluated on the basis of interactions between the CP and the objectives concerning energy. Waste generation and management are significant for their effects on energy consumption and production, so they have been included (second order).</p> <p>The resulting significant cumulative positive effect is mainly through SO 2.1, with action for reduced energy consumption, implementation of renewable energy and efficiency. SO 4.1 also has waste management objectives.</p>	
<b><i>Cross-border effects</i></b>	
<p>Effects deriving from energy sector, first of all GHG emission, have a cross-border nature. Cooperation in renewable energy and in a strategy for the implementation of energy efficiency and reduced energy consumption represents an opportunity for the cooperation area.</p>	

### 5.3.b *The carbon impact of the Program: the CO2MPARE model*

The cumulative CO<sub>2</sub> emissions impact of the programme has been assessed using the CO<sub>2</sub>MPARE model. The CO<sub>2</sub>MPARE model is provided by DG Regio and uses financial inputs to estimate the carbon outcomes of a programme.

The model exploits different levels of aggregation for activities within the Programme. The highest aggregation level consists of the main programme themes for budgets e.g. “Energy”, “Research and Development”, etc. Each theme is then specified in more detail (second level of aggregation). Investments in a given theme are then disaggregated into a predefined set of standardised activities, or Standardised Investment Components (SICs), which represent the actual physical activities.

**Figure 14 - Results from the CO<sub>2</sub>MPARE model**



The model output distinguishes between direct and indirect emissions. Direct emissions are defined as immediately occurring on the site of the project. Indirect emissions may include the energy used for producing materials, electricity generation, or an increase in traffic caused by the project.

In the first stage of the assessment Specific Objectives were associated to one or more themes, taking into account the proposed actions, and the percentage of financial allocation split.

The use of the CO<sub>2</sub>MPARE model constitutes only a first approximation. However, it can help in understanding the Programme’s level of sustainability. Furthermore, even though these first results are probably affected by bias, they represent a baseline for future evaluations.

The CO2MPARE model was used to compare two different scenarios. They only differ in the allocation of Standardised Investment Components and therefore differ mainly between “material” and “immaterial” expenditure. “Scenario A” maintains the default allocation (generally represented by a 50%-50% division between material and immaterial investment). “Scenario B” follows a more realistic partition, with an overall preponderance of immaterial investment.

Results for the two scenarios are shown in Figure 14. The “carbon content indicator”, or CO<sub>2</sub> equivalent emission assessed for the whole Programme during the entire period, is negative for both scenarios, pointing to a reduction in CO<sub>2</sub> emissions.

The main reduction is under “Scenario A”, with -2 990 kt CO<sub>2</sub> against -2 412 kt for “Scenario B”. In both scenarios, the biggest reduction in CO<sub>2</sub> is in indirect emissions, mainly energy. Some small extra emissions are linked to equipment.

## 6. MITIGATION MEASURES

The CP is devoted to cooperation in pursuing sustainable objectives and has no significant negative effects on the environment.

The assessments carried out for the SEA show that some opportunities in the CP can be strengthened. In addition to measures aimed at mitigating negative effects, we propose measures to enhance the environmental performance of the CP and to reinforce the inclusion of several environmental issues. The measures submitted to the CP drafters can be divided into:

- Mitigation of negative effects, including the implementation of additional specific activities or actions to avoid, remove, or off-set the adverse effects;
- Orientation of Specific Objectives (SOs) or actions; through the proposal of alternative instruments or tools to be promoted by the Programme;
- Green selection criteria, with the objective of improving the sustainability of projects co-financed by the Programme;
- Provisions for the implementation phases, including guidelines to be used by applicants during the preparation and management phases of the projects or the definition of specific environmental monitoring measures (see section 7.1 below).

In the following section we propose a brief description for each priority axis of recommendations and suggestions to improve integration of environmental topics in the Programme.

### 6.1 PRIORITY AXIS 1

*Priority Axis 1* is devoted to innovation, which usually leads to better environmental performance. We suggest explicitly referring to the environmental performance of innovation, especially in S.O.1.2.

Optimising the integration of environmental issues in innovation activities under Priority Axis 1, could need a set of project selection criteria focusing on eco-innovation and resource efficiency.

*Cultural heritage* and *management of Natura 2000* sites have little space in the 2 Seas CP. A re-orientation of an action in S.O.1.3, related more specifically to *cultural heritage* and *biodiversity* management could improve the CP performance/for these issues. The idea is to support local governance to adopt new management tools for natural and cultural sites, combining social

objectives (re-employment or reintegration of people with disabilities for example) and sustainable management goals (preservation of biodiversity).

## **6.2 PRIORITY AXIS 2**

In the SO assessment, only one insignificant indirect negative effect has been pointed out. It is linked to the action “*Adoption by actors of identical or similar renewable energy solutions, in particular marine-related ones (e.g. related to off-shore wind, tidal energy, wave energy)*” under SO 2.1. The eventual realisation (or planning) of off-shore energy plants could affect migrant birds. This effect will take place only if a series of conditions happen simultaneously. The first is obviously the realisation of an off-shore wind plant and the plant is located in a sensitive ecological area. Conservatively, it is better to consider this possibility in advance by introducing the requirement of a pre-analysis on the location of the plants into the cross-border action plan for SO 2.1.

*Air quality* and consequently human health, are not directly addressed within the present CP. Nevertheless, introducing an appropriate reference e.g. within SO 2.1. (Mobility) could strongly improve the efficiency of the Programme regarding this issue by including air quality as a target to be achieved wherever possible.

## **6.3 PRIORITY AXIS 3**

Furthermore, the focus on *soil management* is could be better taken into account under climate change adaptation. Yet European Territorial Cooperation is an opportunity to develop a sustainable approach to soil and landscape management. This issue could be promoted in S.O.3.1 as an instrument for climate change adaptation. An action could be modified as the “*Establishment of integrated tools – for example related to sustainable land management – and technical solutions such as coastal defence lines or concepts, including managed realignment, and flood protection by maintenance and enhancement of marine ecosystems as natural protection and defence lines and through the introduction of sustainable tools in land management*”.

## **6.4 PRIORITY AXIS 4**

No particular mitigation measures proposed

## **7. FOLLOW-UP FOR THE IMPLEMENTATION PHASE**

The proposal for a monitoring system is an integral part of the SEA procedure (Annex 1 of the SEA directive). A description of monitoring measures has to be included in the environmental report (Art. 10) and monitoring measures also have to be available when the decision is publicised (Art.9).

Monitoring will track the significant environmental effects of implementation and identify adverse effects at an early stage.

This represents an opportunity. The implementation phase can be examined, analysed, and success measured, giving the opportunity to deal with uncertainties, take corrective measures and also update the Programme. Monitoring permits a comparison between assessed and actual environmental effects and allows a re-adjustment of the programme instruments.

Art. 10 of the SEA Directive says that monitoring can be split into the following main steps:

- Selection of an adequate set of indicators;
- Procedures and responsibilities (governance).

Proposed indicators related to the CP effects and the governance aspects (“who”, “how” and “when”) could be used to construct the monitoring system. To avoid overlaps or duplication of monitoring activities, indicators and monitoring arrangements will be integrated as far as possible into the Programme procedures of governance.

## 7.1 ENVIRONMENTAL INDICATORS

Three categories of indicator are used in an environmental monitoring system:

- Descriptive indicators;
- Performance indicators;
- Result indicators.

Descriptive indicators are collected in the context analysis section. They are used to describe the initial state and, through monitoring, they could show variations in the environment over 2014-2020. Information to quantify descriptive indicators can be obtained directly from national environmental agencies, or public and private organizations engaged in producing and communicating environmental information to the public.

Performance indicators measure the contribution of the CP to environmental objectives. They show how much the change in environmental component can be attributed to the CP.

Result and output environmental indicators complete the set of indicators included in the structure of the CP. They highlight implementation of the CP itself in its environmental dimension. They can contribute to understanding the CP's environmental performance.

Proposed environmental indicators of results, output and performance are listed in Table 15. Environmental result indicators are mainly derived from Programme result, common and specific output indicators and can be directly or indirectly addressed by the Programme monitoring system, while performance indicators will be defined and quantify under the *ongoing* evaluation of the CP.

**Table 15 – Example of results and performance indicators**

S.O.	Expected environmental effect	Environmental result and output indicator*	Source	Environmental performance indicator	Source
S.O. 1.1	Eco-efficiency*	Number of solutions (collaboration, arrangements, structures and policy tools) aimed at eco-efficiency	Programme monitoring system	Contribution of SO to reduce the use of primary resources	on going Evaluation
S.O.1.2	Eco-efficiency*	Number of product or service innovations developed by international cooperation aimed at eco-efficiency	Programme monitoring system	Contribution of SO to reduce the use of primary resources	
S.O.2.1	GHG reduction	% increase in the number of businesses, public institutions and households using low carbon technologies to reduce their carbon dependency	Programme monitoring system	Contribution of SO to reduce fossil energy dependency and CO2 emissions	
S.O.3.1	Adaptation to climate change	Number of governance tools adopted or developed for climate change adaptation actions	Programme monitoring system	Action for flood risk reduction activated	on going Evaluation
				Action for sea level rise protection	
S.O.4.1	Waste reduction and resource consumption	Number of solutions (collaboration, arrangements, structures and policy tools) implemented for a more resource-efficient economy	Programme monitoring system	Contribution of SO to a resource-efficient economy	on going Evaluation
		Number of improved and new processes adopted or developed to reduce resource consumption	Programme monitoring system	Contribution of SO to a reduction in resource consumption	on going Evaluation

\* Eco-efficiency implies a reduction in use of primary resource: these indicators accounts for effect on GHG emission, Energy consumption, waste and pollutant.

## 7.2 PROVISIONS FOR AN ENVIRONMENTAL MONITORING SYSTEM

The procedural aspects involve the collection and processing of data, its evaluation and interpretation and consideration of the consequences. It takes place at programme and project levels.

The main tasks in defining the monitoring system at Programme level are, first, to attribute responsibility to the different phases and, second, to design the framework for collection and reporting of indicators.

The following table proposes responsibility for each task. If a monitoring team is created (inside the Management Authority/JTS), it could be supported by National and Regional Environmental Authorities (for some tasks), the JTS, the Programme Managing Authority and have input from a future evaluation team.

**Table 16 - Monitoring tasks' responsibilities**

TASKS	RESPONSIBLE
Data collection	Monitoring team; JTS/MA/EA; Evaluators
Data processing	Monitoring team; JTS/MA/EA; Evaluators
Interpretation and Evaluation	Monitoring team; JTS/MA/EA; Evaluator
Conclusion (decision making)	Decision maker (MA, Monitoring Committee)

Even though Directive 2001/42/EC does not contain any specific stipulation on how to report on the monitoring process and its results, reporting is important at the following stages:

- When defining objectives
- When evaluating the first results;
- After programming.

The first two allow re-adjustment of the Programme while the third gives information about the overall performance and environmental impact of the Programme.

Environmental impact information lacking at the programme level, including some performance indicators, will be collected at a project level during the *on going* evaluation of the Programme

as foreseen in section 5.3.6 of the CP. This should only occur at a defined stage of implementation, with particular regard to the early phase of project preparation and to conclusion of the project. Monitoring environmental effects at project level should consider:

- Embedding information collection in the routine monitoring activities of the Programme to address only crucial information not available at any other level;
- Collecting information using predefined forms (see below Table 17) and guidelines provided to project partners for homogenous information collection and to enable indicator aggregation at Programme level;
- The project must obviously comply with environmental legislation and obligations derived from European and national normative frameworks; thus project team leaders should be required to draft their final report to illustrate how they took normative aspects and other sustainable goals into consideration.

**Table 17 - Template for the evaluation of environmental impact at project level**

Environmental issues	Description of environmental effects	Intensity of potential environmental effects		
		Strong	Medium	Low or not significant
Water				
Soil				
Biodiversity				
Air-quality				
....				

All information collected at different levels will be included and analysed in an environmental report, periodically drafted by the monitoring team and made available for decision making to the JTS and Managing Authorities. Such a report should be discussed in monitoring committees, especially during the Programme mid-term review and decisions made regarding re-programming or adjustment of the Strategy in order to reach a more satisfactory sustainable development of the area under the cooperation objective.

The environmental monitoring and evaluation system will be fine-tuned in the evaluation plan of the Operational Programme, in which details will be provided regarding: evaluation questions and environmental issues to be addressed, methodology to be used, target groups and stakeholders involved in the evaluation activities, products delivered and activities for dissemination of results.

## 8. CONCLUSION

### 8.1 ALTERNATIVES AND JUSTIFICATION OF THE PROGRAMME CHOICES

Directive 42/2001/CE in article 5(1) and article 9(1b) requires an analysis of the alternatives and a justification of choices made.

The risk of significant negative effects means alternatives must be considered within the Programme to give decision makers the opportunity to select options which eliminate or reduce environmental impacts and which improve the global environmental footprint of the programme.

Alternatives have been considered in two ways:

- A baseline scenario "zero-option" considers an absence of the Programme over the 2014-2020 period. In section 2, environmental trends are simulated without implementation and a picture of the environmental situation at the 2020 horizon drawn;
- Two CO<sub>2</sub> emission scenarios use the Compare model – a simulating tool - taking into consideration different actions to be implemented by the Programme.

Compared to the base scenario, the effects of the Programme are broadly positive (see section 5). The proposed Strategy clearly contributes to the improvement of environmental conditions in the cooperation area. Furthermore, all alternatives simulated under the Compare model demonstrate reduced CO<sub>2</sub> emissions over the entire programming period.

In conclusion, the current strategy proposed must be considered as a good alternative from an environmental point of view, compared to other Programme options discussed by PPG members during the preparation phase.

### 8.2 QUALITY OF INFORMATION AND RATIONALE FOR ANALYSIS

The underlying information in this report comes from official statistics and documents identified during the scoping consultation with the EAs. Data from European statistics institutions (European Environmental Agency and Eurostat) and available at Nuts 3 levels were often lacking. The analysis was also limited in many cases by the difference in quality, time

period covered and scale of information provided by the four different national statistical systems.

Nevertheless information at Nuts 3 level has been collected for the whole cooperation area when available. Information at Nuts 2 level has been used when data provided by different national systems and different levels within the same statistical system was missing.

Information with a cross-border format was considered first. Other national statistics were used, illustrating specific aspects or giving a clear picture on some issues. Because data from different statistical sources were aggregated, the indicators describing the cross-border environmental context must be considered as an approximation

## ANNEX 1. NATURA 2000 EFFECTS ASSESSMENT DOCUMENTATION

### Incidence analysis

According to Annex I(d) of the SEA Directive, the assessment should consider ‘any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Directives 79/409/EEC and 92/43/EEC’.

In the environmental report, there is a full description of the cooperation area’s environmental resources, highlighting interactions between the environment and the Programme.

According to national legislation of the Member States involved in the Programme, this section underlines the absence of significant effects the Programme could have on Natura 2000 sites and on habitats and species protected under the Birds Directive and the Habitats Directive, e.g. as stated under Art. R414-21 and R414-23 of the *Code de l’Environnement*.

### Synthetical description of the programme and of the cooperation area

The 2 Seas Programme is a cross border cooperation programme between France, the United Kingdom, Belgium (Flanders) and the Netherlands, co-financed by the European Regional Development Fund (ERDF). The Programme contributes to EU cohesion policy, which pursues harmonious development across the Union by strengthening economic, social and territorial cohesion, to promote a smart, sustainable and inclusive growth.

This Programme enables regional and local authorities, as well as other organisations from each partner country, to exchange knowledge and experiences, to develop and implement pilot actions, to test the feasibility of new policies or products and to support investment. To address these objectives, the Programme has been structured into 5 Priority Axes, 4 Thematic Objectives (TOs) and 6 Specific Objectives (SOs).

**Axis 1** is dedicated to technological and social innovation, **Axis 2** to the uptake of low carbon technologies, **Axis 3** to climate change adaptation in the cooperation area, while **Axis 4** promotes a more resource-efficient economy. Finally, **Axis 5** is devoted to technical assistance, supporting implementation of the Programme.

The cross border area has diverse marine, coastal and inland ecosystems. These provide a number of ecological services to local communities including fish resources, water quality and quantity, diverse plants and animals, and air quality. They also constitute a large source of environmental amenities for tourism. However, human impact on the environment is high and ecosystems remain under pressure. Cross-border environmental issues include water pollution and marine ecosystem health, climate change and natural risks management (i.e. coastal erosion, floods and extreme events), biodiversity loss, energy dependency, air pollution, soil erosion and a variety of threats to the landscape and to natural and cultural heritage.

Regarding the **cooperation area** the 2 Seas Programme extends on both sides of the Channel and on the North Sea and includes NUTS3 regions of four Member States (MS):

- Arrondissementen of Antwerpen, Turnhout, Brugge, Oostende, Veurne, Roeselare, Tielt, Eeklo, Gent, Sint-Niklaas, Mechelen, Turnhout, Diksmuide, Ieper, Kortrijk, Aalst, Dendermonde and Oudenaarde in Belgium/Flanders;
- French departments of Nord, Pas-de-Calais, Somme and Aisne;
- Coastal NUTS3 of Delft en Westland, Groot-Rijnmond, Zeeuwsch-Vlaanderen, Overig Zeeland, West-Nord-Brabant, Zuid-Oost Zuid-Holland, Leiden and Bollenstreek Agglomeration, Gravenhage Agglomeration, Haarlem Agglomeration, IJmond, Alkmaar and surrounding area and Kop van Noord-Holland in the Netherlands;
- Coastal NUTS3 areas of Norfolk, Suffolk, Southend-on-Sea, Thurrock, Essex CC, Brighton and Hove, East Sussex CC, West Sussex, Portsmouth, Southampton, Hampshire CC, Isle of Wight, Medway Towns, Kent CC, Bournemouth and Poole, Dorset CC, Cornwall and Isles of Scilly, Plymouth, Torbay, Devon CC, Surrey, Somerset, Wiltshire CC, Cambridgeshire CC and the unitary authorities of Swindon and Peterborough.

The 2 Seas Programme areas has highly diverse landscapes and ecosystems including marine and coastal ecosystems, wetlands, traditional agricultural lands and large areas dedicated to intensive agriculture and urban areas. The number of protected areas and Natura 2000 sites is comparable to other EU regions, but ecosystem fragmentation and endangered species represent a critical aspect.

Loss of species and the lower conservation status of priority species are critical aspects shared by all 2 Seas regions. Nevertheless, the increased number of protected areas, the Natura 2000 network and progress in policy making through EU Directives, national legislation, monitoring (indicators) and the definition of integrated strategies at local levels, have reduced this decline.

## Motivations for the absence of any significant effects

The 2 Seas Programme will promote cooperation for sustainable development so significant negative effects on environmental resources are not expected.

A more in depth assessment of the incidence is not possible at this stage, for the 2 Seas Programme covers a broad area and does not determine the localisation of its actions. However, the Programme still presents some interactions with Natura 2000 areas, and in particular, protected habitats.

**Table 18 - Programme interactions with habitats possibly involved in Natura 2000 networks**

Habitat aggregation	Vulnerability/Threats	Programme interactions
COASTAL AND HALOPHYTIC HABITATS	Tourism, yachting, water pollution, water harvesting	SO3.1, SO4.1
COASTAL SAND DUNES AND INLAND DUNES	Tourism, beach replenishment	SO3.1
FRESHWATER HABITATS	Water harvesting, nitrate pollution, intervention on riverbeds, dams	SO4.1
TEMPERATE HEATH AND SCRUB	Only edaphic- climatic factors.	SO3.1
SCLEROPHYLLOUS SCRUB (MATORRAL)	Lacking of appropriate management	No interaction
NATURAL AND SEMI-NATURAL GRASSLAND FORMATIONS	Lacking of traditional use, alien species	No interaction
RAISED BOGS AND MIRES AND FENS	Water harvesting, nitrate pollution, climate change	SO3.1
ROCKY HABITATS AND CAVES	Low vulnerability. Possible threats from tourism in caves	No interaction
FORESTS	Different threats for the different forest habitat, mainly tourism, water harvesting, new roads construction	No interaction

Interactions with SO3.1 are all positive: the SO is devoted to climate change adaptation addressing biodiversity loss and climate change in an integrated manner. Possible positive interactions are expected for habitats the most vulnerable to climate change. In addition, interventions against coastal erosion could contribute to prevent the destruction of coastal

habitats.

SO4.1 aims at achieving green growth through a resource-efficient economy. This could imply a reduction in water harvesting with positive effect on some habitat typologies. In addition, actions for a sustainable use of marine resources can have positive effects on coastal and halophytic habitats.

Tourism and its resulting pressures are one of the main threats for habitats. However, the 2 Seas Programme does not entail any actions aiming at developing tourism in the cooperation area.

The comparison of the 2 Seas CP objectives with threats and vulnerability potentially affecting the protected habitats the Programme aggregates allow to conclude that likely significant effects on the Natura 2000 network can be excluded. Instead, positive interactions between Specific Objective and habitats are expected.

According to the general Commission guidance document on the management of Natura 2000 sites<sup>37</sup>, Programme incidences are analysed in terms of two main topics: deterioration of habitat and disturbance of species. For each of them, appropriate factors have been taken in to account.

**Table 19 - Analysis of the Programme foreseen incidences**

Topics	Factors	Assessment result
Deterioration of habitats	Natural range and area covered by the habitat	No reduction of habitats is expected
	Specific structure and functions of the area necessary for its long-term maintenance	No interference with habitats structure or function is expected
	Conservation status of its typical species	No interference with the conservation status of species is expected
Disturbance of species	Population dynamics	No event which could contribute to the long-term decline of species populations is expected
	Natural range of the species	No interference with the natural range of species is expected

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<sup>37</sup> European Commission (2000) “*Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC*”, 69 pp

	Availability of habitat for the species	No reduction of habitats is expected
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## Conclusion

Without precision on actions and project locations, it is difficult to accurately estimate the Programme effects on the Natura 2000 network.

Therefore, in order to secure the objective of biodiversity preservation in 2000 Natura sites, it is suggested to introduce eco-conditionality criteria in the project selection. To go through the selection process, projects should demonstrate they have no significant effects on any Natura 2000 site, e.g. through filling in a streamlined form on this issue.

Under these conditions, the 2 Seas Programme 2014-2020 will not bring damage to habitats and species of Community interest for which conservation objectives have been set up and Natura 2000 sites created.

## ANNEX 2. CONSIDERATION OF COMMENTS FROM THE CONSULTATION PROCESS

### Consideration of EAs' opinions concerning the Environmental report

Comments / recommendation	Section concerned	Amendments
Add a specific chapter assessing the Programme's effects on Natura 2000 sites (as stated under Art. R414-21 and R414-23 of the <i>Code de l'Environnement</i> )	Appendix 1	Natura 2000 effects' assessment documentation, in appendix to the Environmental Report
Present the Environmental Report in a way that the different entities required by article R 122-20 of the <i>Code de l'Environnement</i> can be formally identified	Introduction	« <i>Tableau 1 – Exhaustivité du présent Rapport environnemental par rapport à l'article R 122-20 du Code de l'Environnement</i> » added at the end of the introduction (French version only).
In the context analysis, quote Directive 2012/33/EU on the sulphur content of marine fuels	Section 2.4	Information added
Revise age and heterogeneity of the data, in particular those on GHG (p.25) and those on air quality, in the light of recent events, standardise measurement units, especially for tonnes of CO <sub>2</sub> equivalent	Section 2.1	Concerning GHG, no more recent data are available at NUTS 2 level on Eurostat/EEA, Data on air quality have been revised, CO <sub>2</sub> measurement units have been standardized and a paragraph added with data at Member State level.
Concerning health and exposure to pollutants, conclusion on improvements regarding the exposure to particulate matter (...) is to balance	Section 2.9	Reviewed and clarified
Performance indicators are still to be defined	Section 7	Information added
In the non-technical summary, recall by a map the study area, the methodology applied and the limitations of the study	Non-technical summary	Information added

## Consideration of EAs' opinions concerning the Cooperation Programme

Comments / recommendation	Proposed integration / Amendments	CP section concerned
Define more precisely what kind of actions are « adoption » and « development »	Clarification in the Final CP version	A new definition of the terms has been added in the Glossary
Make direct funding beneficiaries clearer, beyond the notions of « sectors » and « target groups »	Clarification in the final CP version	CP Sections 2.A.6.1 Main target groups and types of beneficiaries' have been listed referring to Article 2(10) of Regulation (EU) No 1303/2013.
Integrate mitigation measures proposed in the environmental report	When deemed relevant, mitigation actions proposed by the SEA experts have been integrated into the CP	CP Section 2.1 <u>Axe 1:</u> The re-orientation of an action in S.O.1.3 was not deemed relevant. Keep in mind that Axis 1 is devoted only to key societal challenges and not intend to focus on environmental target. <u>Axe 2:</u> Section 2.A.6.2 'Guiding principles for the selection of operations' mention the contribution to horizontal principles defined at EU level (see Section 8) among the key principles that also inform project selection decisions. "also in terms of air pollution" was added to the 'Results that the Member States seek to achieve with Union support' to improve the efficiency of the Programme regarding the issue of air quality <u>Axe 3:</u> "Establishment of integrated tools and technical solutions such as soil management" was added to the 'Examples of actions to be supported'
Define indicators for monitoring the programme effects on the environment	Reference to the SEA report added by the CP drafters regarding an environmental monitoring system of the Programme	CP Sections 2.A.6.5 Output indicators (by investment priority) CP Section 5.3.6. Evaluation "and in coherence also with what is proposed in the SEA report" (CP, p.77)
Present the results of the previous 2007-2013 Programme	Information added by the CP drafters	CP Section 1.1. 'Key lessons from INTERREG IVA 2 Seas'

## Consideration of comments from the public concerning the Environmental report

Comments / recommendation	Section concerned	Proposed integration / Amendments
<p>Remarks regarding the State of the environment:</p> <ul style="list-style-type: none"> <li>• <b>Biodiversity</b> Linking of Natura 2000 sites, creating wildlife corridors and helping species crossing borders - is important for biosecurity, protecting species and for sustaining habitats.</li> <li>• <b>Natural and cultural heritage</b> Protection and promotion of green infrastructure is increasingly important as developments and the need for more housing are increasing around population areas. We need to learn from each other, develop best practice and work together.</li> </ul>	<p>Section 2.6</p> <p>Section 2.6</p>	<p>Topics are already addressed but have been further elaborated</p> <p>Topics are already addressed but have been further elaborated</p>
<p>Other potential effects produced by the Programme on the environment should be included:</p> <ul style="list-style-type: none"> <li>• <b>Biodiversity</b> Communicating the impact of habitat fragmentation is increasingly important to all actors, including landowners, communities and visitors.</li> <li>• <b>Natural and Technological risks</b> Coordination between local actors important in planning mitigation against risks - partnerships of local authorities, stakeholders and communities need to be brought together and form local "hubs" for addressing risks.</li> </ul>	<p>Section 5.3</p>	<p>Topics are already addressed but have been further elaborated</p> <p>Reconsideration and more precise explanation/ concrete statements</p>
<p>Other possible mitigation measures to remove, reduce or offset the negative effects should be identified:</p> <ul style="list-style-type: none"> <li>• (Axis 2) Demonstrate health benefits of low carbon transport initiatives including walking and cycling</li> <li>• (Axis 3) Plan for resilience - eg advice on planting trees which are more resistant to new diseases</li> <li>• (Axis 4) Ensure sustainability - eg reduction of the carbon footprint - local tourism</li> </ul>	<p>Section 6.2</p> <p>Section 6.3</p> <p>Section 6.4</p>	<p>Not relevant in the framework of the analysis</p>
<p>Would be useful to have some assessment of how the Interreg Programme fits with other EU programmes - what its key strengths are.</p>	<p>Section 4</p>	<p>Topic is already addressed in Section4</p>

## Consideration of comments from the public concerning the Cooperation Programme

Comments / recommendation	CP section concerned	Proposed integration / Amendments
<p>[Measures proposed by the Programme (under Axis 1, 2 and 3) are not sufficient to address environmental issues in a cross-border context] Would like to see</p> <ol style="list-style-type: none"> <li>1. opportunity to develop communication and citizen science themes or projects;</li> <li>2. application of new technologies such as satellite technology; reducing carbon footprint - eco-tourism;</li> <li>3. projects protecting natural and cultural heritage</li> </ol>	<ol style="list-style-type: none"> <li>1. Section 2.A.6.1 CP Priority 1</li> <li>2. Section 2.A.6.1 CP Priority 1 and priority 4 in relation to tourism</li> <li>3. Section 2.A.6.1 CP Priority 3</li> </ol>	<ol style="list-style-type: none"> <li>1. Issue included in Priority 1, through actions implemented in Specific Objective 1.3 and related to social innovation.</li> <li>2. Issue included in Priority 1, through actions implemented in Specific Objective 1.2, such as the action : <i>“Development of technological and applied research, in particular based on the application and use of Key Enabling Technologies”</i></li> <li>3. Issue already included in Priority 3 and related actions</li> </ol>

## **ANNEX 3. NON-TECNICAL SUMMARY**

Document put as a side piece