RegioPlus Consulting

REPORT ON THE RELEVANCE OF THE STRATEGIC ENVIRONMENTAL ASSESSMENT

ATLANTIC AREA
Transnational Programme

European Union
European Regional Development Fund

Strategic Environmental Assessment of the Transnational Cooperation Programme of the Atlantic Area for the programming period 2014-2020

September 2014

Index

1. NON-TECHNICAL SUMMARY

Regulation (EU) No. 1303/2013 of the European Parliament and the Council laying down common provisions on the ERDF, ESF, Cohesion Fund, EAFRD and EMFF for 2014-2020 establishes *in Article 55.4* that the Ex -ante Evaluation shall include, where applicable, the requirements for the elaboration of the Strategic Environmental Assessment.

The requirements set out in *Directive 2001/42/EEC* of the European Parliament and of the Council on the assessment of the effects of certain plans and programmes on the environment (SEA Directive), focus on the obligation by the Member States of assessing the effects of certain plans and programmes on the environment. Thus, the Environmental Assessment is configured as a key prevention tool for the planning and programming processes to incorporate the environmental horizontal principle.

However, Annex I of the "*Guidance Document on the Ex- ante Evaluation, Monitoring and Evaluation of the European Cohesion Policy*" provides that, for the programmes not covered by *Article 3 (2) of Directive 2001/42/EE*, the environmental authorities of the Member States must ascertain the possible existence of significant environmental effects. In principle, most of the programmes financed by the ERDF and the Cohesion Fund will require the Strategic Environmental Assessment. On the other hand, it is likely that, in principle, the Strategic Environmental Assessment is not required for programmes co-financed by the ESF or European Territorial Cooperation Programmes.

The Transnational Cooperation Operational Programme – Atlantic Area 2014-2020

The Transnational Cooperation Programme of the Atlantic Area 2014-2020 responds to the scope and content of the programmes referred to in *Article 8 of Regulation (EU) No 1299/2013 laying down specific provisions on the support of the European Fund for Regional Development on the European Territorial Cooperation objective.*

In this context, there has been selected a total of four Thematic Objectives and four Investment Priorities, which were organized into four Priority Axes, which provides the Programme structure a high level of simplification and transparency.

The planned actions are characterized as intangible, pro-active and with a strategic dimension, not being noticeable possible cases to be subject to Ordinary Environmental Impact Assessment, an aspect that can be reinforced through the completion of requirements that are specific to the different calls.

These actions respond to the OP environmental objectives standing out, for its horizontal nature, the Specific Objectives linked to Axes 2, 3 and 4 and Thematic Objectives 4, 5 and 6 and, with a more indirect nature, those relating to the Axel 1 and the Thematic Objective 1. Such Specific Objectives have full consistency with the EU environmental strategy and cover almost all of the most important environmental areas. However, the contribution of

the OP to the achievement of this strategy is limited by the financial dimension of the planned actions.

Characterization of the environmental starting point

The territory covered by the Cooperation Programme comprises the eligible regions from five European Union's countries with Atlantic coast: Spain, France, Ireland, Portugal, and the United Kingdom. It presents predominantly agricultural characteristics, with a few highly urbanized areas (United Kingdom), and numerous natural and semi-natural habitats scattered isolated and fragmented.

The Atlantic Area highlights the predominance of protected areas in the Iberian Peninsula and the United Kingdom. As regards marine sites areas under the Natura 2000 protection, those on the West coast of France and the United Kingdom stand out.

This transnational cooperation area is utterly bathed by the Atlantic Ocean. The Atlantic marine waters´ quality is, on average, one of the best in Europe, though with serious local problems, especially in estuaries and areas with high industrial concentration. In general, the coast state in the Atlantic Area is good, with some exceptions in the cases of Portugal and France.

Although water quality in the Atlantic Area is better than in other parts of Europe, one must consider that it is a place of river basin drain, which carries significant carry-over contaminant flows. Mainly, the surface water quality is affected by the presence of nitrogen and phosphorus.

The integrated management of all water resources turns out essential and a priority for the Transnational Atlantic Area. The increase in population, industrialization, the intensification of agriculture, power generation and transportation, pipeline and construction of dams, and the growth of recreational use have increased significantly the pressures on European inland waters. In addition, there are other problems such as droughts and floods.

The trend toward climate instability is exacerbating the risks of natural disasters, both in coastal areas and in the innermost areas. It stands out for the higher incidence, the risk of flooding in the United kingdom and Northwest of France; fire in south-western France and the Iberian Peninsula; earthquakes in southern Spain, the Pyrenees and Portugal; or drought in southern France, Spain and Portugal.

Climate change as regards both the effects prevention and mitigation is a general priority of the Atlantic Area. The biggest potential negative impact occurs in the Iberian Peninsula (Algarve, Alentejo, Centro and Norte of Portugal, Galicia, Asturias, Cantabria, Cáceres, Burgos and La Rioja in Spain). However, in the regions of France, the United Kingdom and Ireland the negative impacts are "low" or "moderate".

Coastal areas and the coast of the European Atlantic Area are potentially vulnerable areas to rising sea levels caused by climate change, related flooding and erosion. Thus, on the Atlantic coast the sea level rise would affect the coastline.

Waste production and treatment show major differences by Member State. The *per capita* waste generation (excluding large mineral) appears especially significant in Ireland, Portugal and the United Kingdom, clearly falling below the European average both in France and in Spain. In turn, the tendency of the data related to waste treatment in the past decade points to an appreciable improvement in terms of sustainability.

Anticipated effects of the OP and corrective measures

The effects on the environment and the environmental objectives of the European Union by the OP are limited by the type of actions implemented, the thematic and territorial specificity and financial dimension.

In any case, it is not expected those actions to be negative and their impact will always come up indirect and marginal, but they are much more relevant in those actions focusing on environmental aspects for the central theme.

The general conclusion draws a meagre relevance of the expected effects and the consideration of potential determinants relegated to two specific areas amongst the criteria to determine the significance of the likely significance of the effects on the environment set out in *Annex II of Directive 2001/42/EEC:*

- The fact that the Programme fixes a framework for the approval of projects. In this respect, however, the projects will be approved in calls, which will determine the conditions of access, in addition to the particular type of projects that, by their nature, are only marginally subject to an *Environmental Impact Assessment*.
- Potential effects on areas and landscapes with recognized protection extent.

More specifically, in Axis 1, the particular characteristics to the planned actions type, the presence of public research and innovation institutions (which has been constant throughout history and is expected to remain for the next programming period) and the high level of control and environmental management in public and in private innovation centres allow to assess as “reduced” the direct environmental risk.

In turn, Axis 2 presents mostly positive effects, standing out the reduction of fossil fuel consumption, which is generator of greenhouse gases emission (GHG), and therefore responsible for climate change.

The Specific Objective of Axis 3 has a positive impact on a wide range of environmental issues, though in marginal and timely manner, with a localized impact on the territory and no cumulative effects.

The expected effects of Axis 4 actions will have a particular impact on the natural and cultural heritage, although the impact will be of a particular nature (associated with specific actions), as well as indirect and small sized (proportional in all cases to the financial dimension of the co-financed actions).

Consequently, and in accordance with the provisions of *Article 3 of Directive 2001/42/EC*, it cannot be concluded that the Transnational Cooperation Programme of the Atlantic Area 2014-2020 has significant negative effects on the environment.

To the extent that the OP is not expected to generate significant environmental impacts or that strongly influence the surrounding environment, it is not considered significant to raise preventive measures. However, in order to promote the achievement of the potential positive effects and eliminate the potential negative effects that a project could generate in a timely manner, it is recommended to incorporate elements of environmental integration to select the operations for each call.

Planned measures for the Programme's environmental monitoring

The established environmental monitoring system has been integrated within the overall monitoring process of the OP, based on two fundamental references and simplifying the reporting requirements:

- Quantification and monitoring of selected indicators of productivity common for the Objective of European Territorial Cooperation given by the *Annex of the Regulation (EU) N º 1299/2013* and selected under the OP, that have been considered relevant by the Ex Ante evaluation;

- Giving attention to actions headed to promote sustainable development by the Monitoring Committee.

2. INTRODUCTION

The Strategic Environmental Assessment is carried out under the direction of the Managing Authority of the Programme (Norte Regional Coordination and Development Commission - CCDR-N), based on the European regulatory framework (*Directive 2001/42/EC*) and its transposition at the national level in the Member States participating in the Operational Programme of the Atlantic Area (OP-AA): United Kingdom, France, Ireland, Portugal and Spain.

2.1. REGULATORY REQUIREMENTS

Regulation (EU) No. 1303/2013 of the European Parliament and the Council laying down common provisions on the ERDF, ESF, Cohesion Fund , EAFRD and EMFF for the period 2014-2020 determines in Article 55.4 that the Ex -ante evaluation shall include, where applicable, the requirements for the elaboration of the Strategic Environmental Assessment.

These requirements set out in *Directive 2001/42/EEC* of the European Parliament and of the Council on the assessment of the effects of certain plans and programmes on the environment (SEA Directive), focus on the obligation of Members States to assess the effects of certain plans and programmes on the environment. Thus, this **Environmental Assessment** configures a key prevention tool for the planning and programming processes to incorporate the environmental horizontal principle.

The purpose of the SEA Directive is "*to provide a high level of environmental protection and contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development*".

Under such Directive and taking into account the specificities that its transposition to the national legislative areas of the United Kingdom, France, Ireland, Portugal and Spain has taken, the corresponding process was adopted to submit for the consideration of environmental authorities the need to carry out a *Strategic Environmental Assessment of the Transnational Cooperation Programme of the Atlantic Area for 2014-2020.*

The following evaluation process complies with the regulations of each country integrated in the cooperation area:

- Spain: *Law 21/2013* of Environmental Assessment, which unifies the community right around environmental assessment procedures laid down in *Directive 2001/42/EC* on the assessment of the effects of certain plans and programmes on the environment.

- France: *L'Ordonnance nº 2004-489 du 3 juin 2004 portant transposition de la Directive 2001/42/ CE du Parlement Européen et du Conseil du 27 juin 2001 relative à l'évaluation des incidences de certains plans et programmes sur l'environnement*.

- Portugal: *Decree - Law No. 232/2007*, of June 15, as amended by *Decree- Law No 58/2011 of May 4*, transposing *Directive 2001/42/EC*.

- United Kingdom: There is specific legislation for each one of the countries comprising it:

  - The Environmental Assessment of Plans and Programmes Regulations 2004 (Statutory Instrument 2004 No. 1633);

  - The Environmental Assessment of Plans and Programmes (Northern Ireland) Regulations 2004 (Statutory Rule 2004 No. 280);

  - The Environmental Assessment of Plans and Programmes (Scotland) Regulations 2004 (Scottish Statutory Instrument No. 258);

  - The Environmental Assessment of Plans and Programmes (Wales) Regulations 2004 (Welsh Statutory Instrument No. 1656 (W 170).

  The first of the above regulations apply to any plan or programme of England and each of the territories that make up the United Kingdom, excluding Northern Ireland, Scotland and Wales.

  On the other hand, "*The Environmental Assessment (Scotland) Act 2005* comes into force in February 20, 2006, repealing the previous one from 2004.

- Ireland: "National Regulations, S.I. No. 435 of 2004 (European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004" and "S.I. No. 436 of 2004 (Planning and Development (Strategic Environmental Assessment) Regulations 2004" amended by "S.I. No. 200 of 2011 (European Communities (Environmental Assessment of Certain Plans and Programmes) (Amendment) Regulations 2011)" and "S.I. No. 201 of 2011 (Planning and Development (Strategic Environmental Assessment) (Amendment) Regulations 2011)" respectively.

2.2. Procedure Established for the Evaluation on the Relevance of the Strategic Environmental Assessment

The procedure established starts from the consultation by the Managing Authority to the Public Administrations that in each country will perform the processes technical analysis and, if necessary, that will proceed to the formulation of strategic policy statements to

determine the possibility of initiating an assessment process on the appropriateness of conducting a Strategic Environmental Evaluation.

The process is structured in two phases:

- **PHASE 1**: Preparation and delivery of the *Preliminary Report* to the Environmental Authorities of each Member State

  For this purpose, the Working Group of the OP-AA 2014-2020 agreed to start an analysis on the Operational Programme from the perspective of its potential environmental impact, counting on the support of the consultant company hired to prepare the Ex - ante evaluation and Strategic Environmental Assessment of the OP (*Regio Plus Consulting*).

  This report is the result of this process and aims to respond to the regulatory requirements of *Directive 2001/42/EEC* and the particularities of their transposition into national legislation, providing the information necessary for the adoption of a resolution by the corresponding Environmental Authority in relation to the need of approaching a Strategic Environmental Assessment of the OP-AA 2014-2020.

- **PHASE 2**: Adoption of a resolution by the Environmental Authorities

  The Environmental Authorities had studied the preliminary environmental document to determine if the OP can have significant effects on the environment, according to the criteria set out in *Annex II of Directive 2001/42/EEC*.

  - The Environmental Authority, in the case of Spain, will submit this document to a first public consultation with the affected Public Administrations and stakeholders, to whom response will be given within 45 days.

  - In the case of the United Kingdom, in the area of the Programmes from other Member States, which definition and development involve the United Kingdom, the competent Authority will request information about the potential environmental effects of implementing the plan and the measures envisaged to reduce or eliminate such effects. The present report responds to those requirements, collecting the requirements established by the SEA Directive.

    This second phase will proceed by informing the Public Authorities concerned and the public affected and/or interested, and granting the time that the Managing Authority and the competent Authority consensually consider appropriate for conducting relevant inputs (taking into consideration that the public consultation must end no later than 28 days before the end of that deadline).

- In the case of Ireland, for the purpose of consulting environmental authorities, a notice must be issued to those authorities (as appropriate) giving them an opportunity to comment on whether or not they consider that significant effects on the environment would be likely to arise. It will be noted from the terms of article 13A (4) of the Planning and Development Regulations 2001 (as inserted by article 7 of S.I. No. 436 of 2004) that whenever consultation with environmental authorities is necessary, the Environmental Protection Agency (EPA) must be consulted in all cases. The minimum period for response by the environmental authorities is specified in S.I. No. 436 of 2004.

- Finally, in the cases of France and Portugal, it is not expected any consultation in this phase.

In the course of concluding that the Programme has significant effects on the environment, in a period of twenty days in Portugal, two months in the case of France, or three months in the case of Spain, the environmental bodies will develop the "Scope Document", which determines the content, level of detail, environmental criteria, indicators of environmental objectives and scope of the consultations that shall integrate the so-called "Pre-Rapport" in France, "Estudio Ambiental Estratégico" in Spain, or "Relatório Ambiental" in Portugal.

If the environmental authority of a country considers that the OP has no significant effect on the environment of that country, it will produce a resolution, which will finalize the Strategic Environmental Assessment process in that country, not being necessary to go to the last phase.

2.3. Content of the Report

This **Report on the Relevance of the Strategic Environmental Assessment** includes, in response to the normative requirements laid down in *Directive 2001/42/EEC* and related transpositions to national legal areas, the following aspects:

- The planning objectives.
- The scope and content of the proposed plan and its reasonable alternatives, technically and environmentally feasible.
- The expected development of the Programme.
- A characterization of the environment state before the development of the Programme in the affected territory.
- The expected environmental impacts and, where appropriate, their quantification.
- The anticipated impacts on concurrent sectoral and territorial plans.

- The motivation for the implementation of the strategic environmental assessment process.
- A summary of the reasons for selecting the alternatives dealt.
- The measures envisaged to prevent, reduce, and as far as possible, to correct any significant negative effect on the environment regarding the Programme implementation, taking into account climate change.
- A description of the measures envisaged for the Programme environmental monitoring.

3. THE PLANNING OBJECTIVES

Europe 2020 is the EU´s growth strategy for the current decade, which aims to come out stronger from the economic and financial crisis affecting the continent. It proposes three mutually reinforcing objectives:

- *Smart growth*: development of an economy based on knowledge and innovation;
- *Sustainable growth*: promotion of a greener and more competitive economy making a more efficient use of resources;
- *Inclusive growth*: fostering an economy with high employment level presenting social and territorial cohesion.

These objectives represent the direction that should be taken by the various Programmes co-financed by the Funds of the Common Strategic Framework (CSF), including the European Regional Development Fund (ERDF) under the Territorial Cooperation objective.

Thus, the OP -AA must jointly face the Cooperation Area problems by facing the main weaknesses and defining a formula of intervention that enhances the consolidation of a model of smart, sustainable and inclusive growth through an approach based on territorial cooperation.

The CSF sets 11 Thematic Objectives (Table 1), which guide the programming process with the intention that Member States and regions to determine their investment priorities.

At least 80% of the ERDF contribution will focus on up to four of these Thematic Objectives, according to *Article 6 of Regulation (EU) No 1299/2013* laying down specific provisions establishing the ERDF support to the objective of European Territorial Cooperation.

TABLE 1. ERDF INVESTMENT PRIORITIES BY THEMATIC OBJECTIVES

THEMATIC OBJECTIVES	INVESTMENT PRIORITIES
Boosting research, technological development and innovation.	The improvement of research infrastructures and innovation (R&I) and the ability to develop excellence in R+i matters, and the promotion of competence centres, especially those of European interest.
	Encouraging business investment in R&I, developing linkages and synergies between companies, research and development centres and the higher education sector, by encouraging investment in the development of products and services, technology transfer, social innovation, eco-innovation, public service applications, stimulating demand, networking, clustering and open innovation through smart specialization, and by supporting technological and applied research, pilot actions, early product validation, advanced manufacturing capabilities and first production, particularly in key enabling technologies and diffusion of general purpose technologies .
Improving the use and quality of information and communication technologies and related access.	The expansion of broadband deployment and diffusion of high-speed networking and support the adoption of emerging technologies and networking for the digital economy.
	The development of ICT products and services, e-commerce, and greater demand for such technologies.
	Strengthening the applications of information technology and communication for e-government, e-learning, e-inclusion, e-culture and e-health.
Improving SMEs competitiveness.	The promotion of entrepreneurship, in particular by facilitating the economic exploitation of new ideas and fostering the creation of new businesses, including business incubators.
	The development and implementation of new business models for SMEs, in particular for their internationalization.
	Support for the creation and expansion of advanced capabilities for product and service development.
	Supporting the capacity of SMEs to grow into regional, national and international markets, and to engage in innovation processes.
Encouraging the transition to a low carbon economy in all sectors.	Promoting the production and distribution of energy from renewable sources.
	The promotion of energy efficiency and renewable energy use by companies.
	The support to energy efficiency, smart energy management and renewable energy use in public infrastructure, including public buildings, and homes.
	The development and implementation of smart distribution systems that operate in networks with low and medium voltage.
	The promotion of carbon reduction strategies for all types of territory, especially in urban areas, including the promotion of sustainable urban multimodal mobility and adaptation measures with mitigation effect.
	The promotion of research and innovation in technologies with low carbon emissions and the adoption thereof.
	Promoting the use of combined heat and high efficiency energy, based on useful heat demand.
Adaptation to climate change and risk management and prevention	The investment support for adaptation to climate change, including ecosystem-based approaches.
	Promoting investment to address specific risks, ensuring resilience to natural disasters and developing disaster management systems.

THEMATIC OBJECTIVES	INVESTMENT PRIORITIES
Preserving and protecting the environment and promoting resource efficiency	The investment in the waste sector to meet the requirements of the EU acquis in the field of environment and to respond to the needs, identified by the Member States, of an investment that goes beyond those requirements.
	Investment in the water sector to meet the requirements of the EU acquis in the field of environment and to respond to the needs, identified by the Member States, of an investment that goes beyond those requirements.
	Conservation, protection, promotion and development of natural and cultural heritage.
	The protection and restoration of biodiversity and soil and promoting ecosystem services
	Actions to improve the urban environment, revitalize cities, rehabilitate and decontaminate industrial sites (including conversion area), reduce air pollution and promote measures to reduce noise.
	Promoting innovative technologies to improve environmental protection and resource efficiency in the waste sector and the water sector, regarding the ground or reduction of air pollution.
	Supporting industrial transition to an efficient economy in the use of resources, promoting green growth, eco-innovation and environmental impact management in the public and private sectors.
Promoting sustainable transport and removing bottlenecks in key network infrastructures.	Support for a single European multimodal transport investing in the TEN- T.
	Improving regional mobility by connecting secondary and tertiary, TEN -T infrastructure nodes, including multi-modal nodes.
	The development and improvement of the transport systems respecting the environment and with low- carbon emissions, in order to promote sustainable regional and local mobility.
	The design and rehabilitation of a comprehensive railway network, high-quality and interoperable, and promoting measures to reduce noise.
	Improving energy efficiency and security of supply by creating intelligent systems of distribution, storage and transmission of energy and by integrating distributed generation from renewable sources.
Promoting sustainability and quality in employment and supporting labour mobility.	Supporting the development of business incubators and investment aid in favour of self-employment, micro-enterprises and job creation.
	Supporting the employment -generating growth through the development of endogenous potential as part of a territorial strategy for specific areas, including the conversion of declining industrial regions and improving accessibility to specific natural and cultural resources and related development.
	Providing support to local development initiatives and aid for structures that provide neighbourhood services to create jobs.
	Investment in infrastructure for employment services.
Promoting social inclusion and combating poverty and all forms of discrimination	Investment in social and health infrastructures that contribute to national, regional and local development and reduce health inequalities and promote social inclusion through improved access to social, cultural and recreational services and the transition from institutional services to local services.
	Supporting the physical, economic and social regeneration of disadvantaged urban communities and rural areas.
	Providing support to social enterprises.
	Continued investment in the context of local community development strategies.
Invest in education, training and vocational training for skills acquisition and lifelong learning.	
Improve institutional capacity of public authorities and stakeholders and efficiency of public administration.	

4. OP SCOPE AND CONTENT AND POSSIBLE ALTERNATIVES

4.1. TERRITORIAL AND TIME HORIZON OF THE PROGRAMME

The **territorial scope** of the OP-AA 2014-2020 covers the following territories:

Country	ELIGIBLE REGIONS		TERRITORIAL SCOPE
Spain	ES11	Galicia	
	ES12	Principado de Asturias	
	ES13	Cantabria	
	ES21	País Vasco	
	ES22	Comunidad Foral de Navarra	
	ES61	Andalucía: ES612 Cádiz ES615 Huelva ES618 Sevilla	
	ES70	Islas Canarias	
France	FR23	Haute-Normandie	
	FR25	Basse-Normandie	
	FR51	Pays de la Loire	
	FR52	Bretagne	
	FR53	Poitou-Charentes	
	FR61	Aquitaine	
Ireland	IE01	Border, Midland y Western	
	IE02	Southern and Eastern	
Portugal	PT11	Norte	
	PT15	Algarve	
	PT16	Centro	
	PT17	Lisboa	
	PT18	Alentejo	
	PT20	Açores	
	PT30	Madeira	
United Kingdom	UKD1	Cumbria	
	UKD2	Cheshire	
	UKD3	Greater Manchester	
	UKD4	Lancashire	
	UKD5	Merseyside	
	UKK1	Gloucestershire, Wiltshire y North Somerset	
	UKK2	Dorset y Somerset	
	UKK3	Cornwall e Isles of Scilly	
	UKK4	Devon	
	UKL1	West Wales y The Valleys	
	UKL2	East Wales	
	UKM3	South Western Scotland	
	UKM4	Highlands y Islands	
	UKN0	Northern Ireland	

The **socio-economic characteristics of the area** are detailed in the territorial context and *SWOT* analysis made in the programming phase, which are attached to this document. The main results are summarized as follows:

- *Territory and accessibility:*
  - The cooperation area of the Atlantic Area covers a heterogeneous part of Europe, with a major north- south division in terms of demographics and accessibility.
  - It has a significant maritime dimension.
  - It is characterized as a rural and semi-rural territory.
  - The accessibility is a problem in great part of the cooperation area, which is considered a central element in the development opportunities for the Atlantic Area.
  - The geographical distribution of the population is characterized by significant disparity, combining strong dynamic areas with areas with population loss (particularly rural areas).
- *Employment*:
  - The employment rate is below the objectives of the Europe 2020 Strategy in all regions of the Atlantic Area.
  - The long-term unemployment, in turn, has a different impact, clearly influenced by the national level. Thus, peripheral areas are particularly affected, especially the Northeast and southern Spain.
  - Significant North-South gap in the levels of education, with some concerning figures in some parts of Portugal and Spain.
- Economic development and competitiveness:
  - There is a decline in the economic situation of the area, due to the current economic crisis affecting particularly the southern regions, which can lead to an increased North-South gap.
  - There is a clear concentration of economic dynamism mainly in urban areas.
  - Regional competitiveness is below the whole of western Europe. However, the reality differs significantly between the regions of the Atlantic Area. While the Atlantic regions of Spain and Portugal show very low levels, France and Ireland register the intermediate level, with the regions of the United Kingdom to have a better performance.

- The level of expenditure in R&D is at or below the average of the European values. The effort by the majority of the Atlantic regions is estimated between 1% and 2% of their GDP, far from the target of the Europe 2020 Strategy, set at 3%. Additionally, it is detected a step backwards, in recent years, as a result of the crisis.

  There is a clear disparity between supply and demand for market research, due to the lack of cooperation between the public and the private sector.

- In turn, innovation levels are relatively low, especially in those traditional economic sectors that offer the greatest potential for growth and job creation in the Atlantic Area.

- *Environment, natural resources and energy efficiency:*

  - The Atlantic Area has a well- preserved natural heritage, in spite of the low percentage of territory under the Natura 2000 Network.

  - It presents high exposure to climate change, due to the large coastal area of the Atlantic region and a reduced capacity of adaptation.

  - There are a number of additional factors that contribute to the increased exposure of Atlantic territories to climate change impacts, such as pollution from industrial activities, transportation, as well as production and consumption patterns.

  - For its territorial and climatic characteristics, the Atlantic Area has significant advantages as regards renewable energy. However, this potential has not been fully exploited. In addition, a limited efficiency in the use of natural resources is observed as well as low levels of development and exploitation of renewable energy.

From **a time perspective,** the programme will be implemented during the seven years that correspond to the programming period 2014-2020. The expenditure is eligible from 1 January of 2014 until 31 December of 2023, due to the impact of rule N+3 on the actions implementation. (*Article 136 of Regulation (EU) Nº1303/2013*).

4.2. OP Scope and Content

The OP-AA 2014-2020 responds to the scope and content of the Programmes referred to in *Article 8 of Regulation (EU) No 1299/2013 laying down specific provisions for the support of the European Fund of Regional Development for European Territorial Cooperation*, which are structured into the following elements:

a) A justification for the choice of the thematic objectives, investment priorities and the related financial allocations based on an analysis of the cooperation area needs and the chosen strategy as a result of those needs.

b) A structure by priority axis, with the definition of the following topics for each one of the Axis:

   i. Investment priorities and corresponding specific objectives.

   ii. The expected results for the specific objectives and associated outcome indicators, with a reference value and a target value.

   iii. A description of the type of actions and examples, subject to assistance under each investment priority and its expected contribution to the specific objectives, including the guiding principles for the selection of operations and identification of the specific selected territories and type of beneficiaries.

   iv. The common and specific indicators of productivity for each investment priority.

   v. The determination of the implementing stages, the financial and productivity indicators and, where appropriate, the outcome indicators to be used as milestones and objectives of the performance framework.

   vi. A summary of the intended use of technical assistance.

   vii. The corresponding intervention categories and an indicative breakdown of the resources programmed.

c) A financing plan.

4.2.1. Strategic definition of the Operational Programme of Transnational Cooperation of the Atlantic Area 2014-2020

The strategic formulation of the OP-AA 2014-2020 is based on the selection of the Thematic Objectives and Investment Priorities set out in *Article 5 of Regulation (EU) No. 1301/2013 on the ERDF* (see previous Table 1).

Additionally, for Transnational Cooperation Programmes, the ERDF may also support the improvement of the institutional capacity of public authorities and stakeholders and the efficiency of public administration through the development and coordination of macro-regional strategies and sea basins.

The proposed strategy is based on the selection of Thematic Objectives and Investment Priorities, which highlights the prioritization of the following core areas of intervention: R&D+I (green growth and eco-innovation, included), renewable energy, climate change, environmental efficiency and conservation and protection of the natural and cultural heritage. This framework comprises a selection of five Thematic Objectives and six Investment Priorities.

This strategy is structured in four Priority Axes:

- *Axis 1:* Stimulating innovation and competitiveness in the Atlantic Area.
- *Axis 2:* Fostering resource efficiency.
- *Axis 3:* Strengthening risk management systems.
- *Axis 4:* Enhancing biodiversity and the natural and cultural assets.
- *Axis 5:* Technical Assistance.

Considering that Axis 5 corresponds to Technical Assistance, the four Axis left present the structure shown by the following table:

TABLE 2. STRATEGY DESCRIPTION OF THE TRANSNATIONAL COOPERATION OP OF THE ATLANTIC AREA 2014-2020

Axis	T.O.	INVESTMENT PRIORITIES	SPECIFIC OBJECTIVES
Axis 1	T.O. 1 Promoting research, technological development and innovation	1B. Promoting business investment in innovation and research, and developing links and synergies between enterprises, R&D centres and higher education, in particular products and services development, technology transfer, social innovation, eco-innovation, public service applications, demand stimulation, networking, clusters and open innovation through smart specialization and supporting technological and applied research, pilot lines, early product validation actions, advanced manufacturing capabilities and first production, in particular in key enabling technologies and diffusion of general purpose technologies	SO.1.1. Enhancing innovation capacity through cooperation to foster competitiveness
			SO.1.2. Strengthening the transfer of innovation results to facilitate the emergence of new products, services and processes
Axis 2	T.O. 4 Encouraging the transition to a low-carbon economy in all sectors	4A. Promoting the production and distribution of energy derived from renewable sources	SO.2.1. Fostering renewable energies and energy efficiency
Axis 3	T.O 54 Promoting the adaptation to climate change and risk prevention and management	5B. Promoting investment to address specific risks, ensuring disaster resilience and developing disaster management systems	SO.3.1. Strengthening risks management systems
Axis 4	T.O.6 Preserving and protecting the environment and promoting resource efficiency	6C. Conserving, protecting, promoting and developing natural and cultural heritage	SO.4.1. Improving the protection of biodiversity and enhancing ecosystems services
		6D. Protecting and restoring biodiversity, soil protection and restoration, and promoting ecosystem services, including Natura 2000 and green infrastructures	SO.4.2. Enhancing natural and cultural assets to stimulate economic development
		6G. Supporting industrial transition towards a resource-efficient economy, promoting green growth, eco-innovation and environmental performance management in the public and private sectors. Possibility of further exploiting the green economy model profiting from the existing natural resources in the Atlantic Area	SO.2.2. Fostering Green Growth, eco-innovation and environmental efficiency

4.2.2. Actions typology

The proposed OP-AA places the planned actions typology to be developed over the period 2014-2020. Table 3 presents a list of the actions for each of the Axes of the Programme (excluding Axis 5 Technical Assistance), which differ depending on the Specific Objective.

TABLE 3. TYPE OF PLANNED ACTIONS BY INVESTMENT PRIORITY IN THE EUROPEAN TERRITORIAL COOPERATION OP OF THE ATLANTIC AREA 2014-2020

Axis	IP	SO	TYPE OF ACTIONS
1	1.b)	1.1	- Establishment and further strengthening of territorial innovation networks, SME networks and clusters, also supporting their internationalization - Development of cooperation schemes contributing to organizing the development of scientific resource centres, business incubators, clusters, business networks, research and innovation infrastructures and regional poles of excellence - Stimulation of regional triple helix and quadruple helix cooperation - Enhancement of intersectoral cooperation and interlinks within and between supply chains for the launch of innovative initiatives - Development of regional innovation chains - Development of pilot actions on knowledge exchange and collaboration tools: e.g. social innovation platforms, social innovation clusters, observatories, web-based platforms - Development of social enterprises and social incubators in territorial collaborative networks - Development of public-private partnerships to work in smart specialization areas, setting up territorial frameworks and platforms for the coordination of innovation policy, including the coordination of regional RIS3 strategies, innovation governance initiatives, competence networks, resources pooling structures or integrated supply chains - Increasing skills of employees in the business sector (particularly SMEs) regarding novel technologies (e.g. eco-innovation, low-carbon technologies, ICT, key enabling technologies, etc.), innovative products, services or processes and social innovation contributing to regional smart specialization strategies - Support of programmes for training for trainers and develop curricula, and adapt education and training systems for the innovation uptake and diffusion, and the provision of capacity development mechanisms - Development of technology transfer initiatives - Development of strategies and tools to improve creativity and entrepreneurial mind-sets.
		1.2	- Development of common mechanisms to ensure cost-efficient exploitation of resources and best use of the research results - Designing and demonstrating new products and services addressing social needs (social innovation) - Designing and demonstrating new processes and tools addressing the efficiency of public services - Development of territorial knowledge transfer models, enhancing the transfer of RTD results from research institutions to the business sector (in particular SMEs) leading to new services and products - Development of knowledge and information tools addressed to business internationalization - Development of networking mechanisms and platforms for the generation of business consortia - Development of data sharing and market information systems - Realization of focused market watch and gap analysis - Development of intelligence and scoping tools for transnational innovation partnerships

Axis	IP	SO	TYPE OF ACTIONS
			Development of Knowledge Intensive Services (KIS) and products Development of innovative products through cooperation approaches (end-user-involvement, co-design, open innovation …) Transfer and development of models or solutions enabling R&D support for SME demand-driven innovation Development of demonstration projects to test the market readiness
2	4.a)	2.1	Development of technological, legal, educational, financial and organizational solutions in the field of renewable energy Identification of existing and potential local value chain and key differentiators Development of joint mapping of competencies versus expected needs from project developers and technology suppliers Enhancement of cooperation between private, public and research actors throughout the whole value chain related to energy (R&D demonstration, feasibility & project planning, manufacturing, installation, operation & maintenance, distribution, environmental impact assessment…) Development of networks of clusters on (marine) renewable energies in the Atlantic Area Improvement of spatial management to enhance the use of offshore and onshore renewable energies Development of peer reviews and networking of regions, economic agencies and organizations specialized in the development of renewable energies to support the delivery of existing low carbon strategies Enhancement of coordination and integration of the production and distribution systems of different kinds of renewable energy Joint actions to support the grid integration of offshore renewable energies Awareness raising on the relevance and business opportunities of renewable energy Development of information, communication and awareness raising campaigns to increase social acceptance of renewable energy Supporting consumer and local communities empowerment (micro-generation, smart metering Development of local policies and tools for the promotion of ultra-low energy buildings, high energy savings and super-efficient appliances.
	6.g)	2.2	Development of mechanisms to convey the information on the need of eco-innovation products and services to the relevant actors of the sector Development of measures and tools to stimulate the adaptation of policies and behaviours supporting green growth and eco-innovation Awards and awareness-raising such as information events, competitions and awards to help to raise awareness and recognize positive eco-innovation behaviour Development of business management support instruments, such as analysis tools for the assessment of the environmental performance of products and services, and environmental management, life cycle management, design for environment and environmental supply chain management tools Promoting the adoption of the agenda 21 in the private sector Development of circular economy / cradle-to-cradle principles that deliver new products or ways-of-working to achieve sustainable economic growth Development of mechanisms to reduce the amount of resources (e.g. land, water, minerals) used in industrial processes

Axis	IP	SO	TYPE OF ACTIONS
			Development of solutions to reduce or recycle the waste outputs of industrial or domestic processes Development of actions to reduce the use of resources in businesses, administrations and organization of major events such as festival and large conferences Introducing novel policy instruments for eco-innovation support that will create demand for eco-innovative products and services such as green public procurement and directly supporting eco-innovation in SMEs, including providing subsidies and advisory and technical support Development information systems addressed to consumers on the eco-efficiency performance of products and services
3	**5.b)**	**3.1**	Development of actions to prevent risks (environmental monitoring and prevention systems; tools to improve governance and coordination, crisis and emergency management and responses; tools for early detection; early warning systems; mapping; risk assessment…) Coordination of the use of GMES and surveillance systems to support threat and emergency response, coordinated use of IT infrastructure necessary to allow information sharing and interoperability between national surveillance networks and the Common Information sharing Environment at EU level Development of awareness-raising tools related to prevention and management of risks Development of local community empowerment to risk prevention, and recovery and regeneration actions Networking of technical and scientific resources available in the European Atlantic Area: joint production of data on the evolution of the coastline to facilitate its measurement along the Atlantic coast on the basis of comparable data. Development of capacity-building initiatives directed to actors involved in managing and preventing risks Dissemination of data and risk management tools Promote the interlinking of regional, coastal and ocean observation and maritime safety and coastal structures and their forecasting models Development of methodologies for the study, procedures, evaluation and compensation of damage linked to risks under this objective.
4	**6.d)**	**4.1**	Actions to identify, assess and develop ecosystem services and green infrastructures (resilience to pollution, carbon capture and storage, trophic chains balance and conservation of marine resources) Development of concerted management procedures concerning emblematic species or species with strong economic interest (fisheries resources, migratory species) and combating invasive species Development of pilot actions to test new solutions and methods concerning the preservation and restoration of biodiversity Development of initiatives aiming at mapping natural species habitats and the seabed Development of management and enhancement methods concerning natural Atlantic areas (including assessment of the ecosystem services provided) Development of methods for quality monitoring and enhancement of the coastal and inland waters Development of collecting and disseminating natural environmental data (environmental observatory network), modelling aimed at improving forecasts and environmental management Development of joint or comparative methodologies for defining and managing environmental protected areas (considering economic activities)

Axis	IP	SO	TYPE OF ACTIONS
			Assessment of marine/coastal areas management modalities and of the impact of new maritime economic activities Development of concerted strategies to combat macro waste
	6.c)	**4.2**	Development of common strategies, policies and initiatives capitalizing on the Atlantic cultural and natural heritage by public institutions, enterprises, NGOs and local population to convert natural resources and the cultural heritage in the unmistakable mark of the Atlantic Area, with a view to generate specific new products, services and tools having an economic impact at a local and regional level Development of joint actions to preserve the cultural heritage Development of cultural activities and events Development of cultural tourism and industries Enhance the competitiveness of small and medium sized cultural enterprises Development of marketing and promotion strategies for cultural activities Added value to existing cultural and heritage tourist attractions Encourage spillover effects between culture-based creativity and other sectors Development of initiatives to preserve and protect the Atlantic natural species, landscapes and sites of major natural interest contributing to the promotion of AA regions Development of joint initiatives to promote a territorial identity of the Atlantic cultural heritage as an asset to attract new visitors and develop new local jobs and economic activity Development of the creative and craft industries sector in the Atlantic Area Enhancement of the attractiveness of traditional economic and productive activities, jobs and services as a way to increase their economic valorisation, attract new visitors and develop new local jobs and economic activity Development of niche tourist attractions and products, including coastal, nautical, cruise, sports, rural and farm, gastronomy, wellness, cultural, Pilgrimage and religious events and business tourism Development of nautical activities, marine leisure (integrated development of a nautical sector, promoting the growth of economic activities in coastal areas, job creation, social integration and coastal zone preservation) Development of tools and exchange of know-how on protected site/areas management

Four general conclusions arise from the above:

- The different types of actions are characterized by their strategic and pro-active nature.
- Their dimension is generally reduced; therefore, the anticipated impacts associated are not expected to be meaningful (as discussed in more detail in Chapter 7 of this Report).
- The type of actions that can have closer links, particularly through direct effects, to the compliance with both the environmental objectives of the Programme and the European Union, and some relevant effects on the environment are those from Axes 2, 3 and 4. Especially these actions corresponding to the Axes 2, 3 and 4 can count on privileged spaces for experimentation, such as many of the French islands included in the scope of the OP, among other islands located within the cooperation programme area.
- The type of actions expected under Axis 1 (Stimulating innovation and competitiveness in the Atlantic Area) may have an indirect influence, to the extent that the projects approved under this axis are directed to obtaining results that can support eco-innovation.

4.2.3. Horizontal principles

The proposed OP-AA 2014-2020 is fully consistent with the horizontal principles of partnership and governance at various levels, with the promotion of equality between men and women, non-discrimination and sustainable development. In this sense, the latter aspect is particularly relevant. Thus, the Programme promotes the production and distribution of renewable energy, promotes a joint response to address the consequences from climate change and the protection, fostering and development of natural and cultural heritage. Furthermore, it supports the exploitation of synergies with regional Operational Programmes, as well as policy instruments of the Union, that serve to reduce climate change and improve adaptation, protecting the environment and efficient use of resources.

4.2.4. Environmental Objectives

The EU has established policy objectives that will last until 2050 in various areas as part of its Europe 2020 Strategy, among which are those related to the promotion of sustainable growth.

In the specific case of environmental objectives, these are reflected in the document "*Towards a green economy in Europe. EU environmental policy targets and objectives 2010–2050*" (EEA Report Nº 8/2013), prepared by the European Environment Agency. This

document highlights nine areas comprising major European objectives for that timeframe, which are consistent with the EU regulatory framework.

From this perspective, the OP-AA 2014-2020 defines a set of Specific Objectives of environmental character in line with that purpose. It encompasses, particularly, Axes 2, 3 and 4, covering the Thematic Objectives 4, 5 and 6, to which five Specific Objectives are associated.

Table 4 shows the linkage between the EU strategic environmental objectives and the OP Objectives. Two main conclusions arise:

- The *full consistency of the environmental objectives set by the OP with the EU environmental strategy* for the period considered. Noteworthy, due to their horizontal nature, are the Specific Objectives connected to priorities 6.c)–SO 4.2– and 6.g) –SO 2.2.-and, above all, 1.b)–SO 1.1 and 1.2.

  In order to encourage research, technological development, and innovation in environmental matters, there may be an effective contribution to the specified areas by the European Environment Agency, which are always consistent with the actions envisaged in the *Action Plan on Eco-innovation (EcoAP)*, which grants a horizontal nature to the Specific Objectives 1.1., 1.2. and 2.2.

  In addition, the OP objectives are framed in the context defined by the *VII Environmental Action Programme of the European Union*, which is the main reference for addressing environmental and sustainability challenges. Thus, R&D+i is a very important part, highlighting its importance in the Multi-annual Financial Framework, as well as in the common agricultural and fisheries policies, cohesion policy, and the Horizon 2020 Programme.

  In turn, Investment Priority 6.c.) aims to boost economic development and diversification through territorial programmes by investing in common environmental opportunities and in “green growth”. This objective raises the momentum for the "green economy", promoting economic growth and ensuring, at the same time, that natural assets continue to provide the resources and environmental services necessary to enhance life quality. Therefore, it has a direct influence on all aspects that had been considered by the European Environment Agency through the promotion of:

  - An economy encouraging the efficient use of natural resources and eco-efficiency.
  - An economy that invests in natural capital and it is based on biotechnologies.
  - A low carbon economy with renewable energy sources.

- *Considering as “relevant” all the areas considered by the European Environment Agency*. In particular, the areas with a great number of specific objectives in the OP are related to the reduction of pollutant emissions, such as lower emissions of greenhouse gases; and to a lesser extent, those linked to energy efficiency and renewable energy, in addition to the fields of biodiversity and chemicals.

TABLE 4. EU ENVIRONMENTAL OBJECTIVES (2010-2050) UNDER THE TRANSNATIONAL COOPERATION OP OF THE ATLANTIC AREA 2014-2020

		T.O. 1		T.O. 4		T.O. 5	T.O. 6	
		SO 1.1	SO 1.2	SO 2.1	SO 2.2	SO 3.1	SO 4.1	SO 4.2
ENERGY	Energy efficiency	+	+	++	+			+
	Renewable energy	+	+	++	+			+
GREENHOUSE GASES	Reduction of Greenhouse Gases	+	+	+	+	++		+
POLLUTION AND AIR QUALITY	Reduction of polluting emissions	+	+	+	+	++		+
TRANSPORT	Reduction of Greenhouse Gases	+	+		+			+
	Reduction of air pollution	+	+		+			+
WASTE	Reuse, recycling and valuation	+	+		+			+
	Collection and Removal	+	+		+			+
	Generation	+	+		+			+
WATER	Reduction of water extraction	+	+		+			+
	Minimizing impacts of droughts and floods	+	+		+			+
	Considering first the cheapest options in the alternative water supply	+	+		+		+	+
RESPONSIBLE PRODUCTION AND CONSUMPTION	Consumption and production orientation towards environment friendly products	+	+		++		+	+
CHEMICALS	Production, handling and use of chemicals so they not pose a significant threat to human health and the environment	+	+		+			+
BIODIVERSITY	Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society	+	+		+		+	+
	Reduce the direct pressures on biodiversity	+	+		+		+	+
	Improve the status of biodiversity by safeguarding ecosystems, species	+	+		+		+	+
	Increase the benefits of biodiversity and services for all	+	+		+		+	+
	Enhance the implementation through participatory planning, knowledge management and capacity building	+	+		+		+	+

++ *Notable linkage* + *Weak linkage*

Source: Own elaboration based on the EEA Report No 8/2013 and draft report of the European Cooperation OP of the Atlantic Area 2014-2020

4.3. Reasons for the Selection of the Alternatives Dealt

According to the intervention logic arisen from the analysis undertaken under the Ex Ante Evaluation, the selection of Thematic Objectives and Investment Priorities responds directly to the main weaknesses identified in the *SWOT* analysis.

Therefore, the substantiation thereof has a direct link to the main weaknesses and derived areas of intervention.

4.4. Proposed methodology and limitations

Possible alternatives to the content of the Programme allow multiple combinations, in accordance with Community regulations, as long as the thematic concentration of 80% of expenditure in four Objectives is respected. This flexibility turns out large the number of possible alternatives, which limits the usefulness of their analysis.

Given the above, the adopted methodological proposal includes the description of three alternatives:

- *Alternative 0,* which would comprise not implementing the OP-AA 2014-2020. This would mean giving up the Funds available for the cooperation zone.
- *Alternative 1,* called "*Alternative of continuity*", which would consist of the measures implemented in the OP 2007-2013 to be continued.
- *Alternative 2*, or "*Selected Alternative*", which appears detailed in the document "Draft of the OP 2014-2020".

In order to understand the methodological approach adopted, it is necessary to consider the following starting points:

- Firstly, the selection of the alternative, which will make up the OP, is part of many initial provisions, some of them mandatory, meaning that the room for manoeuvre by the Managing Authority responsible for developing the Programme appears limited.

  Specifically, the Programme must comply with the provisions of the various Community regulations, especially as regards:

  - Regulation 1303/2013 on the Common Strategic Framework, which provides a common ground for the management of the European Investment Fund (EIF): ERDF, ESF, EMFF, EAFRD and CF.
  - Regulation 299/2013 on the support from the ERDF to the European territorial cooperation objective.

These documents establish the Programme's general framework, the general objectives, and the priorities that must be addressed, in addition to the financial allocation (thematic concentration).

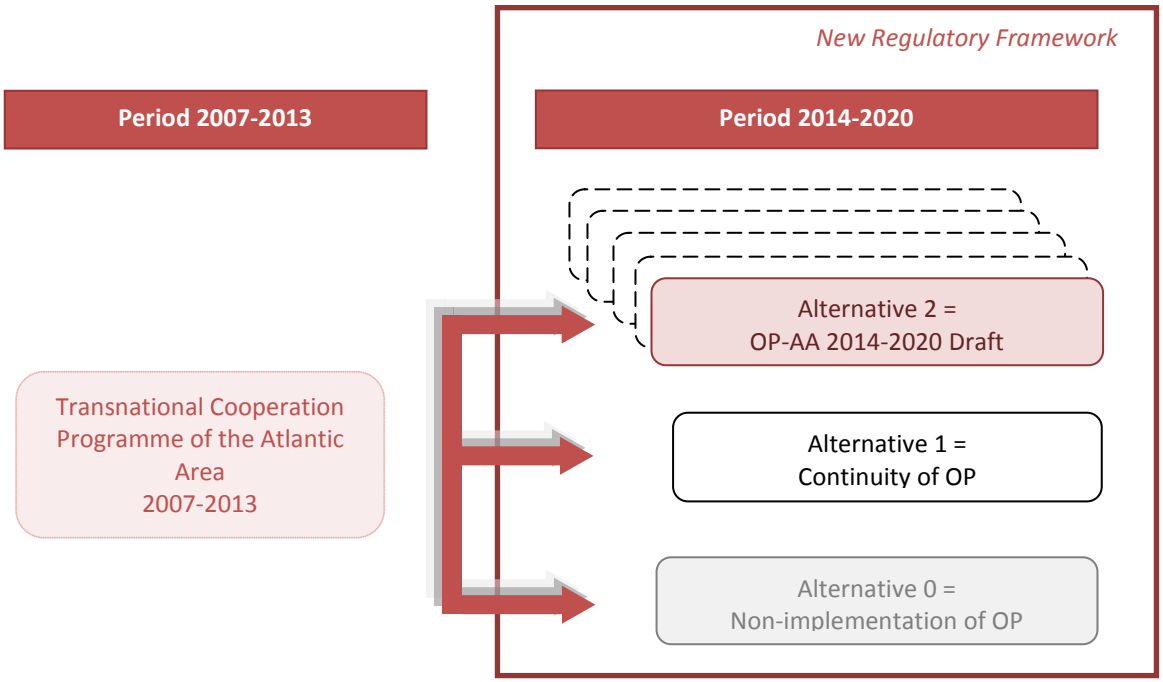
- Secondly, it is necessary that the selected alternative, or the OP to be implemented, fits and is consistent with several papers produced at the national level, and specifically with the Partnership Agreements of the different Member States determining the general framework of implementation of all EU funding in each country.

- However, despite all the constraints and in addition to the three situations described above, i.e., alternative 0, 1 and 2, there could be infinite alternatives based on different combinations of measures and actions.

  Therefore, as the description of all these alternatives is not feasible, the option goes to detail the three scenarios of greatest weight, thus deepening it in the process leading to the final selected alternative.

The following scheme graphically depicts the elements described.

SQUEME 1. PROPOSED METHODOLOGY FOR APPROACHING ALTERNATIVES TO THE PROGRAMME'S CONTENT



Source: Own elaboration.

4.5. PROPOSAL OF ALTERNATIVES AND RATIONALE FOR THE ALTERNATIVE SELECTED

4.5.1. Alternative 0: Non-implementation of the Programme

From a financial point of view, the impact of not implementing the Programme would be the loss of the co-financing expected for the implementation of actions in the field of cooperation through the ERDF, which means to miss the opportunity to invest effectively in activities that would result in improving the Atlantic Area growth potential.

Furthermore, by wasting public funds possibility, the non-implementation of the Programme results in loosing the multiplier effect generated by such funds, i.e., the national counterpart that would mobilize the different aids included in the Programme.

Similarly, the existence of the OP-AA 2014-2020, which comprises pre-allocation of funds with a ten-year horizon (the seven years from 2014 to 2020, plus three additional years that make possible the completion of the budget execution), is an excellent opportunity for action planning in the medium and long-term in the cooperation territory. This opportunity would be wasted, if the Programme's development were forgone.

Consequently, not implementing the Programme's possible actions could affect the achievement of the following Territorial Cooperation objectives:

- Facilitating and promoting cooperation between zones with common interests and bonds.
- Promoting common solutions for actors in different countries under the priority areas identified by the Programme.
- In particular, moving forward/working together towards sustainable development, integrating resource efficiency and improvement of the environment and cultural heritage.

All the considerations mentioned above make up the rationale for Alternative 0, or the non-development of the Programme, not to be the chosen option.

4.5.2. Alternative 1: the Alternative of continuity

Alternative 1 called "*Alternative of continuity*" consists of giving continuity to the measures and types of actions implemented under the OP-AA 2007-2013 keeping the same budget and focus.

The development of this alternative of continuity involves assuming the following decisions:

- Keeping the formulated strategic guidelines for the 2007-2013 period in the area of cooperation. This means allocating ERDF support to the following domains, taking into account the equivalences between the Priorities set up for 2007-2013 and the Thematic Objectives (TO) for the 2014-2020 period:

  - Priority 1 on promoting transnational business and innovation networks matches several TO of the 2014-2020 period, such as TO 1 on promoting research, technological development and innovation, TO 3 on improving SMEs competitiveness and TO 8 on promoting sustainability and quality of employment.

  - Priority 2 on maritime and coastal environment, heritage and risk prevention matches, in turn, TO 4 on the step towards a low carbon economy, and more specifically the promotion of renewable energies; TO 5 on promoting climate change adaptation and risk prevention and management, in addition to TO 6 on preserving the environment and promoting resource efficiency.

  - Priority 3 on improving accessibility and internal links corresponds to TO 7 on promoting sustainable transport, also including other approachable issues through various TO.

  - Priority 4 on promoting transnational synergies for sustainable urban and regional development represents an alternative also covered by the Regulations of the current period in order to strengthen ties and cooperation in various fields of border regions (TO 11) and preserve and promote cultural heritage (TO 6).

- Not to intervene in some strategic areas that the 2014-2020 period regulations cover, which may be relevant not only to contribute more effectively to the objectives of the Europe 2020 Strategy, but also to address some of the existing problems in the cross-border area and to consolidate the cooperation strategy.

The development of this alternative has undoubtedly various elements in favour, related mainly to the fact that it ensures the continuity of the efforts already begun in 2007-2013 consolidating results and first impacts obtained through this programme.

However, there are several aspects that lead to reject an alternative involving the fully continuity of the OP-AA 2007-2013, such as:

- It does not allow to focus on new ways that ensure the Programme a greater efficiency, as is the greater focus on results and achieving a clear and visible impact in the projects execution.

- It limits the focus on a more strategic approach in designing the Programme, where an effective effort concentration could occur. In fact, although only 4 Priorities structured the OP-AA 2007-2013, its development led to a greater diversity of projects since it covered a larger number of specific objectives:
  - Priority 1 contained three specific objectives.
  - Priority 2 included four specific objectives.
  - Priority 3 comprised two specific objectives.
  - Priority 4 included three specific objectives.
- Finally, this alternative does not allow to incorporate lessons learned from experience, and specifically, it limits the ability to properly adapt the new Programme and the measures that would be included in it:
  - The level of demand and acceptance in the target population in the various measures and actions.
  - The level of efficiency achieved in the different activities and the difficulties experienced in the management and proper execution.
  - The conclusions drawn in the context analysis and identification of needs.

4.5.3. Alternative 2: the Selected alternative

Alternative 2, or the selected alternative, finds itself detailed in the document "*OP-AA 2014-2020 Draft*", in ongoing process.

The process undertaken to reach the selected alternative has been characterized by its iterativity and interactivity as well as by the approach of various programmatic options or intermediate approaches, which are jointly assessed by both the Programming Group, and the evaluation team.

In fact, the process for the strategy formulation and, therefore, the selection of the considered alternatives were based on four key elements: intervention needs identified in the SWOT analysis; prior history related to cross-border cooperation between Spain, Portugal, France, Ireland, and the United Kingdom; the guidelines provided by the EU strategic focuses and the contribution for the development of the OP-AA performed by different stakeholders.

Therefore, the OP-AA 2014-2020 programming sought to address the weaknesses affecting economic and social progress of the Cooperation Area, aligned with the EU policy intervention framework and with a high level of consensus to involve different social actors and institutions in its development.

In the course of this collaboration, the following elements have been taken into account:

- The intervention should be focusing on the priority and strategic aspects for the cooperation area instead of focusing on dispersion, trying to implement all Thematic Objectives allowed by the regulations. The general principle adopted consists of concentrating efforts, given the OP-AA 2014-2020 budgetary constraints.

- The experience accumulated over the period 2007-2013 sets the starting point followed by a critical review on the current Programme that introduces the changes that allow moving from Alternative 1 to this selected Alternative 2.

For this purpose, there were selected the Investment Priorities assuming greater consensus regarding their greater ability in getting results from the ERDF support to the detriment of those in which the impact of support is anticipated lower, either because there is a smaller or inexistent need to act or because the intervention instruments provided by the Programme are not suitable for obtaining the expected results.

After reflection and discussion with national authorities, the proposed Thematic Objectives reached validation, consequently leading the strategy of territorial cooperation to be based on the following objectives:

- **Thematic Objective 1**: Strengthening research, technological development, and innovation.

- **Thematic Objective 4:** Supporting the shift to a low carbon economy in all sectors.

- **Thematic Objective 5**: Promoting adaptation to climate change in all sectors.

- **Thematic Objective 6:** Protecting the environment and promoting resource efficiency.

The main aspects of this alternative finally selected, whose details arise in the OP-AA 2014-2020 draft document, are:

- The focus based on the concentration of efforts leads the OP-AA to develop 4 TO out of the 11 OT available in the Community regulations.

- The Programme's core effort heads to innovation and competitiveness by strengthening cooperation and transfer of results. This issue accounts for 36% of the funds allocated to the Programme.

- New initiatives are included such as the development of systems for preventing and managing climate risks (TO 5), eco-innovation and energy efficiency (TO 6). Also renewable energy get boosted as well as the protection and conservation of biodiversity.

Overall, it is considered appropriate to invest in this alternative as it presents, in comparison to Alternative 1, a more strategic and focused approach on priority issues that can be more effectively addressed through cooperation, and that allows, in contrast to Alternative zero, to focus on the attenuation of the environmental problems described in Chapter 6 of this document and generate a number of positive environmental effects.

Specifically, the selected alternative is expected to provide impact on the following areas:

- In developing research capabilities and promoting innovation through cooperation and transfer of results.
- In improving resources management (water, energy, use of other inputs), through the approval of investment projects in environmental technologies and eco-innovation and boosting production and distribution of renewable energy.
- In the conservation and enhancement of biodiversity and associated natural and cultural heritage through activities of promotion and enhancement of natural resources, development of ecosystem services related to training and awareness, and sustainable tourism development, among others.
- In reducing the probability of occurrence of certain natural hazards and their effects should they occur, through the training of the institutions involved, in terms of equipment, provision of means and interventions in the territory as well as planning and monitoring.
- In the integration of the environment across all investment priorities of the Programme.

4.5.4. Thematic Objective 1: Promoting Research, Technological Development and Innovation

The Investment Priority 1.b) intends *promoting business investment in R&D, developing linkages and synergies between companies, R&D centres and higher education sector, in particular by promoting investment in the development of products and services, technology transfer, social innovation , ecological innovation, the implementation of public service, stimulating demand, networking, clustering and open innovation through smart specialization, and by supporting technological and applied research, pilot lines, early action product validation, advanced manufacturing capabilities and first production, in particular, key enabling technologies and disseminating versatile technologies.*

This responds to the weaknesses and opportunities identified in the Cooperation Area as regards research, technological development and innovation.

TABLE 5. RATIONALE FOR THE SELECTION OF THE INVESTMENT PRIORITIES OF THEMATIC OBJECTIVE 1

PI	WEAKNESSES	OPPORTUNITIES
1B	✦ Relatively low levels of innovation in a number of traditional economic sectors with a high potential to bring growth and jobs to the Atlantic Area ✦ Stagnant or decreasing levels of investment in R&D+i, which is partially explained by the severe economic crisis and the credit crunch ✦ Partial mismatch between R&D+i market demand and supply due mainly to limited support and cooperation between the private and the public sectors ✦ Low levels of competitiveness in the Atlantic Area with respect to the rest of Western Europe	✦ Different territorial patterns of innovation in different parts of the Atlantic Area provide an opportunity for synergies between regions with different innovation profiles that can be strengthened to further exploit complementarities ✦ Growth potential of the blue economy and maritime specialization: coastal tourism, aquaculture, yachting, naval and nautical industries, renewable offshore energy, blue biotechnologies

The Investment Priority is fully justified to the extent that it will allow to obtain important results on the following aspects:

- Increased cooperation and linkage (associations, networks...) between the public, private and social, research and innovation actors;
- Promoting innovation in the key territorial areas of smart specialization and innovation opportunities;
- Enhanced capabilities (skills and knowledge) of public and private bodies involved in R&D in relevant areas of smart specialization;
- Increased capacities and innovation activities in SMEs;
- Better knowledge of markets and business opportunities in the areas of highlighted smart specialization;
- Better exploitation of research results for the development of new technologies, products and services by the productive sector;
- Increased applied research in the economic sectors concerned, based on cooperative approaches.

To this is added the direct contribution to the Europe 2020 Strategy and the Action Plan of the Atlantic Strategy, as follows:

- *Smart growth:* Contributes to strengthening research, promoting innovation and knowledge transfer, increased private sector participation in innovation processes, and strengthening the links between the actors involved and innovation.
- *Sustainable growth:* Strengthening the blue economy, one of the Action Plan priority areas, in which marine renewable energy is included.

4.5.5. Thematic Objective 4: Encouraging a Low Level Carbon Emission Economy in all Sectors

Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources provides a common framework for the promotion of energy from renewable sources, which has become an element of smart, sustainable and inclusive growth promoted by the Europe 2020 Strategy.

The Atlantic Area has a number of weaknesses that need to be addressed, but also a set of opportunities that open up opportunities for sustainable growth in the area (Table 6) and which use requires effective intervention.

TABLE 6. RATIONALE FOR THE SELECTION OF THE INVESTMENT PRIORITIES OF THEMATIC OBJECTIVE 4

IP	WEAKNESSES	OPPORTUNITIES
4A	- Inefficient use of natural resources. - Limited exploitation of the renewable offshore energies potential. - Limited connection of offshore installations to the EU grid. - Pollution and high impact of climate change. - Limited capacity to adapt to climate change due to economic, socio-cultural, institutional and technological barriers. - Need to improve educational commitment and right attitudes towards climate change and use of renewable and low carbon energies. - Mismatch between R&D+i demand and supply due to limited cooperation and support by private and public actors.	- High potential for renewable offshore energy: wind, wave and tidal power, ocean thermal energy, etc., being the Atlantic Area the second main transnational area for wind power in Europe, and almost all the territory provides opportunities to promote wave power, although the take up is currently quite challenging. - Exploitation of new potential market niches.

Such intervention may lead to the following results:

- Increased participation and use of local renewable energy sources;
- Greater regional integration of Low Carbon regional Strategies that promote the production and distribution of renewable energy;
- Improved spatial and organizational management and interaction to encourage the development of the Atlantic territories for the production of renewable energy;
- Increased levels of public and private investment in renewable energy production and related distribution;
- Increased awareness and knowledge of civil society, the business sector and other stakeholders on the needs and opportunities arising from renewable energy, contributing to a shift to an economy and society with low carbon emissions;

- Greater degree of energy self-sufficiency.

The OP focuses on the investment priority 4A, which aims to promote the production and distribution of energy from renewable sources, thereby contributing to the sustainable growth promoted by the Europe 2020 Strategy and the Action Plan of the Atlantic Area Strategy, to the extent that it benefits:

- Building a competitive low carbon economy that makes an efficient and sustainable use of resources and increases the use of renewable energy sources.
- The deployment of sustainable marine renewable energy by promoting research, development, and demonstration of clean technologies.
- The exploitation of renewable energy potential of coastal and marine resources in the Cooperation Area, focusing on the development of renewable energy in high seas.

4.5.6. Thematic Objective 5: Promoting the adaptation to climate change and risk management and prevention

Priority Investment 5.b) is aimed at encouraging investment to address specific risks, ensuring resilience to disasters and developing disaster management systems.

The planned measures focus on addressing the main weaknesses detected in the environmental field of the Atlantic Area and that largely cross national borders resulting on the need to approach transnational solutions. (Table 7).

TABLE 7. RATIONALE FOR THE SELECTION OF THE INVESTMENT PRIORITIES OF THEMATIC OBJECTIVE 5

IP	WEAKNESSES	OPPORTUNITIES
5B	- Pollution deriving from industrial activities, transport and production and consumption patterns increase the exposure of the area to climate change impacts; - Limited capacity to adapt to climate change due to economic, socio-cultural, institutional and technological barriers; - Pollution and high potential impact of climate change in the Atlantic Area; - Development of blue growth technologies pose environmental, social and legal potential risks; - Existing risks of accidents related to maritime economic activities (shipwrecks, oil spills...); - Challenge that clearly jumps the borders of the Member States and therefore calls for transnational nature solutions	- The existing cooperation tradition in this field given its strategic and territorial nature

Cooperation and, therefore, joint action, promote the achievement of outcomes such as strengthening the resilience and planning of the Atlantic regions for natural disasters management and the consequences of climate change. Its contribution to the Europe

2020 Strategy, particularly to sustainable growth, and to the Action Plan of the Atlantic Area Strategy is justified by:

- The strengthening of the economy resilience to climate risks, and the ability to prevent and respond to disasters;
- The development of tools and strategies to address the problems of climate change, including mitigation and adaptation strategies by developing partnerships to identify and monitor risks and natural disasters, including the development of improved predictive capabilities and risk assessments.

4.5.7. Thematic Objective 6: Preserving and protecting the environment and promoting resource efficiency

The Atlantic Area has a rich natural and cultural heritage and an important biodiversity that had largely served as a reference in developing the tourism sector. In this context, eco-innovation is an important factor for the cooperation area development.

In accordance to all this, there are defined those opportunities interesting to boost for the consolidation of a sustainable growth model in the Atlantic Area, but their possibilities are also delimited as a result of some related weaknesses.

TABLE 8. RATIONALE FOR THE SELECTION OF THE INVESTMENT PRIORITIES OF THE THEMATIC OBJECTIVE 6

PI	WEAKNESSES	OPPORTUNITIES
6C 6D 6G	- Need to secure its vast natural heritage and the richness of the existing natural resources; - Further protecting the cultural heritage; - An adequate response to the two challenges above will reinforce the attractiveness of the area; - Uneven levels of capacity to adapt to climate change; - Uneven levels of tourism attraction in the Atlantic Area.	- Relevant environmental heritage; - Tourism as a major economic activity in the region; - Growth potential of the blue economy and maritime specialization: coastal tourism, yachting; - Potential for increasing the revenues from the tourism sector.

In accordance with the above, the rationale for the programming under these Investment Priorities is focused on reaching a number of expected outcomes that improve the starting situation.

- In the particular case of the Investment Priority 6.c the planned improvement includes:
  - Better use and preservation of natural and cultural assets of the Atlantic Area leading to increased interest for the area;
  - Attracting new visitors;

- Generating new products and services that contribute to the economic development, creating local jobs and creating synergies that contribute to the progress and welfare of populations.

- As regards Investment Priority 6D, the results are related to:
  - Enhanced coordination of environmental management systems;
  - Increasing territorial capacity for environmental protection, biodiversity preservation and improved ecosystem services;
- Finally, in relation to the Investment Priority 6G, the expected outcomes are:
  - Increased awareness of ecological innovation and eco-efficiency;
  - Progress on the effective organization of companies and organizations to include the concepts of ecological innovation and eco-innovation;
  - Increased research related to green growth.

It must also be quoted the positive contribution that the planned measures involve for achieving the objectives in the Europe 2020 Strategy area and the Action Plan of the Strategy of the Atlantic Area, which are summarized in:

- Contribution for protecting the environment, reducing emissions and preventing biodiversity loss;
- Development and diversification of coastal and marine tourism.

4.6. Alternatives to the OP Content

The programming of the OP-AA 2014-2020 was made with the intention of achieving a significant and tangible development as regards transnational cooperation in order to generate smart, sustainable and inclusive territorial development in the Atlantic Area.

For this purpose, there were selected the Investment Priorities in which the ERDF support presents greater chance of obtaining results at the expense of those in which the impact of aid is anticipated lower, either because there is a smaller or inexistent need to act or because the intervention instruments provided by the Programme are not suitable for obtaining the expected results.

Moreover, among the possible alternatives, there is also the so-called "*zero option*", i.e., the non-realization of the OP. The impact of not implementing the Programme, from a financial point of view, would be the loss of co-financing provided for the implementation of actions in the field of cooperation through the ERDF, which means to miss the

opportunity to invest in actions that would result in an improved framework for growth in the cooperation area.

Starting from the fact that the ERDF support in the Territorial Cooperation would contribute to the objectives of facilitating and promoting cooperation between areas with common interests and bonds and, particularly, promoting common solutions for authorities in different countries in the field of urban, rural and coastal development, developing economic relations and the creation of networking of small and medium enterprises (SMEs), the non-implementation of actions in this area could affect the fulfilment of these objectives, preventing cooperation between national, regional and local partners, and therefore, preventing greater integration of the territories that make up the Atlantic Area.

Possible remaining alternatives allow multiple combinations, according to the EU regulations, as long as the thematic concentration of 80% of spending in four Objectives is respected. This flexibility makes possible the number of alternatives to be very large, which limits the usefulness of their analysis.

Therefore, it is more relevant to ensure that the final alternative of the OP of the Atlantic Area Transnational Cooperation properly incorporates:

- Investment Priorities aimed at generating positive dynamics for the protection, improvement and conservation of the environment;
- Environmental criteria for selecting operations in calls for projects to be developed.

5. EXPECTED DEVELOPMENT OF THE OP OF THE ATLANTIC AREA TRANSNATIONAL COOPERATION 2014-2020

5.1. THE PROGRAMMING

The programming, understood as *the process of organization, decision-making and allocation of financial resources in several stages, with the participation of partners and in accordance with Article 5, for executing, on a multi-annual basis, the joint action of the Union and Member States, in order to achieve the objectives of the Union for smart, sustainable and inclusive growth (article 2.5) of Regulation (EU) No. 1303/2013)*, is based, in the field of Territorial Cooperation, on two basic documents: the Common Strategic Framework (CSF) and Cooperation Programmes.

As indicated by the Regulation (EU) No. 1303/2013 for the Funds in the **Common Strategic Framework (CSF)**, it "*establishes guiding strategic principles to facilitate the programming process and sectoral and territorial coordination of the Union intervention under IEE Funds and other relevant EU instruments and policies in line with the goals and objectives of the Union Strategy for smart, sustainable and inclusive growth, taking into account the key territorial challenges for the different types of territories*" (Article 10).

Therefore, the CSF will provide a clear strategic direction to the programming process with the intention that Member States and regions may easier and clearly develop their priorities.

In turn, the *Position Paper* prepared by the Commission for the different Member States reinforces that perspective, and identifies the major challenges to be faced in the period 2014-2020, also serving as support and recommendation to the programming exercises to be developed. The thematic objectives and investment priorities underlying the strategy of the 2014-2020 OP-AA have a high level of consistency and complementarity with such challenges.

In the Atlantic Area context, the **Transnational Cooperation Programme** is set as the instrument of intervention through which the Funds are channelled. is detailed in Article *8 of Regulation (EU) No 1299/2013* details the content that should be integrating the cooperation Programme and responds to the content indicated in 4.2 of this report.

In response, and according to the guidelines contained in the "*Draft Template and Guidelines for the Content of the Cooperation Programme*", the OP has the following sections:

- *Section 1*. Preparation of the Operational Programme and participation of partners;

- *Section 2.* Cooperation Programme Strategy for the European Union Strategy for smart, sustainable and inclusive growth and the achievement of economic, social and territorial cohesion;
- *Section 3.* Description of Priority Axis;
- *Section 4.* Cooperation Programme Financial Plan with undivided participation by Member State;
- *Section 5.* Integrated Approach of Territorial Development;
- *Section 6.* Implementing the Programme of Cooperation;
- *Section 7.* Coordination;
- *Section 8.* Reduction of administrative burden for beneficiaries;
- *Section 9.* Horizontal principles;
- *Section 10.* Annexes (separate elements).

5.2. Programme's Monitoring and Evaluation

In order to ensure a proper planning of the evaluation system in the new programming period 2014-2020, *Article 56.1 of Regulation (EU) No 1303/2013* specifies "*the Management Authority shall develop an evaluation plan that may cover more than one programme. It shall be submitted in accordance with the specific rules of the Funds"*. Thus, as provided in *Article 56.2* of the mentioned Regulation, the Managing Authority shall ensure that there is an adequate evaluation capacity.

Given the above requirements, an **Assessment Plan** of the OP-AA 2014-2020 will be undertaken aiming to ensure the development of evaluation activities, including assessment exercises to evaluate the effectiveness, efficiency, and impact of these programmes, and that the means available are adequate and appropriate.

During the programming period there should be evaluated, at least once, how the ERDF support has contributed to the objectives of each priority. All evaluations will be considered by the Monitoring Committee and sent to the Commission.

The Annual Implementation Reports for 2017 and 2019 (in accordance with *Article 14.4.a) of Regulation (EU) No. 1299/2013*) will report the progress in implementing the Assessment Plan.

Moreover, the starting point for a proper monitoring and evaluation is the establishment of an operating system that meets the information needs that both processes require.

For this purpose, the starting point is the definition and selection of the OP indicators to facilitate the assessment of the progress in implementing the Programme, in accordance with the common productivity indicators for the purpose of the European Territorial Cooperation (*Annex of Regulation (EU) No 1299 / 2013*), which will also be complemented with specific outcome indicators of the Programme and, where appropriate, with specific productivity indicators.

As part of the Programme's environmental monitoring, section 10 contains specific tools recommended for its implementation.

6. CHARACTERIZATION OF THE ENVIRONMENT STARTING SITUATION

6.1. GEOGRAPHIC PRESENTATION OF THE ATLANTIC AREA AND CLIMATOLOGY

The territory covered by the Cooperation Programme comprises the eligible regions from five European Union countries with Atlantic coast: Spain, France, Ireland, Portugal, and United Kingdom. This is an area with more than 594 thousand square kilometres, with 62.7 inhabitants.

The Transnational Cooperation Programme of the Atlantic Area 2014-2020 includes as eligible regions the archipelagos of the Azores and Madeira (Portugal) and the Canary Islands (Spain).

In the Transnational Cooperation Atlantic Area, there are two main climates, namely:

- Mediterranean climate characterizes the southern European regions (in Spain – except in its northern coast – and the Centro, Alentejo and Algarve of Portugal). It presents warm and sunny summers, high temperatures, winters with mild temperatures; scanty rainfall and concentrated especially in spring and autumn.

- Oceanic climate with influence in the northern region of Portugal and Spain, the region of France, the United Kingdom and Ireland penetrates unto the interior, leading to mild winters, cool summers, predominantly westerly winds and abundant rainfall, especially in winter.

A summary comes up next on the results obtained in the paper "Environmental diagnosis of the Atlantic Area", which is included as an annex at the end.

6.2. NATURAL RESOURCES

6.2.1. Soil and forest

The landscape in the Atlantic Area appears predominantly agricultural, with a few highly urbanized areas, especially in the United Kingdom. Consequently, there are numerous natural and semi-natural habitats found in isolation and scattered.

European forests occupy 42% of the land area of the EU-27, according to the European Commission data, in 2011. These areas provide critical ecosystem services such as soil protection and water resources, carbon storage and sequestration and generation of biomass for energy production.

In general, European forest soils exceed critical loads of acidification. The excessive widespread application of fertilizer causes its filtration and dragging, and leads to nitrate eutrophication and contamination of water intended for consumption.

In the Atlantic Area, the regions belonging to Spain, Portugal and the southwest coast of France have around 50% of forestland from the total area. By contrast, the Atlantic Area remaining regions of France, United Kingdom and Ireland show percentages of forestland between 1 and 25% from the total land area, with some exceptions in northern Britain, where the percentage is slightly higher.

6.2.2. Water

Integrated management of all water resources is essential and a priority for the Transnational Atlantic Area. In recent years, the population increasing, industrialization, intensification of agriculture, power generation and transport, sewerage and construction of reservoirs, and recreational growth have significantly increased the pressures exerted on European inland waters. In addition to these problems are the droughts and floods.

Water resources in many parts of Europe are threatened by various human activities. Each year, it is extracted an average of 15% from renewable water resources in Europe. Although regional variations are very large, industry absorbs about 53%, agriculture 26% and the domestic sector 19% of the total.

Agriculture is the activity that uses water the most, in the Mediterranean countries. In southern European countries such as Spain and Portugal, 60% of water is used for irrigation. In some regions, groundwater extraction is outpacing the rate of renewal, causing declines in the water table level, loss of wetlands and saltwater intrusion, which poses a threat to the availability of this resource. The risk of scarcity and quantitative and qualitative degradation is exacerbated by seasonal population variations, constant demographic pressure and increased use of water for agricultural purposes. The quality of groundwater is affected by increased concentrations of nitrates and pesticides from agriculture.

Thus, the use of pesticides and fertilizers has led to an eutrophication and nutrient enrichment far from their main focus, reaching, for example, the mouths of some rivers.

An indicator of pressure or stress on freshwater resources is the Water Exploitation Index (WEI), which annually calculates the ratio of the total freshwater extraction of the total renewable resource. A WEI above 20% means that water resources are under stress and values above 40% indicate severe water stress and clearly unsustainable use of these resources.

In the past two decades, the WEI decreased, on average, in Europe, as a result of water saving and efficiency measures. In the Atlantic Area, Spain is the only country over 20%, while the northern regions located in this space show better values.

As regards domestic water consumption, it represents about 15% of total water use in Europe. Europeans consume between 100 and 320 litres of water per day on average, varying by country.

The quality of drinking water is still a concern in Europe. In the period 2004-2007, 15% of the twenty-seven EU groundwater-monitoring stations had average nitrate concentrations above 50 mgN/litre, 10.6% were in the range of 40-50 mgN/litre and 13% in the range of 25 to 40 mgN/litre. Approximately 66% of the groundwater stations had a concentration level below 25 mgN/litre.

Only 21% stations showed average nitrate concentrations of less than 2 mgN/litre and 37% between 2 and 10 mgN/litre. A concentration between 40 and 50 mgN/litre was found in 3% of the stations and above 50 mgN/litre also in 3% of the stations.

Although water quality in the Atlantic Area is better than in other parts of Europe, one must consider that it is a place of **river basin** drain, which carries significant contaminant flows. Mainly, the quality of surface water gets affected by the presence of nitrogen and phosphorus.

The highest concentrations of nitrogen, lying between 2.5-7.5 mgN/l and> 7.5 mgN/l, appear in the littoral regions of France and the United Kingdom. The values of nitrogen concentration at the mouths of the Atlantic Ocean in Portugal present values between 0.3 and 2.5 mgN/l.

On average, the ecological status of rivers or water bodies finds itself between moderate to good for all the Atlantic Area countries and the EU-27 average.

6.2.3. Coastlines

a) Status of coastal and transition waters

The coastline or the shoreline of the Atlantic region extends from the north of the United Kingdom and Ireland to the northern coastlines of Spain and Portugal. Windswept cliffs, exposed rocky headlands and narrow estuaries contrast sharply with long sandy beaches, sheltered bays and extensive marshes in the Atlantic Area.

In general, the state of the coast in the Atlantic Area is good. In fact, Portugal is the only country with coasts in bad condition and France in poor condition, in some cases reaching approximately 5% of its territory.

The coast of the Galicia region in Spain and the north of the United Kingdom have the lowest percentages of waters affected by pollution, between 10% and 30%. The Centro region of Portugal, west coast of Ireland, western France and western United Kingdom have rates in the range of 30-50%. The southern coast of Portugal, East Ireland and northern France present higher percentages, between 50% and 70%, in some cases exceeding 90%.

Therefore, the Transnational Cooperation Programme of the Atlantic Area 2014-2020 includes as eligible regions the archipelagos of the Azores and Madeira (Portugal) and the Canary Islands (Spain). They are located in the biogeographic region of Macaronesia, a collective name given to the five archipelagos of North Atlantic of volcanic origin, which encompasses the two Portuguese archipelagos - the Azores and Madeira, and a Spanish one - the Canary Islands. The location of these archipelagos is considered an outermost region, characterized therefore by specific constraints and structural problems resulting from its insular profile.

The Region of the Azores is an archipelago of nine islands with an area of 2.322 km² (their individual surfaces vary between the 747 km² of São Miguel and the 17 km² of Corvo). In 2011, their population was 246.732 inhabitants with a population density of 106,3 persons per km².

The Region of Madeira is an archipelago consisting of two inhabited islands, Madeira and Porto Santo, and three smaller uninhabited islands. Its area is 801,1 km². Its population, in 2011, was 268.045 inhabitants with a population density of 333,7 persons per km².

The Canary Autonomous Community is an archipelago of seven main islands: El Hierro, La Gomera, La Palma, Tenerife, Fuerteventura, Gran Canaria and Lanzarote, and two island territories: Chinijo Archipelago and Isla de Lobos. Its surface is 7.447 km². Its population, in 2011, was 2.100.229 inhabitants with a population density of 283 persons per km².

b) Shoreline management

Since 1995, the shoreline protection or land-sea transition has been primarily under charge of the Integrated Coastal Zone Management (ICZM). Thus, the management of the coastal zone, i.e., the protection and management of the land portion affected by its dynamics and processes (environmental, social and economic) has been carried out individually by the various States and regions with different **policies and land planning instruments.**

In short, in the Atlantic Area the context, the following picture stands out:

- Portugal accounts for nine Coastal Zone Management Plans (*POOC*), approved in the period between 1998 and 2005. Along with these planning instruments, it was developed an Action Plan for the Coastline in the period 2007-2013, which identifies

and provides the necessary actions to regenerate the coast, both at the national and regional levels.

- In France the effective protection of coastal natural areas is carried out firstly through the *Conservatoire de l'espace littoral et des rivages lacustres*, created in 1975 and dedicated to the protection of natural areas and sea and lake landscapes. Subsequently, the Coastal Act of 1986 would come to establish the basic legal framework of protection.

- In the United Kingdom, the *Shoreline Management Plans* (SMP) aim to ensure environmental protection of the coast and reduce natural disaster risks related to flooding and erosion. The first generation of these plans was approved in the 90s of the last century, so that each area of the coastline is currently managed in a specific way, according to the criteria set out in the plans.

- In Ireland, the *National Spatial Strategy* (NSS) defines the integrated management of the coastal zone through the instrument "Integrated Coastal Zone Management" (ICZM), from the Department of Marine and Natural Resources.

- In Spain, the responsibilities for environmental protection, landscape and land management are transferred to the Autonomous Communities. However, it is impossible to think of a coastal management without the major boost in 1988, which marked the approval of the Coastal Act (*Ley de Costas*) and later the corresponding Regulation (*Real Decreto 147/1989)*. The reality for this matter of the Autonomous Communities included the Atlantic Area is as follows:

  - In Andalucía, *Law 1/1994*, regarding Land Use Management, establishes a territorial planning system articulated on two levels: Spatial Plan of Andalusia and subregional plans. This Autonomous Community will culminate its entire coastline management, after having approved the corresponding subregional plans.

  - Asturias has, since May 2005, a Special Territorial Plan for the Asturias Coastal Zone Management (*POLA - Plan Territorial Especial de Ordenación del Litoral Asturiano*), which develops the *Decree 107/93* laying down Subregional Guidelines for the Asturias Coastal Band.

  - Cantabria, since September 2004, has a territorial planning instrument approved by law, the so-called *Plan de Ordenación del Litoral* (POL).

  - In the Basque Country, the baseline instrument is the Territorial Planning Guidelines (*Directrices de Ordenación Territorial*), which are developed through Partial Territorial Plans and Sectoral Territorial Plans. The Sectoral Territorial Plan for Protection and Management that corresponds to the Shoreline was approved by *Decree 43/2007, of March 13*.

6.2.4. Marine environment

This transnational cooperation area is entirely bathed by the Atlantic Ocean. The quality of the Atlantic marine waters is, on average, one of the best in Europe. However, even here, there are serious local problems, especially in estuaries and areas with high industrial concentration. This ocean is threatened mainly by over fishing and the presence of heavy metals.

Oil pollution reveals very diverse status, and it is not possible to make a reliable assessment on the general trends. According to the European Environment Agency, the main sources are found in soil, and contamination reaches the sea through the rivers. Although the annual number of oil spills seems to be declining, small discharges, and sometimes large in areas of heavy boat traffic, are causing major damages.

The wide variation in the tides of the Atlantic Ocean has led to the formation of large wetlands, notable for their exceptional ecosystems and biodiversity. Enhanced protection of these natural areas is of particular relevance for transnational cooperation.

The density of protected environments can vary greatly from one Member State to another, and seems to be significantly lower in France.

6.2.5. Fishing resources

More than 1.000 fish species live in the waters of the Atlantic Ocean. 10% of these fish has commercial purposes. Although abundant, fish population has been under considerable pressure in recent years because of the rapid expansion of industrial-scale fishing activities. Currently, most of the species are caught without respecting safe biological limits.

Modern fishing techniques also involve high levels of discarding of fish and other marine organisms. It is estimated that more than half of the fish caught particularly with bottom trawls, consists of fish below the required size or non-target species. These animals are thrown back into the sea, usually dead.

In addition to these direct threats, there are other threats related with concentrations of toxic contaminants from liquid waste discharges near the sea or in rivers. Pollution, whether from urban, industrial or agricultural origin, represents a problem that all coastal waters share. Unfortunately, the large algal blooms and poisoning of shellfish and seafood are still a common occurrence despite the attempts in order to regulate and reduce outbreaks of contamination.

Fishing has forged Atlantic culture. Entire communities still rely on it, especially in the less privileged areas. Indeed, it is an integral part of Portuguese social life, for example. The

industry of deep water fishing (high-sea) is prominent, but there are few industrial centres based on long-range fishing. Some examples are Vigo, Berméo, Huelva, Concarneau, Lorient, Aveiro, Killybegs, among others. Access to resources does not result very high and capture activities predominate regarding processing activities.

The fishing activity in the Member States participating in the Programme constitutes a remarkable importance. In fact, several of them are among the top producers in the EU, such as Spain (16% of total EU production), the United Kingdom (13%) and France (11%).

In the Atlantic Area Transnational Cooperation, aquaculture has grown considerably as regards the traditional production of mussels in Galicia, oysters in Poitou-Charentes and lower Normandy, and salmon in Scotland and Ireland. Thereby, its environmental impact expresses relevance when it comes to the presence of nutrients in the water and wild stocks.

The importance of fish-farming units in the economy is low, and the number of fishermen and fish-farms is declining everywhere, due to increasingly scarce resources.

6.3. NATURAL HERITAGE

In the protection of natural areas and in the biodiversity policy of the EU, the Natura 2000 represents the network of protected natural areas set out in the Habitats Directive 92/43/EEC of the Council of May 21, 1992. The network aims at ensuring the long-term survival of the most valuable and threatened species and habitats in Europe. It comprises Special Areas of Conservation (SACs), Sites of Community Importance (SCI) and it also includes Special Protection Areas for Birds (SPAs) designated in accordance with Directive 79/409/EEC of the Council of April 2, 1979.

The Atlantic Area highlights the predominance of protected areas in the Iberian Peninsula and the United Kingdom. As regards marine sites under the Natura 2000 protection, the West coast of France and the United Kingdom are distinguished.

On the other hand, it is in the north of the United Kingdom and throughout the Iberian Peninsula that the highest percentages of High Nature Value areas can be recorded.

Finally, the Iberian Peninsula features the greatest relevance and presence of important bird areas under the High Nature Value representation.

Regarding the Natural Heritage of the archipelagos of the Macaronesian region stands out: In the Azores, the Natural Parks of the Islands: Corvo, Flores, Faial, Pico, São Jorge, Graciosa, Terceira, São Miguel and Santa Maria and the Marine Park of the Archipelago, which are the basic management unit of the Regional Network of Protected Areas in the Azores Autonomous Region. In the Autonomous Region of Madeira, there have been classified nine Sites of Community Importance and four Sites of Special Protection. The

Canary Islands, due to their large surface of natural area comprises 46.8% of its territory described in the Natura 2000 Network and 86.3% of forest area under Natura 2000.

6.4. BIODIVERSITY

The impacts caused by the reduction or loss of biodiversity influence the natural environment, but also affect the achievement of economic and social objectives, framed within a sustainable development strategy, with the challenges regarding biodiversity conservation presenting an international character.

As already seen above, the EU policy concerning biodiversity and management of protected areas for biodiversity conservation are proposed by the Member States under the *EU Habitats Directive 92/43/EEC* and the *Birds Directive 79/409/EEC*.

About 14% of the territory of the EU-27 was proposed for protection under the Habitats Directive,) and it is estimated that the joint area under the two directives amounts to approximately 18% of the EU-27 total land area. In the Atlantic Area, countries such as France, the United Kingdom and Ireland are below the European average of protection, while Spain is far above it.

Table 9 shows the area under the protection of the Habitats Directive in percentage and square kilometres of land area, and in square kilometres of the sea surface. Countries such as France, the United Kingdom and Ireland are below the European average of protection, while Spain is far above it.

TABLE 9. BIODIVERSITY-HABITATS DIRECTIVE PROTECTED SURFACE

REGION/COUNTRY	% LAND SURFACE	TERRITORIAL SURFACE (KM^2)	SEA SURFACE (KM^2)
Portugal	17	586.092	775
Spain	24	46.718	7.926
France	9	123.508	26.838
United Kingdom	7	16.657	12.409
Ireland	11	7.551	6.009

Source: Eurostat

More than a third of Europe's bird species are in decline but more worrisome in north-western and central Europe. The most prominent cause of this situation includes the damage to their habitats with changes in land use, particularly by the intensification of agricultural and forestry practices, the growing infrastructure development, water extraction and pollution.

In Europe as a whole, the wild species are threatened evidencing a decrease in their number. On the other hand, it is possible to see increasing populations of animal species associated with human activities, and proliferation of some plant species that tolerate

high levels of nutrients or acidity. There has also been some recovery in the number of birds that breed in areas, where organic farming is practiced. The introduction of alien species causes problems not only in terrestrial habitats, but also in aquatic habitats, both marine and inland waters.

Southern Europe registers the greatest loss of wetlands. The main causes involve set-aside, pollution, drainage, recreation, and urbanism.

In the Atlantic region, there are 52 species of flora, which are listed in Annex II of the Habitats Directive, out of which 14 are endemic. The rate of endemism is the lowest of all biogeographic regions and appear generally concentrated in the north of the Iberian Peninsula.

Many species of the flora listed are closely associated with typical Atlantic habitats. Some of these species are the herbs *Festuca summilusitana*, which can be found only in coastal heaths of northern Iberian Peninsula, the *Angelica heterocarpa*, which grows on the banks of estuaries along the French Atlantic coast, and the *gencianácea Gentianella Anglica*, which can be found in the chalky pastures in the United Kingdom.

Bryophytes are also well represented. Among these, one can find the rare *Petalophyllum ralfsii*, which nowadays only grows in wet dune slacks. It provides an excellent indicator of the health of the dynamic dune systems, as it requires new wet dune slacks formed by wind to survive.

As for wildlife, there are 80 species living in Atlantic region, which are also listed in the *Habitats Directive*. More than a third corresponds to invertebrates, which include from rare butterflies and dragonflies, to the land snails as is the case of the tiny *Vertigo angustior* and the freshwater mussel *Margaritifera durrovensis*, which is endemic to this region.

The Atlantic region is perhaps the best known for its abundant marine life. The largest concentrations of common seals in Europe are located on the shores of the British Isles and the Wadden Sea. A significant number of bottlenose dolphins and porpoises inhabit along the coast from Denmark to the north of Spain. Although the number of specimens may seem high (350.000 porpoises), populations find themselves under constant pressure due to unacceptably high levels of by-catches and pollutant harmful effects.

Numerous waterfowl and wading birds flock to this region, especially during the winter to escape the harsh conditions of the North Arctic and seek shelter in the coastal wetlands rich in nutrients, near the shores of the Atlantic and North Sea.

On the other hand, the global extent of forests is increasing due to a more intensive management, closely linked to productive forestry, and the serious loss of natural or semi-natural ancient woodland persists.

The number and total size of protected areas in the Atlantic Area appears extraordinary, but unlikely to increase, given the pressures of urbanization on the ground, transport and agriculture. The areas already under protection are also facing similar pressures due to land use.

6.5. NATURAL RISKS

The trend towards climate instability exacerbates the risks of natural disasters, both in coastal areas and in more interior areas.

6.5.1. Seismicity

The seismic risk in Europe is not uniform. Seismic risk models clearly indicate that the main seismic zones with magnitudes of expected earthquakes, even higher than 7, are found in the Mediterranean area. Regarding the Atlantic Area region, the risk would occur in some areas of southern Spain and the risk of earthquakes seems considerably higher in the Pyrenees and in Portugal.

6.5.2. Erosion

Soil erosion is intensified by tillage land abandonment and forest fires, particularly in marginal areas, with consequent loss of fertility and water pollution.

For the Atlantic Area, the highest incidence occurs in Spain (especially in Valle del Guadalquivir and in Galicia) and Portugal (particularly concentrated in the Norte region). Also noteworthy are certain areas in the north of the United Kingdom.

The impact of coastal erosion on the most important Natura 2000 sites occurs in the coast of Ireland, France and Portugal.

6.5.3. Desertification and compaction

Desertification is a process of land degradation caused by different reasons: type of rainfed and irrigated agriculture, water and wind erosion, soil sealing and compaction, climate change, overgrazing, deforestation, forest fires, extinction of native species of flora and fauna, and urban sprawl.

To determine the degree of soil desertification in the Atlantic Area, one must therefore jointly analyze maps of erosion, land use, fires, salinization, among others. It is also

important to know the content of organic carbon on the topsoil when it comes to assess the state of degradation.

Overall, the percentage of topsoil organic carbon stands between 0% and 6% for the Atlantic regions of Spain, Portugal and France, with higher values for Ireland and the United Kingdom, where the percentages grow higher than 2%. In Ireland and on the west coast and northern UK the values increase from 6% to over 35%.

Moreover, it should also be mentioned the soil compaction phenomenon. Compaction is caused by the passage of people, animals and vehicles repeatedly in the same place. This provokes the disappearance of the spaces between soil particles, which decreases the amount of oxygen therein, and, therefore, the microflora and microfauna. It is noted for the Atlantic Area that, generally, there is no soil compaction with the exception for some moderate severity of soil compaction in the south-western part of the Iberian Peninsula, southeast of the United Kingdom and north-eastern France, and light severity of soil compaction in the Atlantic region of France, Ireland and the United Kingdom.

6.5.4. Landslides

The potential impacts of the landslides are often exacerbated by land use management and include uncontrolled urbanization. Mountain areas are the most prone to landslides.

At the Atlantic Area level, it can be seen that moderate risk of landslide would only exist in the north of the United Kingdom, southern Ireland, the area of the Pyrenees, in the eastern half of the Cantabrian coast, in the west coast of the Iberian Peninsula, and even in the valley of Valle del Guadalquivir and Cadiz.

6.5.5. Floods

Many regions of the Atlantic Area (especially in coastal areas) give priority to the protection against floods and the prevention and reduction of its effects. The flood effects are aggravated in mountain areas showing direct relation with the rising sea level.

Coastal risks in relation to flood threats are of two types: coastal flooding, which is produced by the rupture or overcoming of natural or artificial means of protection, and sea level rise, which main causes are mainly human.

Storms are highly associated with flooding and rise in sea level, which are the main natural causes of flooding. This provokes an increase of waves that can trigger an overflow of dune ridges and other coastal defences. Storms are especially dangerous when they coincide with spring tides. In Spain, storms emerge as the leading cause of fatalities caused by natural disasters.

One of the most affected countries in terms of number of floods was the United Kingdom (scoring 20% of the major floods in Europe between 2003 e 2009), and to a smaller extent north-western France.

6.5.6. Forest fires

Some of the projections on Climate Change suggest rising temperatures, heat waves, desertification, increase in the number of droughts and extended periods of drought in southern Europe. These projected climate changes could increase the time and severity of the fire season, the hazard area, and the likelihood of large fires to happen.

Fires and fire effects are concentrated in the European Mediterranean region. About 70% of fires occur in this area, and are responsible for 85% of the total burned area in Europe.

Given the problem of large forest fires, statistics vary considerably each year This indicates that the amount of burned area depends largely on seasonal weather conditions and forest maintenance regarding the accumulation of biomass in fire-prone regions.

The highest values regarding danger and severity of fires are found in the Iberian Peninsula. Spain and Portugal name the countries with higher values of burned area, but if Spain shows a trend of reduction in the past decade, in Portugal the levels of area affected by fire are maintained. From these data, one deduces that Spain has developed measures of fire control and fire management, yet to be developed in Portugal.

6.5.7. Drought

Large parts of Europe see themselves affected by drought and water shortages, while pressures on Europe's water resources have increased due to the population growth and the new uses.

The supply of drinking water represents a matter of concern to Spain, Portugal and the south of France, where, facing the growing scarcity of water in part of the territory, there is an increasingly controlled use.

In the last decade, there were more severe droughts in the south-western Europe, including the Iberian Peninsula, France and the south of the United Kingdom.

6.6. Technological Disasters

Technological disasters are the so-called oil slicks and industrial accidents. Among the technological damages, those related to oil transportation cannot be ignored on the

Atlantic coast. Some areas are particularly exposed: United Kingdom, northwest of France (particularly Normandy), the Charente and the Aquitaine coast, the Cantabrian coast, western Galicia, Lisbon and Alentejo.

Between 1998 and 2009, nine major oil spills from ships were recorded in coastal areas of Europe and a major one from a pipeline. The most significant ones emerged from the tankers Erika (1999, Atlantic coast of France) and Prestige (2002, Atlantic coast of Spain).

The decrease in the number of spill incidents in recent years is due, in part, to the new EU legislation that imposes greater obligations, including the construction of ships such as the double-hull ships (*EC Regulation 417/2002*, and *EC Regulation 1726/2003*), and the common system of traffic monitoring (*EC Directive 2002/59*).

Apart from this traffic, the presence of refineries and other facilities for the extraction or processing of oil and its inherent risks are also considered as technological risks. Spatial planning that includes the proper separation of industry, infrastructures and residential settlements in industrial areas provides an effective mechanism for mitigating these risks.

6.7. Climate Change

According to the climate models and data from the European Environment Agency, year 2100 expects an increase of 2 Celsius degrees, compared to 1990 levels, with higher increases in northern Europe, if compared with the south.

The main causes of Climate Change consist of the use of fossil fuels, agriculture, and changes in land use, including deforestation, some industrial processes such as cement production and landfills, cooling, production of foaming agents and the use of solvents.

Possible consequences include sea levels rising, higher temperatures that increase crop evapotranspiration thus increasing water needs, storms, variations in the patterns of runoff, which can cause flooding and more intense and frequent droughts, as well as changes in biota and food production.

European policy on Climate Change is often structured in two main areas: mitigation and adaptation.

The environmental and economic potential impact regarding Climate Change reveals its estimate by combining the measurements of summer and winter rainfall, days of heavy rainfall, the average annual temperature, summer days, freezing days, snow days and annual average evaporation of erosion, land organic carbon content, protected natural areas and forest fires sensitivity.

The result shows that the greatest potential negative impact occurs in the Atlantic Area of the Iberian Peninsula (and more specifically in the Algarve, Alentejo, Centro and Norte

regions of Portugal, Galicia, Asturias, Cantabria, Cáceres, Burgos and La Rioja in Spain). In the regions of France, the United Kingdom, and Ireland the negative impacts are low or moderate.

As regards the potential economic impact of Climate Change, it has been measured through the combination of several variables such as average annual evaporation, summer days, snow days, freezing days, changes in the height of flooding and sea level rising, forestry, summer and winter tourism, the supply and demand of energy. In this case, the major negative impacts are estimated in southern Portugal, the coast of Alentejo and Algarve regions, and in the Spanish provinces of Huelva, Cadiz, and Seville.

Thus, environmental impacts are larger in the north of the Atlantic Area Peninsula whilst the economic impacts seem to be higher in the south, which means comprehensive adaptation measures to the whole Peninsula.

Coastal areas and the European coast of the Atlantic Area are potentially vulnerable areas to rising sea levels caused by climate change, related flooding, and erosion. Thus, on the Atlantic coast of Andalucía, western France and with less relevance in Portugal, southern United Kingdom, and Ireland, the sea level rise would affect the coastline.

6.8. ENERGY: RENEWABLE SOURCES

Given the inevitable depletion of fossil energies, their cost and their impact on global Climate Change, the development of new, green and renewable energy forms is a commitment by all countries signatories to international agreements.

In the EU, renewable energies should represent, by 2020, 20% of final energy consumption. To this purpose, Europe favours onshore wind energy, hydro and solar power, but it also focuses on less conventional sources, and still not used at a large scale such as Marine Renewable Energies. The Atlantic Area, oceanic in nature, offers potential for renewable energy in marine and coastal environments.

The development of sea power is essential. These European cooperation initiatives regarding technology mainly focus on the phases of R&D, especially through the Framework Programme for Research and Technological Development. There are different strategies adopted by the Atlantic Area countries:

- Spain, after an extensive development of onshore wind and solar energy, massively supports sea wind power. The possible implementation areas are already defined for offshore wind farms, which thus facilitates its implementation.

- The United Kingdom is the first country of the world legislatively endowed with a binding target in terms of emissions of greenhouse gases: 34% reduction by 2020 and 80% in 2050. It is also the world's first largest producer of offshore wind energy aiming at producing power enough to feed electricity to the whole country, by 2020.

- Portugal aims to use wave energy and on offshore wind energy already implemented The country has innovated from a legislative point of view with the "*Marine Occupation Plan*", which authorizes the government to establish a legal framework in order to use the property of the maritime public domain for the production of electrical energy from the waves.

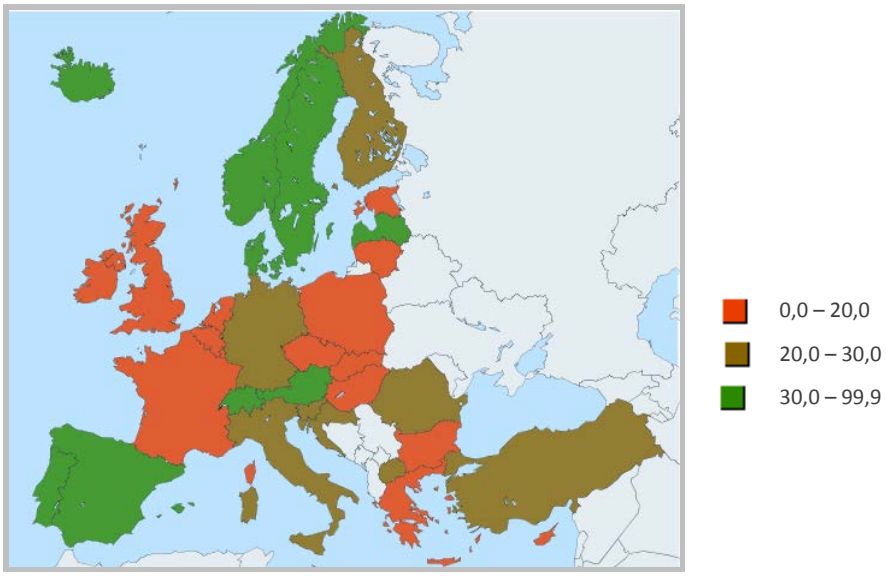
- Ireland extremely dependent on imports of electricity, in 2005, headed itself to the offshore energy and has developed a strategy for the development of ocean energy. The country acquired, in 2004, an offshore wind farm and the development of this type of energy continues with several large projects.

- France, although possessing the second seafront and the first tidal power plant (1966), only recently has been interested in the potential of its marine renewable energies.

A relevant indicator for analyzing sustainability in the energy sector relates to consumption and production by the different countries of the Atlantic Area in relation to renewable energy. Beginning with the renewable energy consumption as regards the total energy consumption, the trend has been growing since 2008, with Portugal on top as it presents a renewable energy consumption rate, in 2011, that almost doubles the EU average (24,9 versus 13), ahead of Spain and France.

On what concerns energy production from renewable sources, both Spain and Portugal had registered important achievements, to the extent that Portugal scored 43% of the energy produced from renewable sources, well above the European average (20 %).

MAP 1. ELECTRICITY FROM RENEWABLE SOURCES (% ON ENERGY CONSUMPTION)



6.9. WASTE

Waste management is one of the biggest challenges of developed societies. For many years, the growth rate of waste generation was above the growth in GDP. The main variables to be considered are, first, the evolution of waste production and, secondly, the treatment performed.

Until the middle of the last decade, a marked trend in which the growth rate of waste production in absolute terms and *per capita* in the countries of the Atlantic Area scored higher than economic growth. This growing trend, at least in *per capita* terms, broke in 2003, so that in the last ten years there was a significant reduction in relative terms for the majority of the areas, except for Ireland, where there has been a remarkable increase.

This decrease has been significant in the industrial and mining waste, while domestic trend has been less pronounced. In fact, the challenge has been the drop in the volume of waste at source and reuse, once most of the production has been incorporated into controlled circuits for collection and storage.

However, there is a significant difference in waste production in the States of the Atlantic Area. Thus, *per capita* waste generation (excluding large mineral) is especially significant in Ireland, Portugal and the United Kingdom, clearly falling below the European average both France and Spain.

As for evolution, in recent years, there has been in the United Kingdom, Spain and Portugal, and to a lesser extent in France, a significant reduction in the volume of waste generated as a result of the brutal fall in production and, above all, consumption. This decrease should be consolidated in the habits and rules in order that, at the time when economic activity picks up, the rate of waste production will not fall above the GDP growth. However, in Ireland, the evolution between 2003 and 2010 shows a significant increase.

The trend shown by the data related to the treatment of waste in the past decade points towards an appreciable improvement in terms of sustainability.

In relation to the treatment of waste, there are very marked differences between the countries in the Atlantic Area, further also evident in the latest developments. Thus, treatment of waste has been significantly increased in the United Kingdom and France, and has been reduced in the cases of Ireland and Portugal.

TABLE 10. WASTE TREATMENT (TONNES)

	2004	2006	2008	2010
Ireland	18.227.850	22.730.497	16.245.217	9.420.759
Spain	136.220.011	143.885.581	137.687.475	132.687.982
France	283.391.472	292.502.076	322.641.264	336.020.706
Portugal	23.945.324	24.597.037	22.043.896	20.114.979

Source: Eurostat

From a municipal perspective, cities such as Bristol, Cardiff, Nantes, Bilbao, Lisbon, among others, stand out by their urban redevelopment plans and recycling integrated in waste policy.

6.10. URBANIZATION

The Atlantic coast seems to be less saturated than other coastlines in Europe, for example, the Mediterranean. In areas where natural areas predominate, such as Scotland, the majority of the Irish coast, the North of England, Wales, Aquitaine and much of the northern Spanish coast, the urban global pressure remain moderate.

Other regions of the Atlantic Area have suffered major urbanization actions, such as building housing complexes on the shores of the sea, for example in the Algarve, Andalusia or south-western France. The same applies to the uncontrolled urban sprawl of cities in regions of the Atlantic, such as the South and West of England, most of the French coast, or the Cantabrian coast.

7. MOTIVATION FOR THE IMPLEMENTATION OF THE STRATEGIC ENVIRONMENTAL ASSESSMENT

7.1. SIGNIFICATION OF THE IMPACTS ON THE ENVIRONMENT

According to the provisions of Annex I of the "*Guidance Document on the Ex-Ante Evaluation. Monitoring and Evaluation of the European Cohesion Policy*", in the case of programmes not covered by *Article 3(2) of Directive 2001/42/EEC*, the environmental authorities of the Member States must ascertain the possible existence of significant environmental effects. Although most of the programmes financed by the ERDF and the Cohesion Fund will require a Strategic Environmental Assessment, it is likely that this is not necessary for European Transnational Cooperation Programmes.

In general, previous experience shows that the percentage of projects approved under the OP that required an Environmental Impact Assessment has been very limited. However, in the specific event that any of the projects would generate effects on the environment, they are expected to have a marginal character without cumulative effect and from a geographical point of view, therefore they can be considered not relevant in the field of the cooperation area.

To this is also added the fact that the ability to influence the OP, for its financial dimension, has a smaller character in the hierarchy of Community, national or regional planning, a linear aspect throughout cooperation experience in the Atlantic Area.

All this leads to the conclusion that there is no evidence that the Operational Programme of Transnational Cooperation of the Atlantic Area_*2014-2020* has significant negative effects on the environment.

Moreover, it is necessary to emphasize the relevance of the Programme to the implementation of Community legislation on the environment. The projects within the framework of the Thematic Objectives 4, 5 and 6 are limited to the scope of application of the relevant regulations. However, once again, its relevance is determined by its financial dimension, which makes it not a key instrument in this task.

The assessment criteria for determining the need to submit a plan or programme to the Strategic Environmental Assessment, as they could cause significant effects, are specified in Annex II in Law *2001/42/EEC*[1].

[1] In the case that from these are deducted the possibilities of emerging significant effects, for the Spanish legal systems it would be necessary to undertake an Ordinary Strategic Environmental Assessment, as determined by Article 31 and Annex V of Law 21/2013.

Table 9 shows an initial assessment of the above criteria to determine the significance of the predicted effects based on the characteristics of the OP and the effects themselves and the area likely to be affected.

The general conclusion drawn from the analysis is the meagre relevance of the expected effects, being the consideration of potential determinants relegated to three specific areas:

- The fact that the Programme defines a framework for the approval of projects. In this respect, however, the projects will be approved in calls in which the conditions of access will be determined, in addition to the particular type of projects that, by their nature, are only marginally subject to an *Environmental Impact Assessment in accordance with the provisions of Article 4.1 and Annex I from Directive 2011/92/EU, of the European Parliament and of the Council of 13 December 2011 Relating to the Assessment of Certain Public and Private Projects Impacts on the Environment*.

- The transnational nature of the effects. As it refers to a Territorial Cooperation Programme, if some environmental impact is to be produced, it will be specifically localized in the territory.

- The potential effects on areas and landscapes with recognized protection. Although no impacts are expected beyond those of marginal and local character, the previous experience has given special attention to the evaluation of projects that may affect areas and resources under Natura 2000 Network. Therefore, this third topic sets up a recommendation towards the development of types of actions closely connected to this type of territories.

TABLE 11. CRITERIA TO DETERMINE THE POSSIBLE SIGNIFICATION OF THE IMPACTS ON THE ENVIRONMENT (ANNEX II OF DIRECTIVE 2001/42/EEC)

(A)CHARACTERISTICS OF THE OPERATIONAL PROGRAMME OF TRANSNATIONAL COOPERATION OF THE ATLANTIC AREA 2014-2020		
CRITERIA	OP CHARACTERISTICS	CRITERIA
Framework for projects and other activities, either with regard to the location, nature, size and operating conditions or in connection with the allocation of resources	The Programme effectively sets a framework for projects. However, the framework determines the approval in accordance with the conditions specified in each call, of a specific type of projects that, by their nature, are only marginally subject to an Environmental Impact Assessment, in accordance with the provisions of Article 4.1 and Annex I *of Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 Relating to the Evaluation of the Effects of Certain Public and Private Projects on the Environment.*	✓
Influence on other plans and programmes	The effects of the Programme on other plans and programmes, given their limited financial dimension and their thematic and territorial specificity are estimated irrelevant (see section 0).	✗
Significant environmental problems associated with the Programme	The types of actions planned, according to the OP draft, will be, for the most, strategic and pro-active, not anticipating the generation of significant problems relating to the Programme (see section 8.1).	✗
Relevance of the programme for the implementation of Community or national legislation on environment	The Programme and the type of actions contained therein are fully relevant in view of the implementation of EU environmental legislation, although for its financial dimension does not constitute the most important instrument in this regard (see section 8.3).	✓

✓ Criteria considered ✗ Criteria not considered

(B) CHARACTERISTICS OF THE EFFECTS AND THE POSSIBLE AFFECTED AREA			
CRITERIA		OP CHARACTERISTICS	EVALUATION
Probability, duration, frequency and reversibility of the effects		It cannot be concluded that the Operational Programme of Transnational Cooperation of the Atlantic Area 2014-2020 has significant negative effects on the environment (see section 8.1).	✗
Cumulative nature of the effects		In the specific event that any of the projects would generate effects on the environment they are expected to have a marginal nature without cumulative effects (Chapter 6.1) and, in any case, there will be conducted the appropriate Environmental Impact Assessment as well as the appropriate corrective measures.	✗
Transnational nature of the effects		The geographical delimitation of the cooperation area covers a transnational territory, although the marginal and non-significant effects that may arise from its development will have a purely local character, without causing transnational effects.	✗
Risks to human health or the environment		It is not expected that the type of proceedings under the Operational Programme for Transnational Cooperation of the Atlantic Area 2014-2020 increase significantly the risks to human health or the environment, nor that they will generate significant accidents.	✗
Magnitude and spatial extent of the effects		The expected effects, according to previous experience and the type of scheduled projects, will have a purely local nature, if there is any.	✗
Value and vulnerability of the concerned problem area	Special natural characteristics	The vulnerability of the Cooperation Area (see chapter 6) will not be, in any case, adversely affected by the development of the types of actions envisaged in the OP.	✗
	Effects on cultural heritage	Generation of negative effects on cultural heritage is not expected, but indeed a positive effect. This positive effect happens mainly through the greater knowledge on it, a consequence from the joint actions covered by the Programme.	✗
	Overcoming limit values or environmental quality objectives	There are no actions anticipated to have a direct influence on the level of environmental quality.	✗
	Soil intensive exploitation	Regarding the implementation of the OP, no negative effects on the intensity level of soil exploitation are anticipated.	✗
	Effects on recognized protection areas and landscapes	Although no impacts are expected beyond those of marginal and local character, previous experience has given special attention to the projects evaluation that may affect protected areas and resources under the Natura 2000, making this one up a recommendation towards the development of types of actions associated with this type of area.	✓

✓ Criteria considered ✗ Criteria not considered

7.2. RELATION WITH OTHER RELATED PLANS AND PROGRAMMES

This section analyzes the relationship between the OP-AA 2014-2020 and other relevant plans and programmes of territorial development in the OP-AA 2014-2020 intervention area. The aim is to study their complementarity.

Therefore, and considering the comments made by some member states of the OP-AA 2014-2020, during the consultation period of the OP Draft and its corresponding SEA, the relationship between OP-AA 2014-2020 and the following directives and relevant plans are analysed:

- Framework Directive on Marine Strategy: Action Plans for Marine Environment.
- Directive for Maritime Spatial Planning.
- Regional ERDF programmes.

a) Framework Directive on Marine Strategy

Directive 2008/56/EC of 17 June, establishes a framework for Community action in relation to measures to achieve good environmental status regarding the marine environment, by 2020.

Specifically, one of the strategies of that policy is its consistency in relation to different policies, agreements, and measures that affect the marine environment, as well as the integration of environmental concerns.

The implementation of these objectives will be carried through a **Marine Strategy** by each Member State, including an **Action Plan**. Thus, Member States sharing a marine region or subregion, in this case the North-East Atlantic region, will be coordinating their marine strategies, which the corresponding action plans will reflect.

This coordination may be done through existing cooperation structures, as required by Article 6 of Directive 2008/56/EC, and based on existing programmes.

Therefore, given the common natural resource that defines the OP-AA 2014-2020 action area, the Atlantic, and due to the OP type of actions, the Framework Directive on Marine Strategy has a high degree of complementarity and consistency with the OP. Specifically, this complementarity is observed in the following actions:

- Regarding the **Specific Objective 2.1.** on the promotion of renewable energy, and energy efficiency, supportive actions for the integration of renewable energies in the littoral zone stand out.

- **Specific Objective 2.2.** on supporting green growth, eco-innovation and resource efficiency uses as a basis the wealth of natural resources, and especially those of marine origin. It also highlights the advantage of the growing demand for products and services, especially those of marine origin.

- In general, all activities encompassed within the **Specific Objective 4.1.** on improving biodiversity protection and ecosystem services have a strong connection with Directive 2008/56/EC. This is due to their common objective of improving the environmental status in marine areas.

- Finally, the improvement of the natural heritage in order to stimulate economic development, included in **Specific Objective 4.2,** expects to get the capitalization of natural resources, which leads to achieve good environmental status of marine ecosystems.

Therefore, the high coherence between the Framework Directive on Marine Strategy and the OP-AA 2014-2020 is evident.

b) Directive for Maritime Spatial Planning

Directive 2014/89/EC of 23 July is to regulate the planning of maritime activities in common seas by establishing **Common Minimum Requirements**. The overall objective is to promote sustainable growth of economies, sustainable development of marine spaces and exploitation of marine resources.

For this purpose, Member States prepare management plans, for which they can take policies, regulations, or existing mechanisms as the basis.

According to Article 5 of Directive 2014/89/EC, management plans take into account the economic, social and environmental aspects in the maritime sector. Furthermore, Member States may contribute to the development of the energy sectors in the sea, maritime transport and fishing sectors, aquaculture and conservation and environmental protection, including resistance to the effects of climate change.

Given the fact that many of the activities, to which the Directive refers, go beyond national borders, this legislation represents an improvement of territorial cooperation in the areas previously identified.

Given the purpose of this Directive, the complementarity between this Directive and the OP-AA 2014-2020 is evident especially in the OP following actions:

- Support for renewable energy and energy efficiency addressed through the Specific **Objective 2.1.,** specifically by supporting the integration of renewable energy in the littoral zone.
- The actions of promoting adaptation to climate change within the **Specific Objective 3.1.**
- The actions corresponding to **Specific Objective 4.1.** on enhancing the protection of biodiversity and ecosystem services.
- Lastly, improvement of the natural heritage in order to stimulate economic development, included in the **Specific Objective 4.2.**

c) ERDF Regional Programmes

The ERDF Regional Operational Programmes are based, like the OP-AA 2014-2020, on the Regulation 1301/2013 of 17 December, which states in Article 5 the Investment Priorities under the possible thematic objectives to be addressed.

Therefore, complementarity and coherence between ERDF regional OP and OP-AA 2014-2020 is high. The specific degree of consistency of each ERDF regional OP with the current Operational Programme will depend on the Investment Priorities, Specific Objectives and types of actions addressed by each one.

Furthermore, based on the nature of the ERDF regional OP, these may include tangible investments on the territory. However, this cannot happen with the OP-AA 2014-2020, which only includes intangible investments.

The following table shows which ERDF Regional Operational Programmes include the Thematic Objectives 1, 4, 5 and/or 6, which are the ones the OP-AA 2014-2020 addresses, in order to analyse the level of complementarity between OPs.

TABLE 12. LEVEL OF COMPLEMENTARITY BETWEEN THE ERDF REGIONAL OPs AND THE OP-AA 2014-2020

Regional OP ERDF	TO1	TO4	TO5	TO6
France				
Haute-Normandie	+	+		+
Basse-Normandie	+	+		+
Pays-de-la-Loire	+	+	+	+
Bretagne	+	+		
Poitou-Charentes	+	+		+
Aquitaine	+	+	+	+
Ireland				
Border, Midland and Western	+	+	+	+
Southern and Eastern	+	+		+
Portugal				
Norte	+	+		+
Algarve	+	+		+
Centro	+	+		+
Lisboa	+	+		+
Alentejo	+	+		+
Açores	+	+	+	+
Madeira	+	+		+
Spain				
Galicia	+	+	+	+
Principado de Asturias	+	+		+
Cantabria	+	+		
Navarra	+	+		
País Vasco	+	+	+	+
Andalucía (Huelva, Cádiz and Sevilla)	+	+	+	+
Islas Canarias	+	+	+	+
United Kingdom				
England[1]	+	+	+	+
Scotland	+	+		+
Northern Ireland	+	+		

1: It includes all the Regional Operational Programmes ERDF 2014-2020 in this area.
Source: Own elaboration based on the Drafts of the Regional OPs ERDF published in the official websites.

8. POSSIBLE EFFECTS

The strategic, operational (defined by the type of actions planned), and financial dimension of the OP-AA 2014-2020 generates low expectations in achieving a real impact on the Atlantic Area environment.

Both the predicted environmental effects, including the effects on concurrent sectoral, and spatial plans are marginal and non- quantifiable in nature.

8.1. POSSIBLE ENVIRONMENTAL EFFECTS OF GENERAL NATURE

The types of actions to be taken, according to the OP draft, will be intangible and there are no infrastructure projects planned. Therefore, for example, it is expected the creation or strengthening of cooperation platforms; encouragement for participation in *European Innovation Partnerships*, technology dissemination, exchange or benchmarking of support services to companies, advisory actions, information and promotion of exporting companies, development of common tools for the efficient use of energy, promotion of sustainable tourism strategies, formulation and implementation of early warning systems, studies, dissemination of good practices, experiences exchange, etc.

In general, the strategic and operational OP formulation allows for the following conclusions regarding their expected effects. These conclusions arise from the detailed analysis, which are included in the following paragraphs:

- The nature of the planned actions, given their strategic orientation, do not adversely affect the natural environment. Nevertheless, it is mandatory the compliance with EU directives and other regulations in force at the national, regional and local levels.

- It is not expected problems or negative environmental impacts associated with the development of the Programme. On the contrary, the strategic orientation of the proceedings leads to expected favourable effects, contributing to the improvement of knowledge and processes, with elements of demonstrative and innovative nature and the promotion of sustainable development strategies and environmental impact mitigation.

8.2. POSSIBLE ENVIRONMENTAL EFFECTS OF INDIVIDUAL NATURE BY PRIORITY AXIS

A more detailed analysis on the effects of the Axis level allows to identify potential impacts of the expected results on the environment in the different fields defined in

Annex I of Directive 2001/42/EEC: biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage and landscape.

8.2.1. Specific effects of Axis 1

Under Axis 1 (Stimulating innovation and competitiveness in the Atlantic Area), which develops Thematic Objective 1, it is complex to estimate the potential specific effects, for their magnitude and degree of uncertainty about the individual actions that can be performed. However, it is estimated that the environmental impact will be very limited given the nature of the Programme, in line with that observed in previous programming periods.

In any case, the particular characteristics of the planned actions type, the presence of public research and innovation institutions in the projects (which has been a historical constant and is expected to remain for the forthcoming programming period), and the high level of environmental control and management in public and private centres allow to assess as "reduced" the direct environmental risk. Similarly, the participation by the social sector increases the expected effects of the actions referred to in Axis 1.

Nevertheless, it is detected the existence of some marginal impacts worthy of highlighting, and that will have a higher probability of occurrence in the case of the approved projects related to environmental technologies, eco-innovation and/or sustainable development.

Thus, it is expected that implementing the actions envisaged in this Axis will increase the capacity for developing innovations in different environmental domains (air, water, soil, etc.), though it is currently impossible to select the magnitude with a degree of certainty.

However, it should be noted that if the Programme aims to improve or disseminate procedures that are more efficient applied to economic sectors, this could mean dynamics that would be disseminating processes or products counting on:

- Lower levels of contamination, which could positively affect water and air quality as well as a lower risk to human health.
- Lower consumption of materials and energy given the achievement of higher levels of performance and efficiency

TABLE 13. POTENTIAL EFFECTS OF THE TYPE OF ACTIONS EXPECTED FOR AXIS 1

Axis	TO	IP	SPECIFIC OBJECTIVE	EXPECTED OUTCOMES	ENVIRONMENTAL ASPECTS								
					Population and human health	Flora, fauna and biodiversity	Soil	Landscape	Water	Air	Global climate	Cultural and natural heritage	Resource efficiency
1	1	1B	SO 1.1: Enhancing innovation capacity through cooperation to foster competitiveness	Greater cooperation and linkage (partnerships, networks…) between public, private and research actors	↑	↔	↔	↔	↔	↔	↔	↔	↑
				Promoting innovation in regional key areas of smart specialization and innovation opportunities	↑	↑	↑	↔	↑	↑	↑	↑	↑
				Improved capacity of public and private bodies involved in R&D in areas of smart specialization	↑	↔	↔	↔	↔	↔	↔	↔	↑
				Increased capabilities on innovation and activities in SMEs	↑	↑	↑	↔	↑	↑	↑	↑	↑
			SO 1.2: Strengthening the transfer of innovation results to facilitate the emergence of new products, services and processes	Better knowledge of markets and business opportunities in the relevant areas of smart specialization	↑	↔	↔	↔	↔	↔	↔	↔	↑
				Better exploitation of research results for the development of new technologies, products and services by the productive sector	↑	↑	↑	↔	↑	↑	↑	↑	↑
				Increasing applied research in relevant economic sectors, based on cooperative approaches	↑	↑	↑	↔	↑	↑	↑	↑	↑

↑ *Positive contribution* ↓ *Negative contribution* ↔ *Neutral or marginal and indirect contribution*

Source: Own elaboration

In this context, environmental issues, where such effects are more likely to arise from, are related with the improvement of the population welfare and the efficient use of natural resources.

Moreover, taking into account the Specific Objectives, those that may have some impact are related to the promotion of innovation and applied research. Thus, to the extent that it is promoted research, technological development and innovation in the environmental field, it can be expected an effective contribution on issues such as soil, water, air, natural heritage and global climate, always depending on the subject they cover and always in evident consistency with the actions planned in the Eco-Innovation Action Plan (EcoAP).

On the opposite, landscape represents the only environmental component that is not going to benefit from any of the actions included in the Operational Programme.

8.2.2. Specific effects of Axis 2

Axis 2 (Fostering resource efficiency) includes two thematic Objectives: TO 4 related to support the shift towards a low carbon economy; and TO 6 on the conservation and protection of the environment and resource efficiency.

Therefore, the type of actions envisaged under the Specific Objective 2.1. is largely headed towards awareness, improving efficiency in the management and promotion of renewable energy production, and consumption and the actions encompassed in the Specific Objective 2.2 will help stimulating eco-innovation in products and services, and increasing efficiency in the use of resources.

Thus, both Specific Objectives show positive impacts on the environment. First, the potential positive impact of eco-innovation and green growth encompasses all environmental areas, with greater or lesser impact depending on the type of projects that ultimately are implemented.

In particular, the concept of "green growth" is gradually occupying an increasingly importance in the normative speech as a construction able to harmonize environmental and climate concerns with the economic objectives, which is understood as a present and forward-looking.

The measures provided for this area will predictably contribute to lower the pressures on the environment caused by the production and consumption of natural resources, mitigating the negative environmental impacts associated with resource depletion, water and air pollution, species habitats, etc., which gives a cross-cutting character to the specific objective of improving the efficiency of natural resources.

TABLE 14. POTENTIAL EFFECTS OF THE TYPE OF ACTIONS EXPECTED FOR AXIS 2

Axis	T.O.	I.P.	SPECIFIC OBJECTIVE	EXPECTED OUTCOMES	ENVIRONMENTAL ASPECTS								
					Population and human health	Flora, fauna and biodiversity	Soil	Landscape	Water	Air	Global climate	Cultural and natural heritage	Resource efficiency
2	4	4A	SO **2.1**: Fostering renewable energies and energy efficiency	Increased participation and use of local renewable energy sources	↑	↔	↔	↔	↑	↑	↑	↔	↑
				Greater regional integration of regional Low Carbon Strategies to promote the production and distribution of renewable energy	↑	↔	↔	↔	↑	↑	↑	↔	↑
				Improved spatial and organizational management, and interaction to encourage the development of the Atlantic territories for the production of renewable energy	↑	↔	↔	↔	↑	↑	↑	↔	↑
				Increased levels of public and private investment in renewable energy production and distribution	↑	↔	↔	↔	↑	↑	↑	↔	↑
				Increased awareness and knowledge of civil society, the business sector and other stakeholders on the needs and opportunities arising from renewable energy, contributing to a shift to an economy and society with low carbon emission	↑	↔	↔	↔	↑	↑	↑	↔	↑
				Greater degree of energy self-sufficiency	↑	↔	↔	↔	↔	↔	↔	↔	↑
	6	6G	SO **2.2**: Fostering green growth, eco-innovation and environmental efficiency	Increased awareness of eco-innovation and eco-efficiency	↑	↑	↑	↑	↑	↑	↑	↑	↑
				Progress on the efficient organization of companies and organizations to include the concepts of ecological innovation and eco-innovation	↑	↑	↑	↑	↑	↑	↑	↑	↑
				Increased research related to green growth	↑	↑	↑	↑	↑	↑	↑	↑	↑

↑ *Positive contribution* ↓ *Negative contribution* ↔ *Neutral or marginal and indirect contribution*

Source: Own elaboration

Furthermore, it is notable, for its greater relevance, the reduction of fossil fuels consumption that cause the emission of greenhouse gases (GHG), and therefore, responsible for climate change. Specifically:

- Reduction of atmospheric emissions that cause global warming;
- Lower contamination of the aquatic and terrestrial environments, producing acidification and eutrophication;
- Reduction of waste generation such as carcinogenic, radioactive waste and heavy metals released into the atmosphere.

The relativity, as identified in all cases, is related to the reduced financial importance of the projects undertaken and therefore, the small size of their actual impact.

Analyzing the potential effects by Specific Objective, the following aspects stand out:

- The predominant positive impact on water, air and climate, in addition to population and resource efficiency in relation to the actions encompassed in SO. 2.1.
- The most outstanding feature of the effects resulting from the actions corresponding to the Specific Objective 2.2., is the potential positive contribution over all environmental components. This is due to the promotion of eco-innovation, efficiency, and "green growth", in a broad sense.

8.2.3. Specific effects of Axis 3

Axis 3 (Strengthening risk management systems) is associated with a Specific Objective, according to which the OP seeks *to strengthen the response capacity of the Atlantic regions to natural disasters and the consequences of climate change*.

This is an objective that has a positive influence on a wide range of environmental issues, though marginal and in a timely manner, and with a well localized impact on the territory and no cumulative effects. It stands out the positive effects on the population.

To the extent that the type of planned actions address the risks associated with flooding, erosion, seismic hazards, fires and other natural disasters, there will be observed positive results in soil, landscape, flora and fauna, water and air, as well as in natural heritage, and welfare of the population.

The effective implementation of measures to strengthen the cooperation regarding risk management and prevention will increase the soundness of institutional capacities of key

actors at different levels of government, private sector and civil society and effective coordination between these actors and the levels.

The expected incidence is produced, at least, at two complementary levels:

- The minimization of the occurrence of natural disasters as a result of preventive measures both at the institutional level (development of warning systems, improved knowledge, among other measures) and on citizenship (awareness and sensitization).
- The correction and attention to the impacts resulting from natural disasters, through the design of joint action plans and mechanisms to compensate and restore the damages.

Therefore, positive effects are expected, though small sized, on material goods, by preventing natural disasters, as well as on natural areas, by preventing their destruction, a fact that would reduce the positive risks to biodiversity, and to other resources and components of the Cooperation Area natural heritage.

Resource efficiency appears as the only aspect with neutral or marginal effects.

TABLE 15. POTENTIAL EFFECTS OF THE TYPE OF ACTIONS EXPECTED FOR AXIS 3

AXIS	TO	IP	SPECIFIC OBJECTIVE	EXPECTED OUTCOMES	ENVIRONMENTAL ASPECTS								
					Population and human health	Flora, fauna and biodiversity	Soil	Landscape	Water	Air	Global climate	Cultural and natural heritage	Resource efficiency
3	5	5B	SO **3.1**: Strengthening risks management systems	Strengthening resilience and planning for the Atlantic regions on the management of natural disasters and the consequences of climate change and maritime activities of economic actors in the Atlantic area	↑	↑	↑	↑	↑	↑	↑	↑	↔

↑ *Positive contribution* ↓ *Negative contribution* ↔ *Neutral or marginal and indirect contribution*

Source: Own elaboration

8.2.4. Specific effects of Axis 4

Finally, Axis 4 (Improving the protection of biodiversity and enhancing ecosystems' services) poses the achievement of two specific objectives with a different impact on the environment.

- Improving the protection of biodiversity and ecosystem services generates positive effects on cultural and natural heritage, landscape and biodiversity of the area of cooperation, leading ultimately to greater efficiency in the use of resources and improves population life quality.

- These last two aspects even cover a greater dimension with regard to the enhancement of natural and cultural assets to stimulate economic development, with a direct impact on the cultural and natural heritage in both cases, being possible to differentiate tourism-related actions and those related to economic enhancement activities.

These cooperation activities headed particularly to the protection of nature and biodiversity conservation involve, therefore, a favourable impact on the environment. The most benefited aspects will be those in the biotic environment, the landscape, natural areas and cultural heritage. Consequently, the socio-economic environment will also be favoured.

However, the other environmental components will benefit due to promoting actions such as supporting innovation processes that boost traditional farming practices with impact on soil, water, and landscape, among others. Likewise, the interconnectedness of environmental components together, soil, water, air, and climate, in general, will benefit indirectly reporting this fact more particularly to water and air. In the first case, it is due to the emphasis of sustainable development of human activities on marine and coastal ecosystems, and river basins, including the promotion of water footprint certificates. For the second case, the impetus for carbon footprint certification will promote air quality and climate in general.

In conclusion, given the thematic focus of Axis 4, the expected results of the type of actions planned will generate, *a priori*, certain effects on different environmental areas, although such elements, always of a positive nature, are characterized, as noted above, by their particular nature (associated with specific actions), indirect and small sized (proportional in all cases to the financial dimension of the co-financed actions).

TABLE 16. POTENTIAL EFFECTS OF THE TYPE OF ACTIONS EXPECTED FOR AXIS 2

AXIS	TO	IP	SPECIFIC OBJECTIVE	EXPECTED OUTCOMES	ENVIRONMENTAL ASPECTS								
					Population and human health	Flora, fauna and biodiversity	Soil	Landscape	Water	Air	Global climate	Cultural and natural heritage	Resource efficiency
4	6	6D	**SO 4.1**: Improving the protection of biodiversity and enhancing ecosystems' services	Greater coordination of environmental management systems	↑	↑	↔	↑	↔	↔	↔	↑	↑
				Increasing territorial capacity for environmental protection, preservation of biodiversity and improved ecosystem services	↑	↑	↑	↑	↑	↑	↔	↑	↑
		6C	**SO 4.2**: Enhancing natural and cultural assets to stimulate economic development	Better use and preservation of natural and cultural assets of the Atlantic Area leading to increased interest in the area and attracting new visitors	↑	↑	↔	↑	↔	↔	↔	↑	↑
				Generating new products and services that contribute to economic development, creating local jobs and creating synergies that contribute to the progress and welfare of populations	↑	↔	↔	↔	↔	↔	↔	↑	↑

↑ *Positive contribution* ↓ *Negative contribution* ↔ *Neutral or marginal and indirect contribution*

Source: Own elaboration

8.3. EFFECTS ON CONCURRENT SECTORAL AND TERRITORIAL PLANS

The effects of the OP on other plans and programmes, given their limited financial dimension and its thematic and territorial specificity are estimated irrelevant.

However, it is considered desirable the complementarity with the other actions to be carried out within the framework of the European Regional Policy and other EU national and regional policies (Eco-innovation Action Plan - EcoAP, the *Life* Programme, etc.).

Moreover, the OP-AA 2014-2020 is not designed to develop related plans or programmes nor has the power to order their development, contrary to what may happen in other programming cases.

8.4. FINAL EVALUATION OF THE GENERATION OF SIGNIFICANT EFFECTS ON THE ENVIRONMENT

The generated effects on the environment and environmental objectives of the European Union by the Operational Programme of Transnational Cooperation of the Atlantic Area 2014-2020 will not provide a negative sign and will present a more significant indirect and marginal character in those actions focusing on environmental issues for a central theme (such as those expected in Axis 2, 3 and 4). However, as regards Axis 1, it emerges necessary to enhance the expected positive impacts of research headed to environmental issues and eco-innovation.

Therefore, in accordance with the provisions of *Article 3 of Directive 2001/42/EC*, it cannot be concluded that the Operational Programme of Transnational Cooperation of the Atlantic Area 2014-2020 has significant negative effects on the environment.

9. CORRECTIVE ACTIONS PLANNED

To the extent that the OP is not expected to generate significant environmental impacts or that strongly influence the environment, *it is not considered significant to raise preventive measures*. However, in order to promote the achievement of the potential positive effects and eliminate specific effects that might timely result from a project, it is recommended to incorporate elements of environmental integration in the development of the process of operations selection associated with each call.

In this sense, the experience from the 2007-2013 period proves useful in order to include the selection criteria of those projects that have had a high degree of consideration, such as:

- Positive assessment of those projects that raise or disseminate innovations with sustainability goals regarding environmental issues relevant to the Atlantic Area: reducing consumption of materials and energy, reducing pollution, climate change, desertification, etc.;
- Prioritization of the projects within protected areas that have already developed management figures, or that encourage the development of these management tools;
- Development of projects that include aspects of public participation and transparency of information, especially of environmental character;
- Positive consideration of the projects that have been integrated into regional or national strategic planning, and that have gone through an environmental assessment;
- Positive assessment of projects integrating environmental objectives and criteria, such as systems promoting the reduction of greenhouse gases to the atmosphere or efficient use of resources;
- Positive consideration to projects that have a positive impact on the environment and develop positive synergies between marine activities, such as relationship between renewable energy and fisheries, shellfish, algae production and tourism;
- Particular attention in the evaluation of projects that may affect areas and resources protected by the Natura 2000 Network.

10. PLANNED MEASURES FOR THE ENVIRONMENTAL MONITORING OF THE PROGRAMME

The *Strategic Environmental Assessment Directive (2001/42/EC)* requires that the significant environmental effects regarding the Programme implementation to be subject of monitoring or surveillance in order to identify the possible unforeseen adverse effects, facilitating the adoption of appropriate corrective actions.

According to the guidelines established for this purpose in the "*Guidance Document on the ex-ante evaluation*", such monitoring normally includes the selection of appropriate indicators.

To this end, it was carried out a selection of the common productivity indicators for the Objective of European Territorial Cooperation given by the Annex of *Regulation (EU) No 1299/2013* and selected under the OP, which have been considered relevant by the Ex Ante Evaluation.

This seeks to combine the environmental monitoring system with the OP monitoring procedure, thus simplifying the reporting requirements.

10.1. INTEGRATION OF THE ENVIRONMENTAL MONITORING WITHIN THE EVALUATION AND MONITORING SYSTEM OF THE PROGRAMME

The monitoring and evaluation system of the OP will be based on two main tools: on the one hand, the definition of an appropriate system of indicators and, on the other hand, the design of an Assessment Plan.

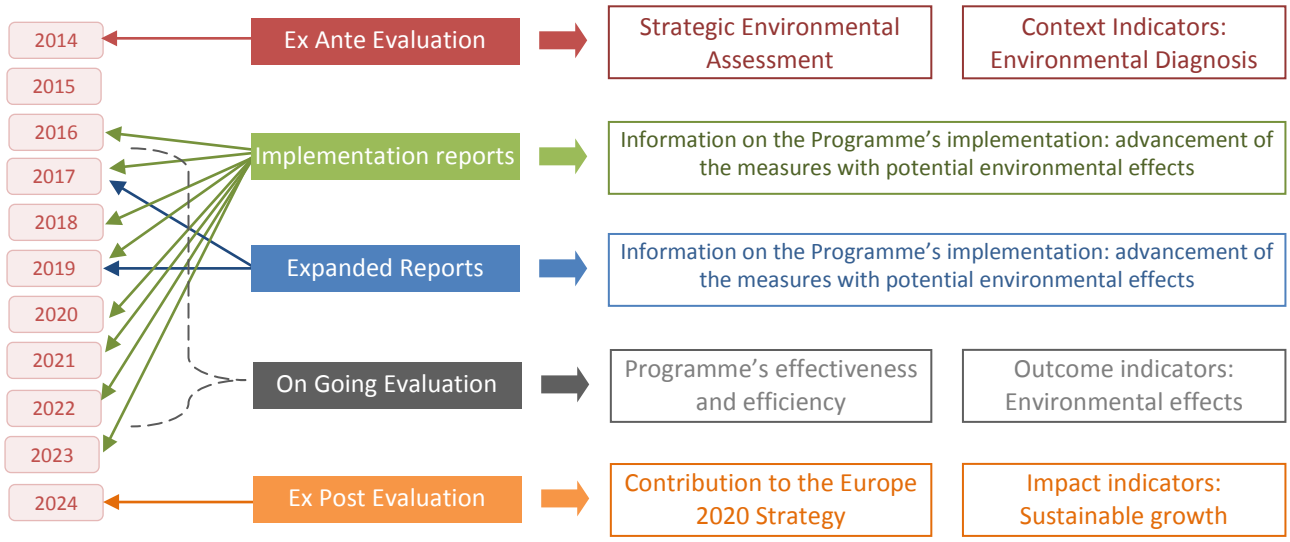
For the selection of environmental monitoring indicators, the productivity indicators of the 2014-2020 OP Draft were considered, as they reflect the impact of the programme implementation in the environment. Also, since these indicators are to be used to monitor the implementation of the Operational Program itself, this way it avoids duplicating resources. Consequently, integrating the environmental monitoring system in the overall system will:

- Make the most of the information collected and establish synergies between both monitoring processes, maximizing efficiency.
- Establish a limited number of indicators, in order to simplify the monitoring system and achieve an efficient management.

- Ensure constant updated information on the OP performance in relation to its impact on the environment.

This guarantee stems from the regulatory requirements set by the European Commission as regards monitoring and evaluation. The general structure underlying the proposed model is graphically illustrated in Squeme 2**¡Error! No se encuentra el origen de la referencia.**, which includes major milestones, indicators, and tools considered for the Programme's environmental monitoring.

SQUEME 2. INTEGRATION OF THE ENVIRONMENTAL MONITORING AND EVALUATION



Source: Own elaboration.

Specifically, it stands out that:

- In the **development phase of the Programme,** the Ex Ante Evaluation process is accompanied by the corresponding Strategic Environmental Assessment (under which this report is developed).

In addition, under the SEA process an analysis of the environmental situation (see document "*Environmental Diagnosis of the Atlantic Area*" in the Annex) was carried out through an extensive battery of context indicators related to environment and natural resources, which has facilitated the development of Chapter 6 of this Report.

The environmental information used has helped to address the following aspects:

- Orography.

- Climatology.
- Natural Resources.
- Natural Heritage.
- Biodiversity.
- Natural Risks.
- Technological Disasters.
- Climate Change.
- Energy.
- Waste.
- Air pollution.
- Urbanization.
- Touristic and cultural resources.

Throughout the **development of the OP** the data for these indicators will suffer an update. In particular, the updated data will relate to:

- Extended Execution Reports, in which information on the achievements of the Programme and its potential environmental effects are provided.
- The Intermediate Assessments conducted during the programming period.
- Ex Post Evaluation to be completed by December 31, 2024.

Each year from 2016 to 2023, Annual Performance Reports will be developed. These Reports should provide data on productivity indicators. Out of these, it is worth noting those associated with the Investment Priorities that expect significant effects on the environment.

The assessment of the evolution of these indicators will allow to understand how the OP is addressing the objectives planned and specifically, how the estimated environmental effects are achieved.

Finally, there will be evaluation activities under the OP Evaluation Plan. Such exercises will also assess the effectiveness and efficiency of the Programme from an environmental perspective, paying particular attention to the issue of climate change.

Finally, as defined in *Regulation (EU) No. 1303/2013*, in article 110.1.g), in the area of monitoring and evaluation, the Monitoring Committee will consider the actions to promote sustainable development.

10.2. Determining Environmental Indicators

Sustainable development is also present in the monitoring system of the AATC-OP through the inclusion of a system of indicators that allows the evaluation of the progress in this field. This is particularly relevant for those indicators linked to Investment Priorities under Axis 2, 3 and 4.

The following table shows the indicators that have been included in the AATC-OP. These indicators will allow the assessment of the established environmental objectives.

TABLA 17. INDICADORES DE SEGUIMIENTO AMBIENTAL DEL PO

Axis	IP	Indicators
		SPECIFIC OUTPUT INDICATORS
ALL	ALL	Number of case studies and pilot actions implemented
		Number of technical and scientific publications produced
		Number of policy, strategy and operational instruments produced
		Number of actions for the dissemination and capitalisation of results
		Number of participants in actions for the dissemination and capitalisation of results
		COMMON OUTPUT INDICATORS
2	4A	Additional capacity of renewable energy production
3	5B	Population benefiting from flood protection measures
		Population benefiting from forest fire protection measures
4	6D	Total surface area of rehabilitated land
		Surface area of habitats supported in order to attain a better conservation status
	6C	Increase in expected number of visits to supported sites of cultural and natural heritage and attractions
		RESULT INDICATORS
2	4A	Degree of political commitment to foster local dynamics aiming to increase energy efficiency and develop renewable energy sources
	6G	Comprehensiveness of public policies for eco-innovation and green growth
3	5B	Comprehensiveness of public policies in view of improving the resilience of land and maritime areas to climate and nature changes
4	6D	Comprehensiveness of public policies valuing the cultural and natural assets in view of local economic development
	6C	Comprehensiveness of public policies in view of improving the biodiversity and the ecosystems services

Source: Own elaboration.

11. ANNEX: ENVIRONMENTAL DIAGNOSIS OF THE ATLANTIC AREA

11.1. GEOGRAPHIC PRESENTATION OF THE ATLANTIC AREA

The territory covered by the Cooperation Programme comprises the eligible regions from five European Union countries bathed by the Atlantic Ocean: Spain, France, Ireland, Portugal, and United Kingdom. Map 1 shows the geographical area covered by the Atlantic Area Transnational Cooperation.

MAP 1. GEOGRAPHIC ZONE OF THE TRANSNATIONAL ATLANTIC AREA

It is an area comprising more than 594.000 square kilometres, where 62,7 million people live, according to the information in Table 1.

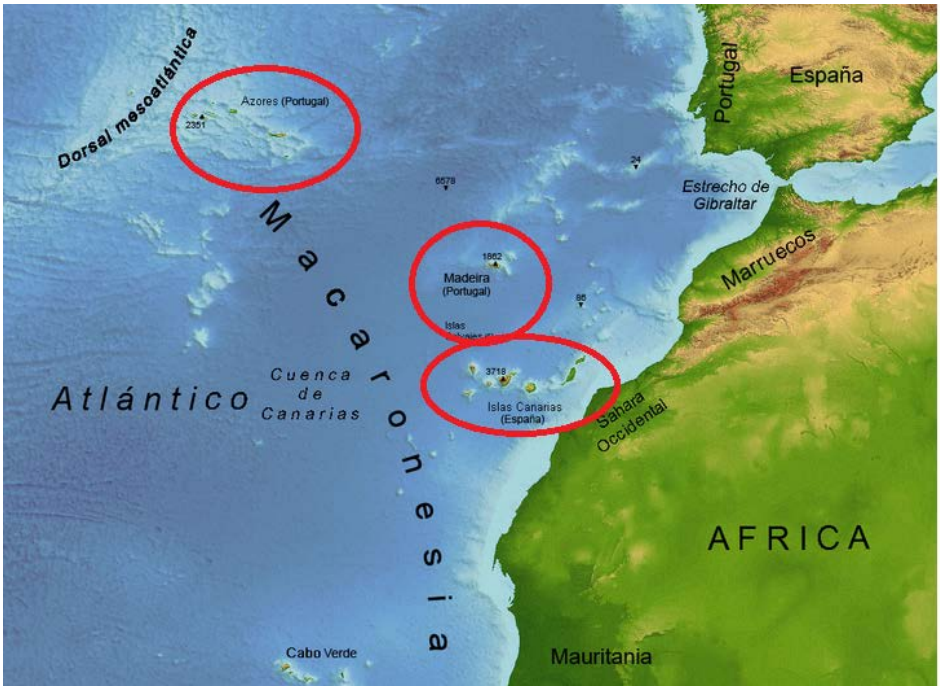
TABLE 1.POPULATION (2011) AND AREA BY REGIONS OF THE ATLANTIC SPACE

COUNTRY	POPULATION	AREA KM^2
Spanish regions	12.909.318	94.729
French regions	15.287.126	156.314
Ireland	4.582.769	69.797
Portugal (mainland)	10.028.234	88.968
British regions	19.893.879	184.553
Total Programme	62.701.326	594.361

Source: Elaborated by Regio Plus from Eurostat data

The Territorial Cooperation Programme of the Atlantic Area 2014-2020 include as eligible regions the archipelagos of the Azores and Madeira (Portugal) and the Canary Islands (Spain). They are located in the biogeographic region of Macaronesia, a collective name for the five archipelagos of North Atlantic of volcanic origin among which the two belonging to Portugal are found: the Azores and Madeira and a Spanish one, the Canary Islands. The location of these archipelagos is considered an outermost region, characterized therefore by specific constraints and structural problems resulting from its insular profile.

MAP 2. MACARONESIA BIOGEOGAPHIC REGION



The Region of the Azores is an archipelago of nine islands with an area of 2.322 km² (their individual surfaces vary between the 747 km² of São Miguel and the 17 km² of Corvo). In 2011, their population was 246.732 inhabitants with a population density of 106,3 persons per km².

The Region of Madeira is an archipelago consisting of two inhabited islands, Madeira and Porto Santo, and three smaller uninhabited islands. Its area is 801,1 km². Its population, in 2011, was 268.045 inhabitants with a population density of 333,7 persons per km².

The Canary Autonomous Community is an archipelago of seven main islands: El Hierro, La Gomera, La Palma, Tenerife, Fuerteventura, Gran Canaria and Lanzarote, and two island territories: Chinijo Archipelago and Isla de Lobos. Its surface is 7.447 km². Its population, in 2011, was 2.100.229 inhabitants with a population density of 283 persons per km².

11.2. Orography

In the Transnational Atlantic Area orography there are plain areas in Ireland, in the United Kingdom regions and the France regions, with an average height of 500 meters above the sea level. As an exception, there is the North of the United Kingdom with the Ben Nevis elevation with a peak of 1,344 meters.

In the Iberian Peninsula the terrain varies, and heights between 500 and 2.000 meters above sea level can be found. The main highest peaks within the cooperation area are the Galician Massif, North Subplateau on the west, the Atlantic Depression, Sierra Morena and the Guadalquivir Depression. Also worth of highlighting on the border between Spain and France is the Pyrenees mountain range.

Map 3, shows the highest peaks of Europe and evidences that the higher elevations of the Atlantic Area are found in Scotland and the north of the Iberian Peninsula.

MAP 3. HIGHEST PEAKS OF EUROPE

Source: Web Resources

11.3. CLIMATOLOGY

In the Transnational Cooperation Atlantic Area there are two main climates, namely:

- Mediterranean climate in Spain (except in its northern coast) and the Centro, Alentejo and Algarve regions, in Portugal.
- Oceanic climate with influence in the northern region of Portugal and Spain, the region of France, the United Kingdom and Ireland.

The oceanic climate penetrates unto the interior, leading to mild winters, cool summers, predominantly westerly winds and abundant rainfall, especially in winter.

The Mediterranean climate is characteristic of the southern European regions, with warm and sunny summers, high temperatures, winters with mild temperatures; the rainfall is scanty and is concentrated especially in spring and autumn.

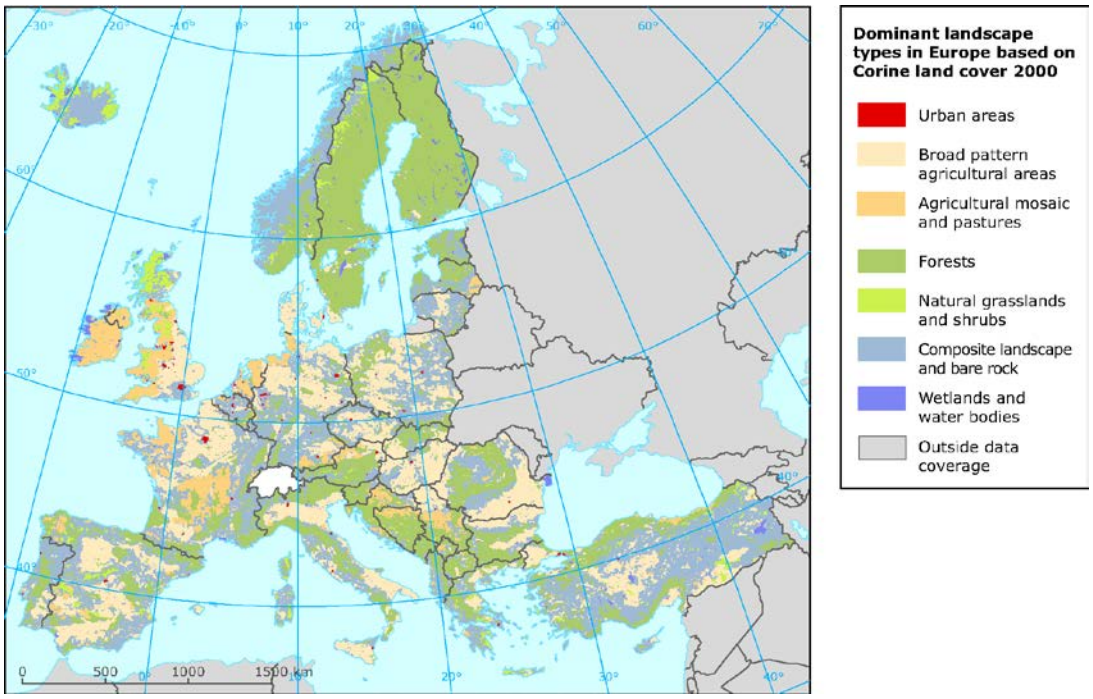
The Atlantic Ocean circulation drives changes in the European ecosystems, both terrestrial and marine.

11.4. Natural Resources

11.4.1. Soil

The landscape in the Atlantic Area is predominantly agricultural, with a few highly urbanized areas, especially in the United Kingdom. Consequently, there are numerous natural and semi-natural habitats found in isolation and scattered, as can be seen from Map 4, which classifies land uses and dominant landscapes in Europe in seven categories: urban or artificial areas, agricultural area, agricultural mosaic and grassland, forests, natural grasslands and shrubs, composed landscape and bare rock, wetlands and water areas.

MAP 4. SOIL USES AND DOMINANT LANDSCAPES IN EUROPE



Source: European Environment Agency- Corine Land Cover

11.4.2. Forests

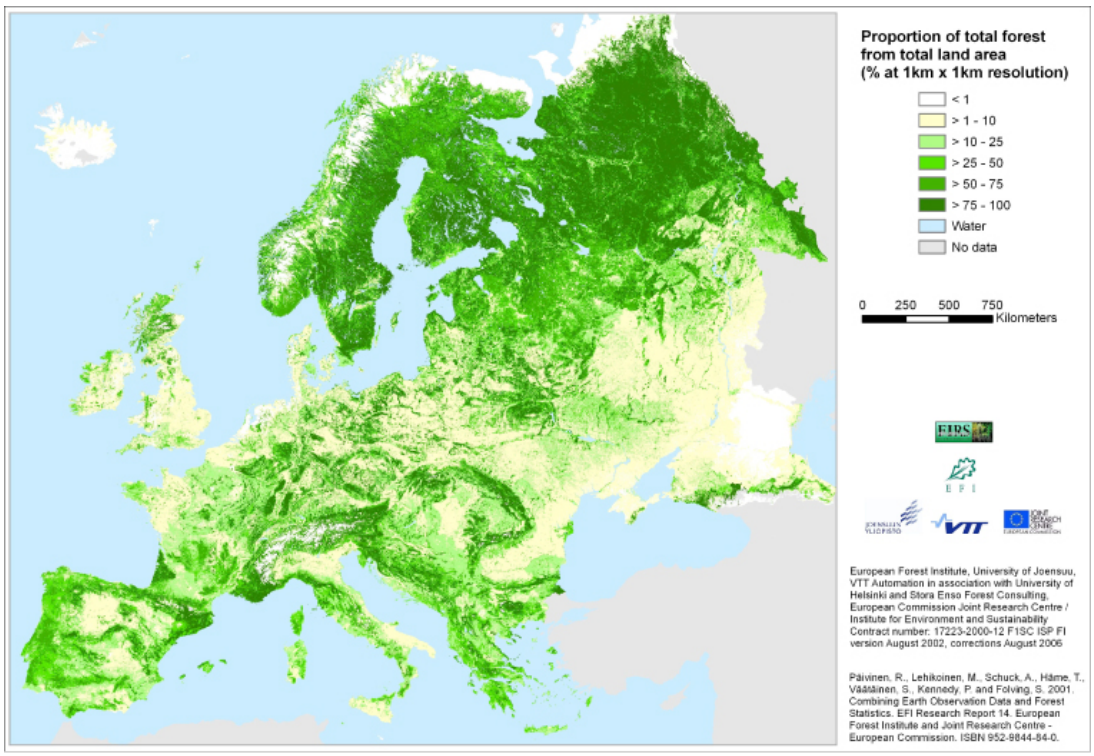
European forests occupy 42% of the land area of the EU-27, according to the European Commission data, in 2011. These areas provide critical ecosystem services such as soil protection and water resources, carbon storage and sequestration and generation of biomass for energy production.

It is essential the potential contribution of forests in Europe to achieve common economic, social and environmental objectives of the EU in rural areas, and has a key role in the reform of the Common Agricultural Policy (CAP), with ERDF measures specifically devoted to these areas.

In general, European forest soils exceed critical loads of acidification. The excessive widespread application of fertilizer causes its filtration and dragging, and leads to nitrate eutrophication and contamination of water intended for consumption.

Map 5 shows the proportion of forest land from the total land area.

MAP 5. PROPORTION OF FOREST LAND FROM TOTAL LAND AREA



Source: European Environment Agency

In the Atlantic Area, the regions belonging to Spain, Portugal and the southwest coast of France have around 50% of forest land from the total area. By contrast, the Atlantic Area remaining regions of France, United Kingdom and Ireland have percentages of forest land between 1 and 25% from the total land area, with some exceptions in northern Britain, where the percentage is slightly higher.

11.4.3. Water

In recent years, the population increasing, industrialization, intensification of agriculture, power generation and transport, sewerage and construction of reservoirs, and recreational growth have significantly increased the pressures exerted on European inland waters. In addition to these problems are the droughts and floods.

Water resources in many parts of Europe are threatened by various human activities. Each year, it is extracted an average of 15% from renewable water resources in Europe. Although regional variations are very large, industry absorbs about 53%, agriculture 26% and the domestic sector 19% of the total.

Agriculture is the activity that uses water the most, in the Mediterranean countries. In southern European countries such as Spain and Portugal, 60% of water is used for irrigation. In some regions, groundwater extraction is outpacing the rate of renewal, causing declines in the water table level, loss of wetlands and saltwater intrusion, which poses a threat to the availability of this resource. The risk of scarcity and quantitative and qualitative degradation is exacerbated by seasonal population variations, constant demographic pressure and increased use of water for agricultural purposes. The quality of groundwater is affected by increased concentrations of nitrates and pesticides from agriculture.

An indicator of pressure or stress on freshwater resources is the Water Exploitation Index (WEI), which annually calculates the ratio of the total freshwater extraction of the total renewable resource. A WEI above 20% means that water resources are under stress and values above 40% indicate severe water stress and clearly unsustainable use of these resources.

In the past two decades, the WEI decreased, on average, in Europe, as a result of water saving and efficiency measures. Table 2 shows the WEI data for each of the countries of the Atlantic Area, where Spain is the only country that is over 20%, while the northern regions located in this space are those with better values.

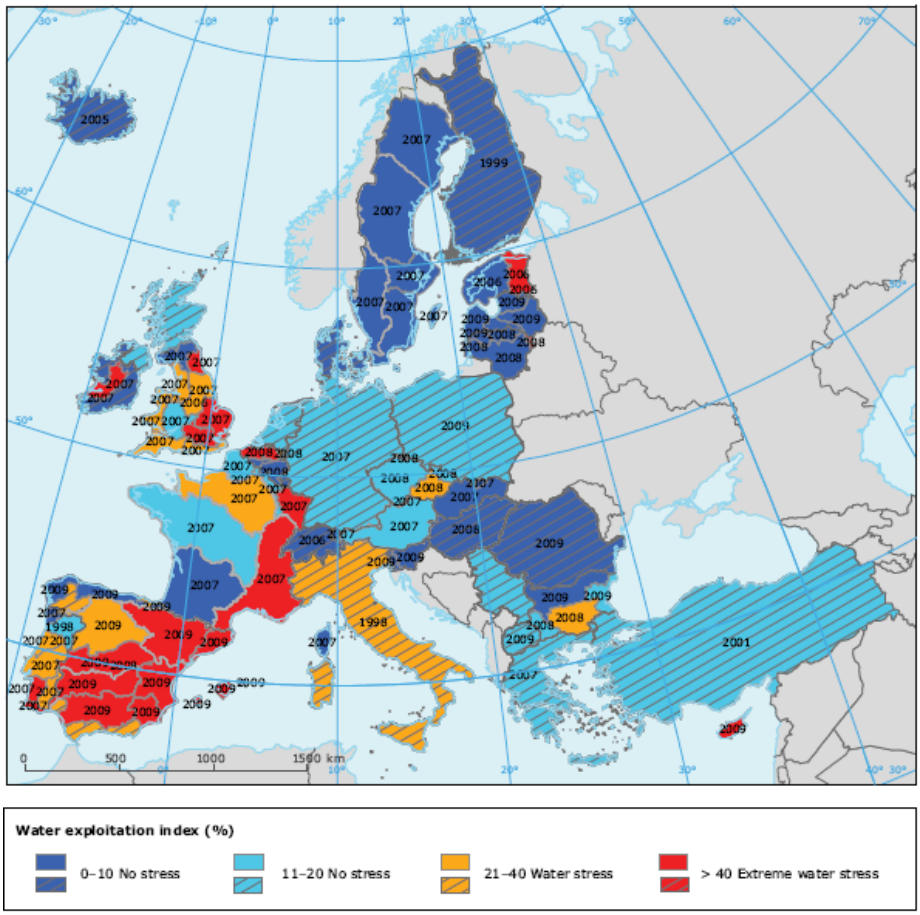
TABLE 2. WATER EXPLOITATION INDEX (WEI)

REGION/COUNTRY	WEI (Latest year available 1998-2007)
Portugal	15,1%
Spain	30,4%
France	17,5%
United Kingdom	12,9%
Ireland	1,5%

Source: European Environment Agency

Map 6 shows the Water Exploitation Index (WEI) at the European level by years.

MAP 6. WATER EXPLOITATION INDEX (WEI)



Source: European Environment Agency

As regards domestic water consumption, it represents about 15% of total water use in Europe. Europeans consume between 100 and 320 litres of water per day on average, varying by country.

Table 3 shows, per capita, the water consumption in litres/person/day in each of the countries of the Atlantic Area as well as the water leaks in the system.

TABLE 3. DOMESTIC WATER CONSUMPTION PER CAPITA (2006)

REGION/ COUNTRY	DOMESTIC WATER CONSUMPTION PER CAPITA (LITRES/PERSON/DAY)	AVERAGE OF WATER LEAKS (%)
EU-27	202	21
Portugal	107	40
Spain	283	9
France	196	23
United Kingdom	241	23
Ireland	317	27

Source: European Commission. ENDWARE and EUREAU, Overview on Water and Wastewater in Europe 2008

The quality of drinking water is still a concern in Europe. In the period 2004-2007, 15% of the twenty-seven EU groundwater monitoring stations had average nitrate concentrations above 50 mgN/liter, 10.6% were in the range of 40-50 mgN/liter and 13% were in the range of 25 to 40 mgN/liter. Approximately 66% of the groundwater stations had a concentration level below 25 mgN/liter.

Only 21% stations showed average nitrate concentrations of less than 2 mgN/liter and 37% between 2 and 10 mgN/liter. A concentration between 40 and 50 mgN/liter was found in 3% of the stations and above 50 mgN/liter also in 3% of the stations.

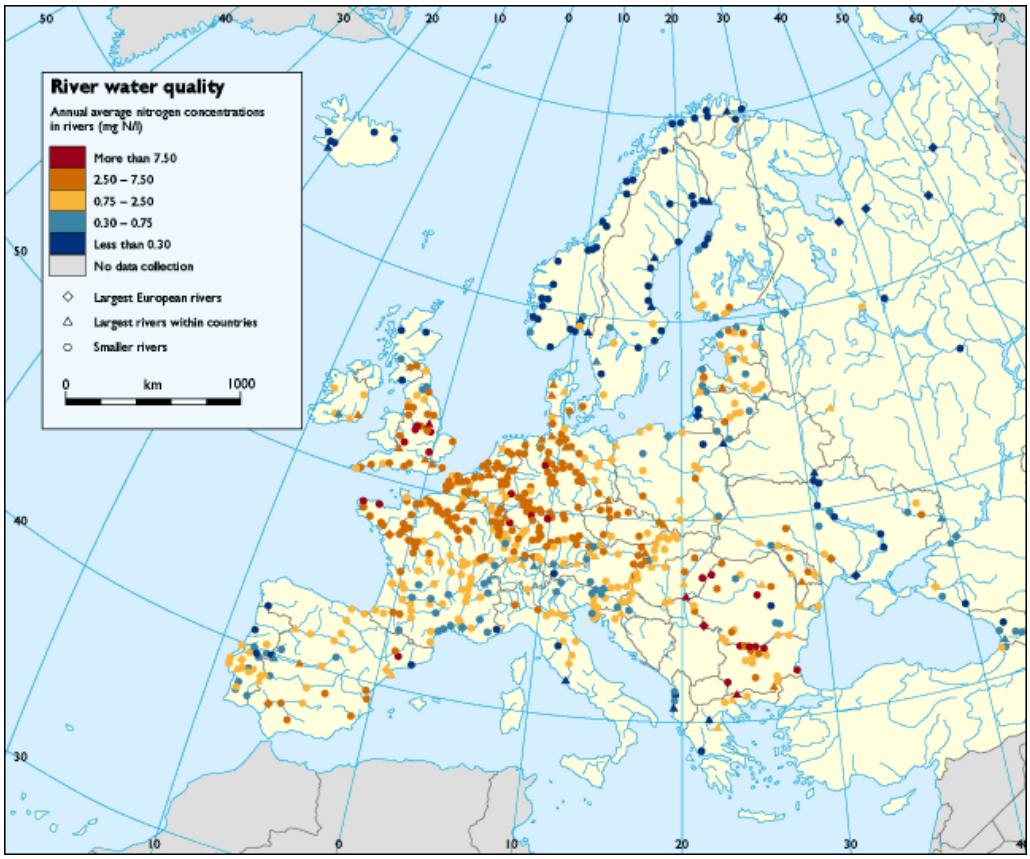
The integrated management of the total of water resources is essential and a priority issue for the Transnational Atlantic Area.

11.4.4. River waterways

Although water quality in the Atlantic Area is better than in other parts of Europe, it must be taken into account that it is a river basin drain, which carries significant drag polluting flows. Mainly, the quality of surface water is affected by the presence of nitrogen and phosphorus.

Map 7 shows the water quality of rivers in Europe through the annual average of nitrogen concentration, measured in mgN/liter. The highest concentrations of nitrogen, between 2,5-7,5 mgN/l and > 7,5 mgN /l, are in the coastal regions of France and the United Kingdom. The nitrogen concentration values at the mouths of the Atlantic Ocean coming from Portugal have values between 0,3 and 2,5 mgN/l.

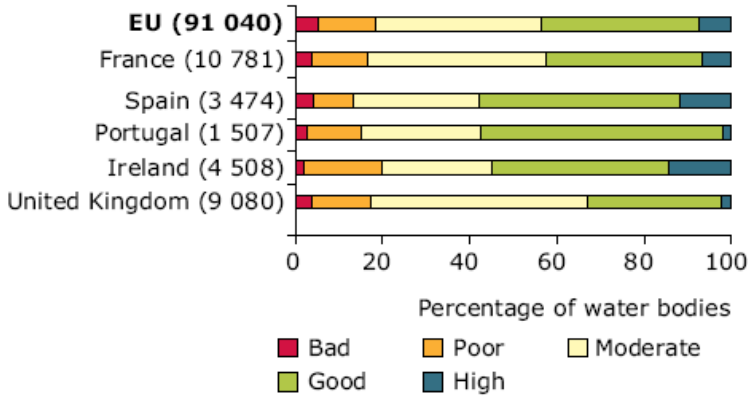
MAP 7.RIVER WATER QUALITY - EUROPE



Source: European Environment Agency

FIGURE 1 shows the potential and ecological status of rivers or water bodies of the Member States of the Atlantic Area as bad, poor, moderate, good and high. On average, the ecological status is between moderate and good for all the Atlantic Area countries and to the EU-27average.

FIGURE 1. POTENCIAL AND ECOLOGICAL STATUS OF RIVERS/WATER BODIES OF THE ATLANTIC AREA MEMBER STATES -ADAPTATION



Source: WISE-WFD database, May 2012.

11.4.5. Coastlines

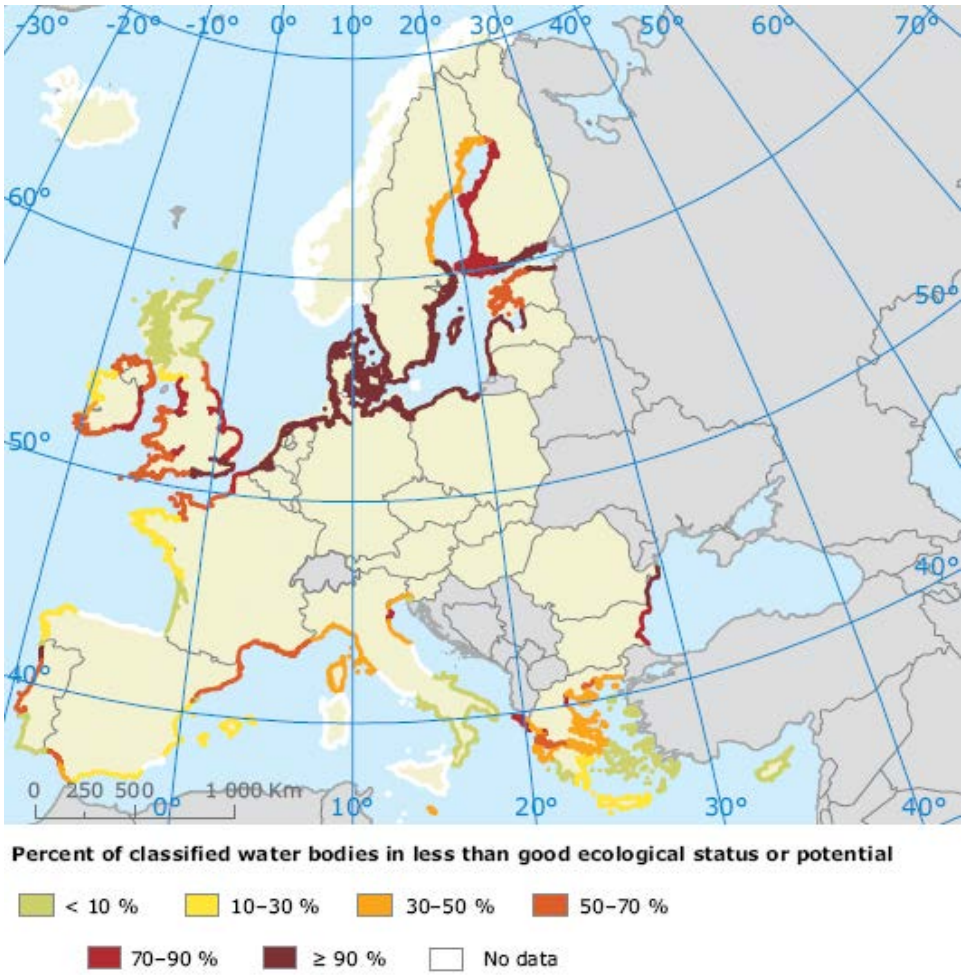
a) Status of coastal and transition waters

The coastline or the shoreline of the Atlantic region extends from the north of the United Kingdom and Ireland to the northern coastlines of Spain and Portugal. Windswept cliffs, exposed rocky headlands and narrow estuaries contrast sharply with long sandy beaches, sheltered bays and extensive marshes in the Atlantic Area.

Map 8 shows the proportion of coastal and transitional waters in different River Basin Districts (RBDs) in potential or ecological status.

The southwest coast of Portugal, northern Britain and southern France have ratios below 10%. The east coast of France, east coast of Ireland, and the coastal region of Galicia in Spain have rates between 10% and 30%. The coasts of the Centro and Norte regions of Portugal, Atlantic Andalusia in Spain, northern France, the rest of the United Kingdom and Ireland have the highest percentages, between 30 and 70%, reaching 90% in some areas.

MAP 8. PROPORTION OF COASTAL AND TRASITION WATERS IN DIFFERENT RIVER BASINS DISTRICTS (RBDS) IN POTENTIAL OR ECOLOGICAL STATUS

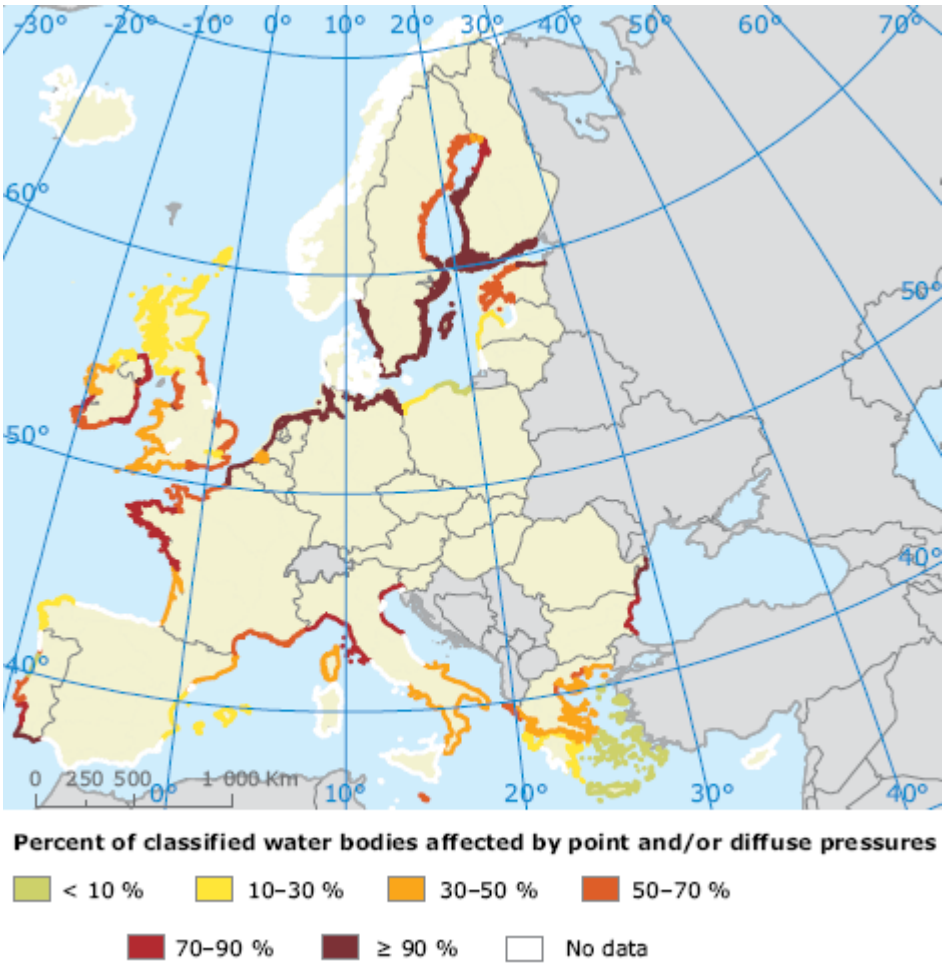


Source: WISE-WFD database, May 2012. Detailed data are available at http://discomap.eea.europa.eu/report/wfd/SWB_STATUS

Map 9 indicates the proportion of coastal and transitional waters in different river basin districts (RBDs) affected by pollution pressures especially by agriculture and population density.

The coast of the Galicia region in Spain and the north of the United Kingdom have the lowest percentages of waters affected by pollution, between 10% and 30%. The Centro region of Portugal, west coast of Ireland, western France and western United Kingdom have rates in the range of 30-50%. The southern coast of Portugal, East Ireland and northern France have higher percentages, between 50% and 70%, in some cases exceeding 90%.

MAP 9. PROPORTION OF COASTAL AND TRANSITION WATERS IN DIFFERENT RIVER BASIN DISTRICTS (RBDS) AFFECTED BY POLLUTION PRESSURES (AGRICULTURE AND POPULATION DENSITY)

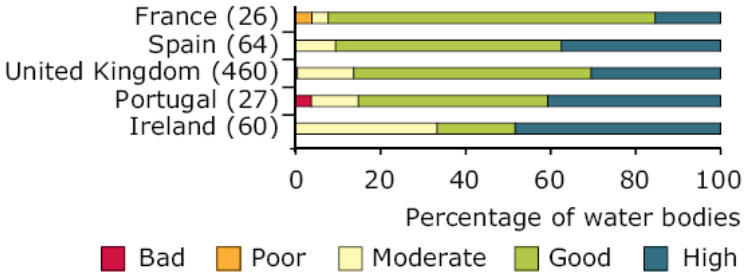


Source: WISE-WFD database, May 2012. Detailed data are available at http://discomap.eea.europa.eu/report/wfd/SWB_PRESSURE_STATUS

Figure 2 is an adaptation of the data available regarding the ecological status of coastlines of the Atlantic Area Member States with the percentage of water bodies as bad, poor, moderate, good and high.

As shown therein, Portugal is the only country that presents coastlines with “bad” status and France with “poor” status, in some cases with approximately 5%. In general the status of the coastlines is “good” or “high”.

FIGURE 2 COASTLINES ECOLOGICAL STATUS FROM THE ATLANTIC AREA MEMBER STATES – ADAPTATION



Source: WISE-WFD database, May 2012.

b) Shoreline management

Since 1995, the shoreline protection or land-sea transition has been primarily under charge of the **Integrated Coastal Zone Management** (ICZM). Thus, the management of the coastal zone, i.e., the protection and management of the land portion affected by its dynamics and processes (environmental, social and economic) has been carried out individually by the various States and regions with different **policies and land planning instruments**.

To summarize, in the context of the Atlantic Area, there is the following picture:

- Portugal has nine Coastal Zone Management Plans (*POOC – Plano de Ordenamento da Orla Costeira*), approved in the period between 1998 and 2005. Along with these planning instruments, it was developed an Action Plan for the Coastline in the period 2007-2013, which identifies and provides the necessary actions to regenerate the coast, both at the national and regional levels.

- In France the effective protection of coastal natural areas is carried out firstly through the *Conservatoire de l'espace littoral et des rivages lacustres*, created in 1975 and dedicated to the protection of natural areas and sea and lake landscapes. Subsequently, the Coastal Act of 1986 would come to establish the basic legal framework of protection.

- In the United Kingdom, the Shoreline Management Plans (SMP) aim to ensure environmental protection of the coast and reduce natural disaster risks related to flooding and erosion. The first generation of these plans was approved in the 90s of the last century, so that each area of the coastline is currently managed in a specific way, according to the criteria set out in the plans.

- In Ireland, the National Spatial Strategy (NSS) defines the integrated management of the coastal zone through the instrument "Integrated Coastal Zone Management" (ICZM), from the Department of Marine and Natural Resources.

- In Spain, the responsibilities for environmental protection, landscape and land management are transferred to the Autonomous Communities. However, it is impossible to think of a coastal management without the major boost in 1988, which marked the approval of the Coastal Act (*Ley de Costas*) and later the corresponding Regulation (*Real Decreto 147/1989)*. The reality for this matter of the Autonomous Communities included the Atlantic Area is as follows:

  - In Andalusia, Law 1/1994, regarding Land Use Management, establishes a territorial planning system articulated on two levels: Spatial Plan of Andalusia and subregional plans. This Autonomous Community will culminate its entire coastline management, after having approved the corresponding subregional plans.

  - Asturias has, since May 2005, a Special Territorial Plan for the Asturias Coastal Zone Management (*POLA - Plan Territorial Especial de Ordenación del Litoral Asturiano*), which develops the Decree 107/93 laying down Subregional Guidelines for the Asturias Coastal Band.

  - Cantabria, since September 2004, has a territorial planning instrument approved by law, called the Coastal Management Plan (*POL - Plan de Ordenación del Litoral*).

  - In the Basque Country, the baseline instrument is the Territorial Planning Guidelines (*Directrices de Ordenación Territorial*), which are developed through Partial Territorial Plans and Sectoral Territorial Plans. The Sectoral Territorial Plan for Protection and Management that corresponds to the Shoreline was approved by Decree 43/2007, of March 13.

11.4.6. Marine environment

This transnational cooperation area is entirely bathed by the Atlantic Ocean. The quality of the Atlantic marine waters is, on average, one of the best in Europe. But even here, there are serious local problems, especially in estuaries and areas with high industrial concentration. This ocean is threatened mainly by overfishing and the presence of heavy metals also being detected high concentrations (over natural levels) of heavy metals and PCBs in fish and sediment, with even higher levels in the spots near the emission sources.

The status of oil pollution is very diverse, and it is not possible to make a reliable assessment on the general trends. According to the European Environment Agency, the main sources are found in soil and contamination reaches the sea through the rivers. Although the annual number of oil spills is declining, small discharges, and sometimes large in areas of heavy boat traffic, are causing major damages.

The wide variation in the tides of the Atlantic Ocean has led to the formation of large wetlands, notable for their exceptional ecosystems and biodiversity. Enhanced protection of these natural areas is of particular relevance for transnational cooperation.

The density of protected environments can vary greatly from one Member State to another, and seems to be significantly lower in France.

11.4.7. Fishing resources

In the Atlantic Area Transnational Cooperation, aquaculture has grown considerably as regards the traditional production of mussels in Galicia, oysters in Poitou-Charentes and lower Normandy, and salmon in Scotland and Ireland. Thereby, its environmental impact is relevant when it comes to the presence of nutrients in the water and wild stocks.

Fishing has forged Atlantic culture. Entire communities still rely on it, especially in the less privileged areas. For example, it is an integral part of Portuguese social life. The industry of deep water fishing (high-sea) is prominent, but there are few industrial centres based on long-range fishing. Some examples are Vigo, Berméo, Huelva, Concarneau, Lorient, Aveiro, Killybegs, among others.

Access to resources is not very high and capture activities predominate regarding processing activities.

The importance of fish-farming units in the economy is low, and the number of fishermen and fish-farms is declining everywhere, due to increasingly scarce resources.

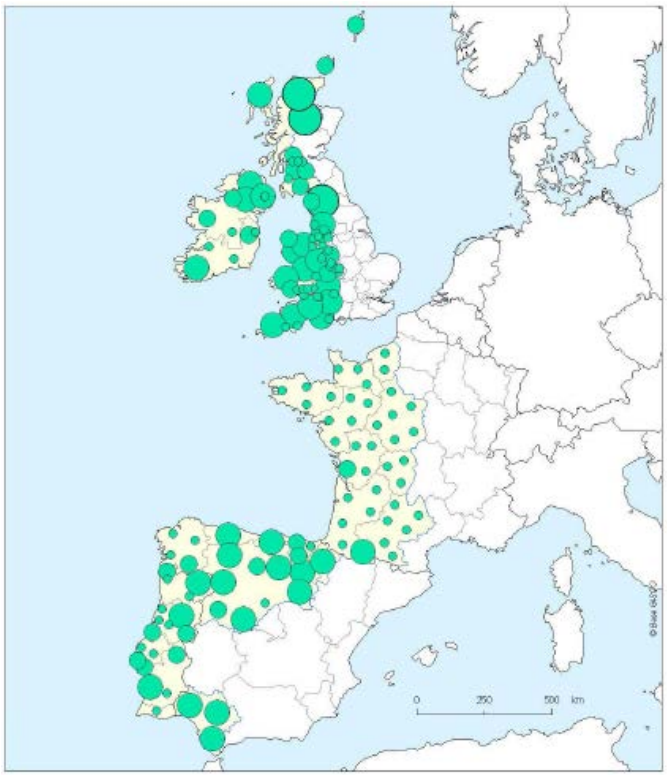
11.5. Natural Heritage

In the protection of natural areas and in the biodiversity policy of the EU, the Natura 2000 represents the network of protected natural areas set out in the Habitats

Directive 92/43/EEC of the Council of May 21, 1992. The aim of the network is to ensure the long term survival of the species and habitats most valuable and threatened in Europe. It comprises Special Areas of Conservation (SACs), Sites of Community Importance (SCI) and it also includes Special Protection Areas for Birds (SPAs) designated in accordance with Directive 79/409/EEC of the Council of April 2, 1979.

Map 10 shows the protected areas of the Atlantic Area, where it can be seen the predominance of protected areas in the Iberian Peninsula and the United Kingdom.

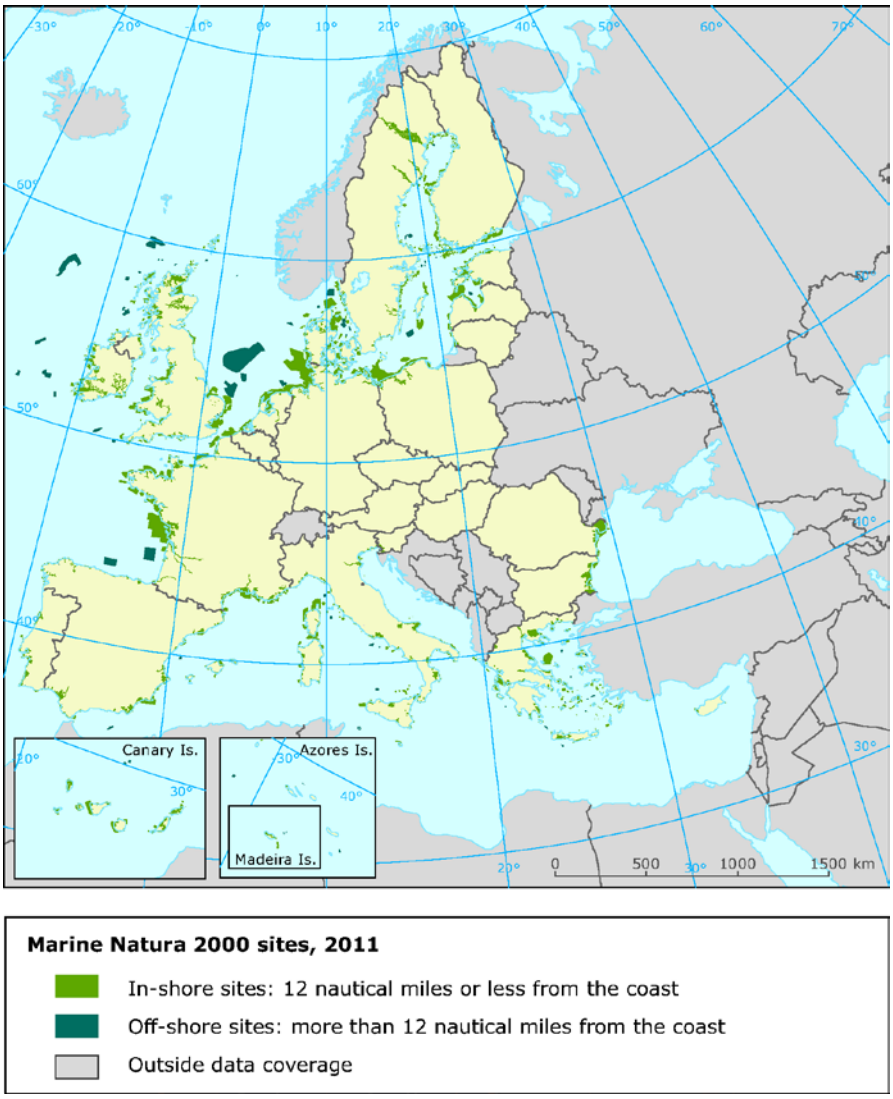
MAP 10. PROTECTED AREAS IN THE ATLANTIC AREA



Source: Atlantic Area 2007-2013 O.P

In turn, Map 11 shows the distribution of marine sites under the Natura 2000 protection, distinguishing the marine sites within the 12 nautical miles (in-shore) and those more distant from 12 nautical miles (off-shore). The marine sites under protection on the west coast of France and the United Kingdom are notable.

MAP 11. MARINE SITES UNDER NATURA 2000-DATA FROM 2011

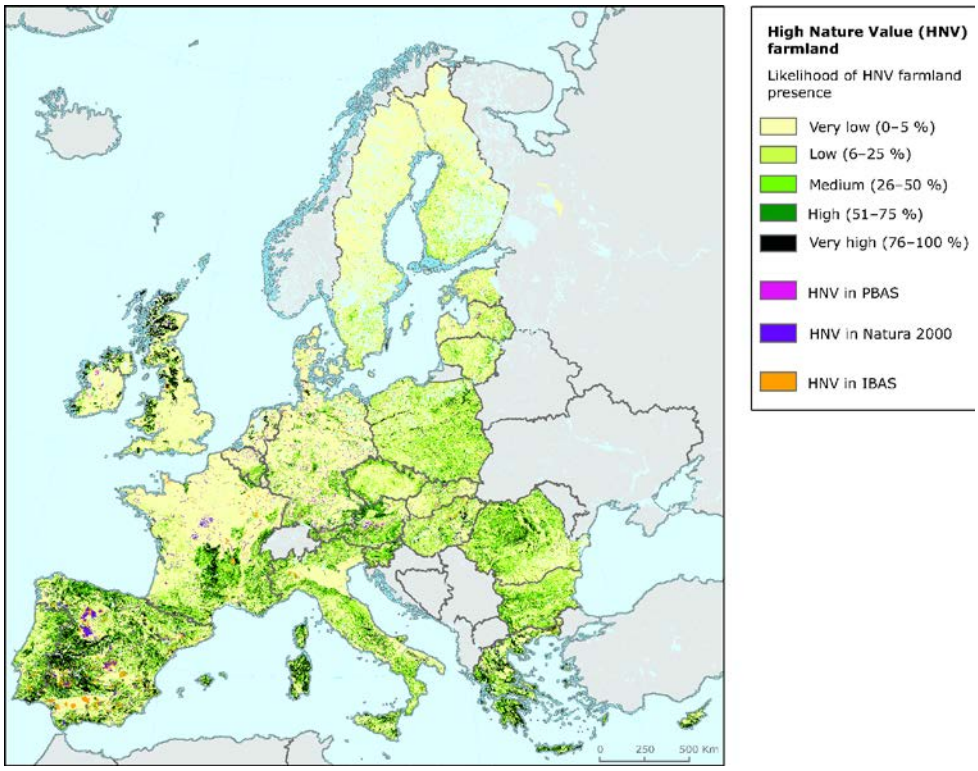


Source: European Environment Agency- European Topic Centre on Nature Protection and Biodiversity

Map 12 describes the spaces of High Nature Value (HNV) for the year 2000 on agricultural land, expressing in percentage the likelihood of High Nature Value on farming land. The map also represents the HNV in PBAS (Prime Butterfly Areas), which relates to areas of butterflies and HNV in IBAS (Important Bird Areas) that defines the areas of importance to birds.

It is in the north of the United Kingdom and throughout the Iberian Peninsula that the highest percentages of High Nature Value areas are found.

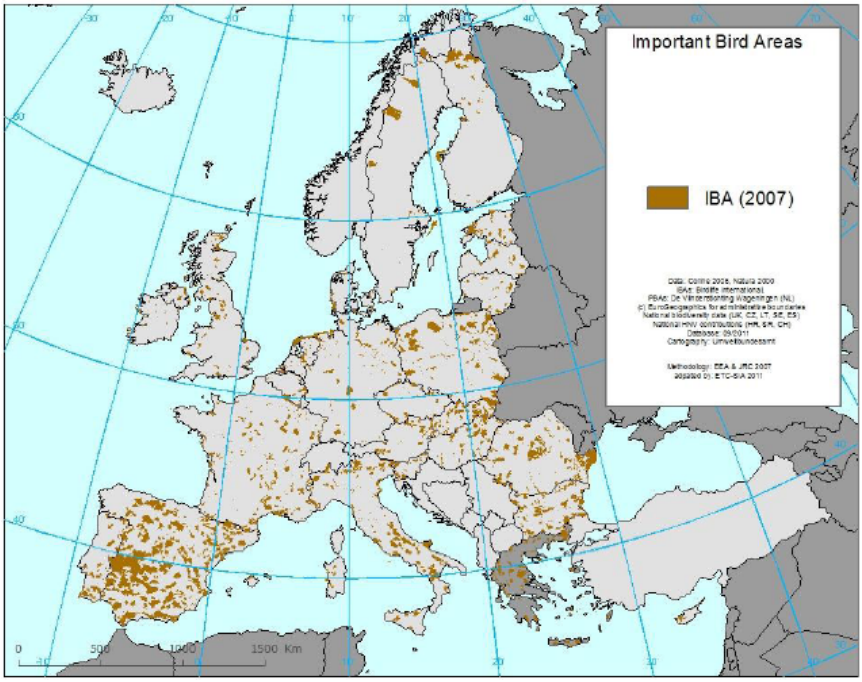
MAP 12. HIGH NATURE VALUE ON FARMLAND IN EUROPE-2000



Source: European Environment Agency- CORINE Land Cover (CLC) 2000

Finally, Map 13 defines the areas of importance to birds under the representation of High Nature Value in IBAS (Important Bird Areas). The greater relevance and presence of these areas are in the Iberian Peninsula.

MAP 13. HIGH NATURAL VALUE (HNV) IN IBAS (IMPORTANT BIRD AREAS) 2006



Source: European Environment Agency

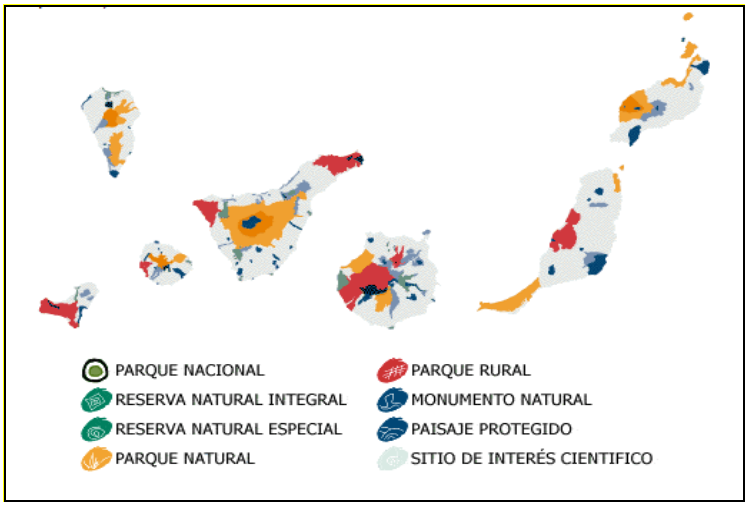
Regarding the **Natural Heritage of the archipelagos of the Macaronesian region**, stands out in the Azores, the Natural Parks of the Islands: Corvo, Flores, Faial, Pico, São Jorge, Graciosa, Terceira, São Miguel and Santa Maria and the Marine Park of the Archipelago, which are the basic management unit of the Regional Network of Protected Areas in the Azores Autonomous Region.

The Natural Park of the Pico Island is the largest natural park of the Azores, comprising 22 protected areas in the territorial area, covering about 35% of the land surface, which corresponds approximately to 156 km². In addition, in the Azores, there have been classified 2 Sites of Community Importance, 23 Special Areas of Conservation and 15 Special Protection Areas.

In turn, in the Autonomous Region of Madeira, there have been classified 9 Sites of Community Importance and 4 Special Protection Areas. It stands out the Funchal Ecological Park, a protected north of Funchal area in the Pico do Arieiro, the Ribeiro Frio Nature Park on the north of Funchal, and the Natural Reserves Garajau, Rocha do Navio, Ponta de São Lourenço, Desertas Islands and Selvagens Islands.

Regarding the Canary Islands, map 14 shows categories or different types of protection from the Canary Network of Protected Natural Areas. Overall, these categories of protection include 146 areas and 319.576,90 hectares of surface. The Canary Islands, due to their large surface of natural area, has 46,8% of its territory included in the Natura 2000 Network and 86,3% of forest area under Natura 2000 Network.

MAP 14. CANARY NETWORK OF PROTECTED AREAS



Source: Canary Network of Protected Natural Areas, Canary Islands Government

11.6. BIODIVERSITY

The challenges associated with the conservation of biodiversity, far from being a local or regional issue, are in fact an international issue. The impacts caused by the reduction or loss of biodiversity influence the natural environment, but also affect the achievement of economic and social objectives, framed within a sustainable development strategy.

As already seen above, the EU policy concerning biodiversity and management of protected areas for biodiversity conservation are proposed by the Member States under the EU Habitats Directive 92/43/EEC and the Birds Directive 79/409/EEC. About 14% of the territory of the EU-27 was proposed for protection under the Habitats Directive.

As there is some overlap between the two types of protected areas (Habitats Directive and Birds Directive), it is estimated that the joint area under the two directives would amount to approximately 18% of the EU-27 total land area.

Table 4 shows the area under the protection of the Habitats Directive in percentage and square kilometres of land area, and in square kilometres of the sea surface.

Countries such as France, the United Kingdom and Ireland are below the European average of protection, while Spain is far above it.

TABLE 4. BIODIVERSITY-HABITATS DIRECTIVE PROTECTED SURFACE

REGION/COUNTRY	% LAND SURFACE	TERRITORIAL SURFACE (KM^2)	SEA SURFACE (KM^2)
Portugal	17	586.092	775
Spain	24	46.718	7.926
France	9	123.508	26.838
United Kingdom	7	16.657	12.409
Ireland	11	7.551	6.009

Source: EUROSTAT

More than a third of Europe's bird species are in decline, more worrisome in north-western and central Europe. The most prominent cause of this situation is the damage to their habitats with changes in land use, particularly by the intensification of agricultural and forestry practices, the growing infrastructure development, water extraction and pollution.

In Europe as a whole, the wild species are threatened and there is a decrease in their number. On the other hand, it is possible to see increasing populations of animal species associated with human activities, and proliferation of some plant species that tolerate high levels of nutrients or acidity. There has also been some recovery in the number of birds that breed in areas where organic farming is practiced. The introduction of alien species is creating problems not only in terrestrial habitats, but also in aquatic habitats, both marine and inland waters.

The greatest loss of wetlands is recorded in southern Europe. The main causes are set-aside, pollution, drainage, recreation and urbanism.

The global extent of forests is increasing due to a more intensive management, closely linked to productive forestry, and it persists the serious loss of natural or semi-natural ancient woodland.

Marine biodiversity, coastal and freshwater, is not considered, as the data are scarce and it must include water quality or fisheries.

Atlantic regions have the responsibility to preserve the nature of their varied ecosystems and landscapes, conserve migratory species that cross their regions and

protect the endangered species they home. However, the effort must go further in order to try to reduce the “ecological footprint".

The number and total size of protected areas in the Atlantic Area is extraordinary, but unlikely to increase given the pressures of urbanization on the ground, transport and agriculture. The areas already under protection are also facing similar pressures due to land use.

11.7. Natural Risks

The trend towards climate instability is exacerbating the risks of natural disasters, both in coastal areas and in more interior areas. This section describes the situation in the Atlantic Area regarding the seismicity, erosion, desertification and compaction, landslides, floods, forest fires, drought and climate change in relation to the situation of coastal vulnerability.

11.7.1. Seismicity

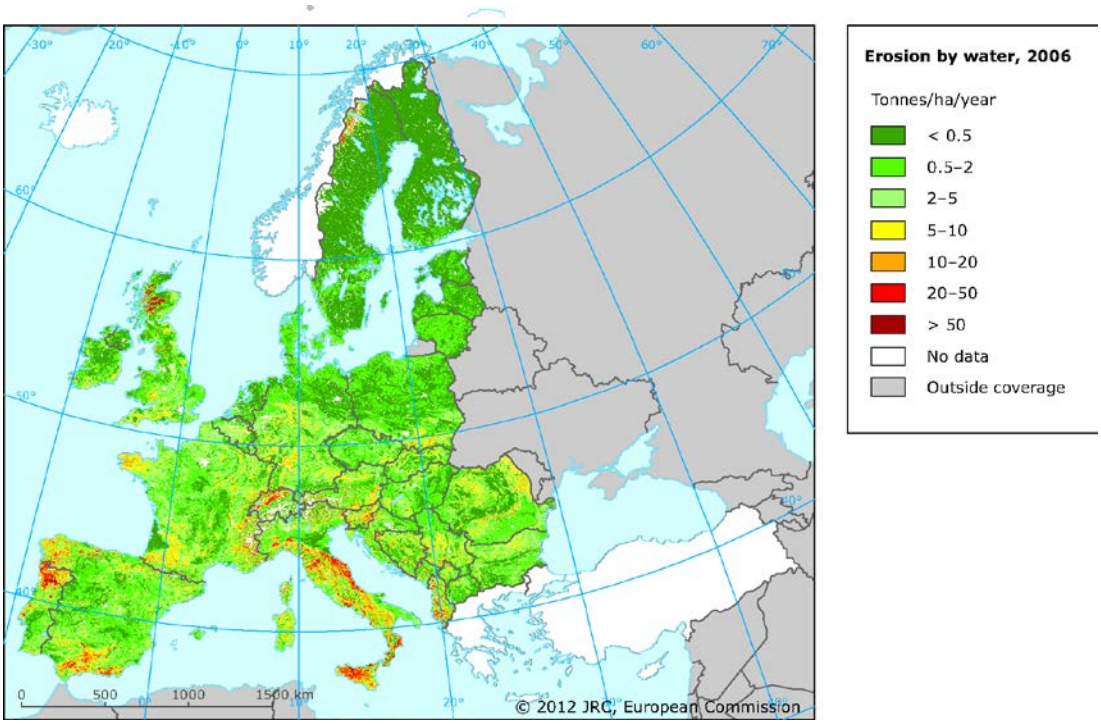
The seismic risk in Europe is not uniform. Seismic risk models clearly indicate that the main seismic zones with magnitudes of expected earthquakes, even higher than 7, are found in the Mediterranean area. Regarding the Atlantic Area region, the risk would occur in some areas of southern Spain and the risk of earthquakes is considerably higher in the Pyrenees and in Portugal.

11.7.2. Erosion

The erosion reaches to 115 million hectares of land in Europe affected by water erosion and 42 million hectares suffer from wind erosion. The problem is highlighted in the Mediterranean region due to its fragile environmental conditions, although problems exist in the majority of European countries. Soil erosion is intensified by tillage land abandonment and forest fires, particularly in marginal areas, with consequent loss of fertility and water pollution.

Map 15 shows the estimated soil erosion by water action, measured in tons per hectare and per year (Universal Soil Loss Equation, RUSLE-).

MAP 15. ESTIMATED SOIL EROSION BY WATER ACTION IN EUROPE (2006)

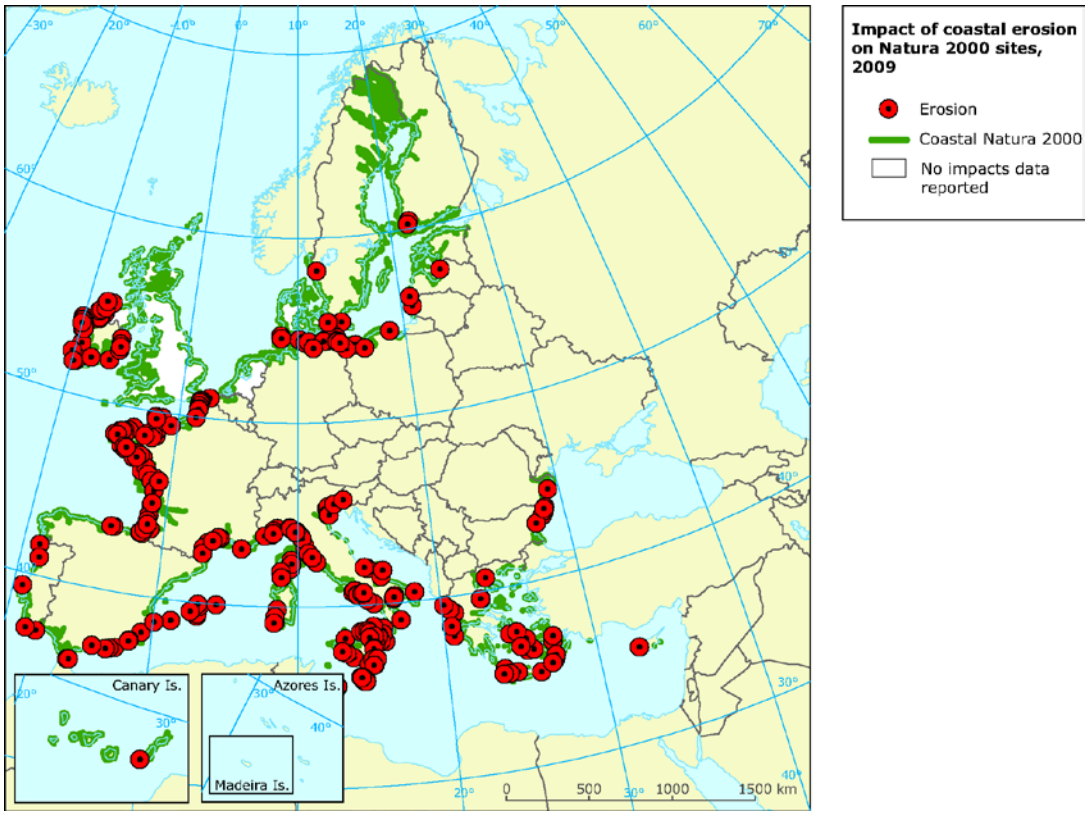


Source: European Environment Agency

For the Atlantic Area, it is observed that the highest incidence occurs in Spain and Portugal. In Spain, the problems are mainly concentrated in the Valle del Guadalquivir and in Galicia. In Portugal, the problem is particularly concentrated in the Norte region. Also noteworthy are certain areas in the north of the United Kingdom.

Map 16 shows, on the other hand, the impact of coastal erosion on the Natura 2000 sites. The most important effects of erosion are recorded off the coast of Ireland, France and Portugal.

MAP 16. IMPACT OF COASTAL EROSION ON NATURA 2000 SITES (2009)



Source: European Environment Agency

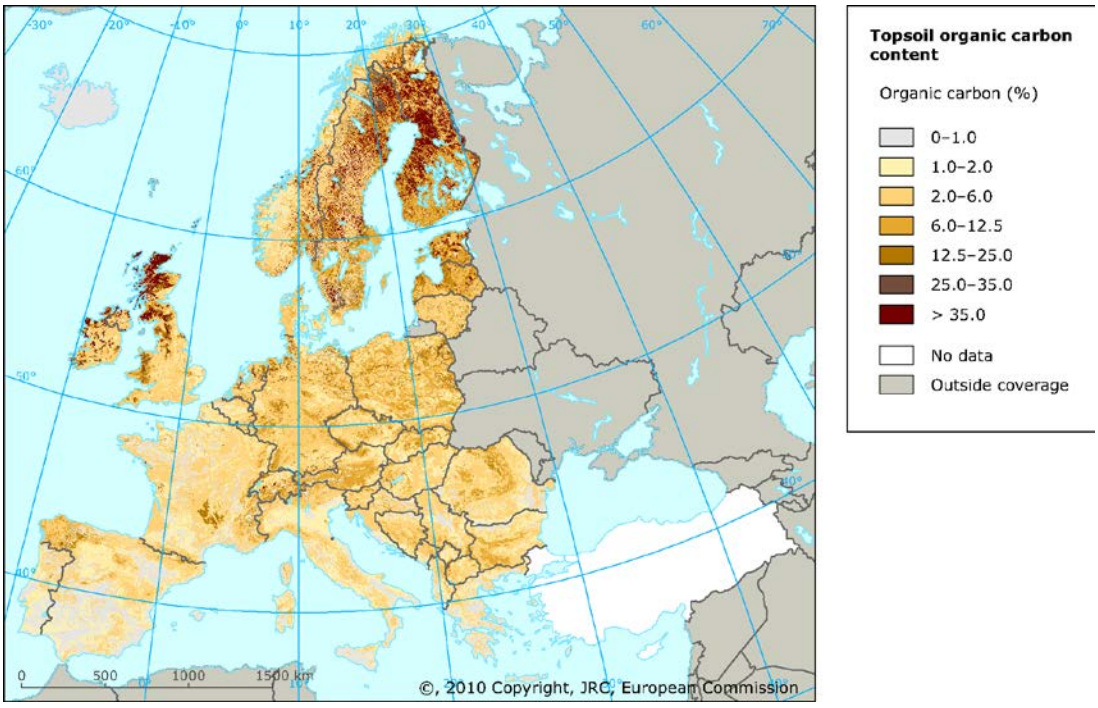
11.7.3. Desertification and compaction

Desertification is a process of land degradation caused by different reasons: type of rainfed and irrigated agriculture, water and wind erosion, soil sealing and compaction, climate change, overgrazing, deforestation, forest fires, extinction of native species of flora and fauna, and urban sprawl.

To determine the degree of soil desertification in the Atlantic Area, one must therefore jointly analyze maps of erosion, land use, fires, salinization, among others. It is also important to know the content of organic carbon on the topsoil when it comes to assess the state of degradation.

Map 17 shows the variations in the organic carbon content of the topsoil in Europe for 2010. Overall, the percentage of topsoil organic carbon is between 0% and 6% for the Atlantic regions of Spain, Portugal and France, with higher values for Ireland and the United Kingdom, where the percentages are higher than 2%. In Ireland and on the west coast and northern UK the values go from 6% to over 35%. In Spain the highest values occur in eastern Galicia, north of Zamora and north-western León.

MAP 17. VARIATIONS ON THE TOPSOIL ORGANIC CARBON CONTENT IN EUROPE (2010)

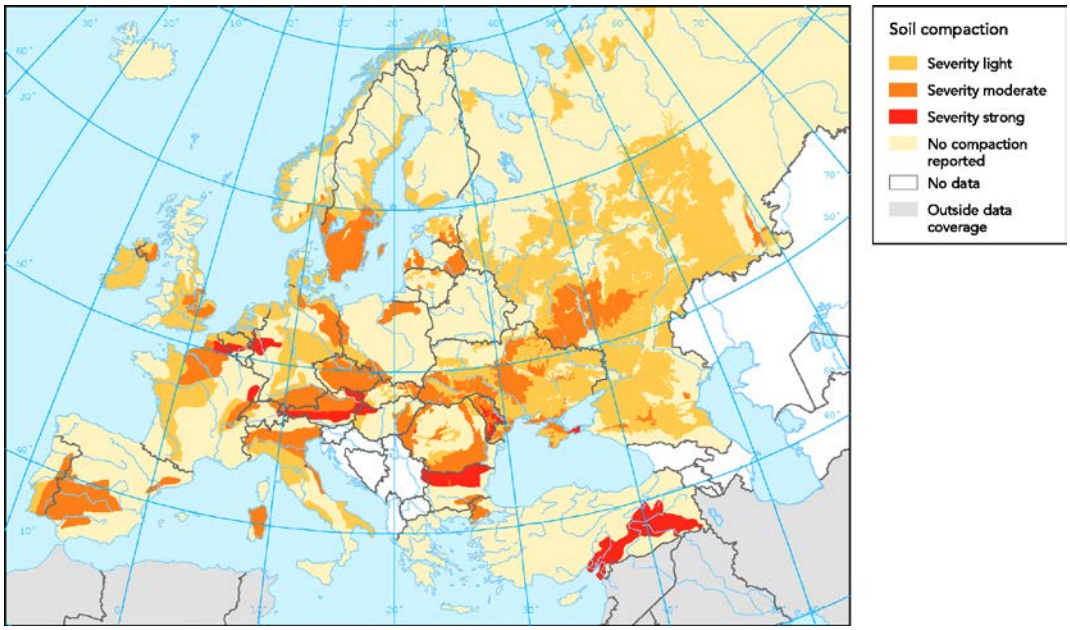


Source: European Environment Agency

Moreover, it should also be mentioned the soil compaction phenomenon. Compaction is caused by the passage of people, animals and vehicles repeatedly in the same place. This causes the disappearance of the spaces between soil particles, which decreases the amount of oxygen therein, and, therefore, the microflora and microfauna.

Map 18 shows the degree of compaction in Europe. It is noted for the Atlantic Area that, generally, there is no soil compaction with the exception for some moderate severity of soil compaction in the south-western part of the Iberian Peninsula, southeast of the United Kingdom and north-eastern France, and light severity of soil compaction in the Atlantic region of France, Ireland and the United Kingdom.

MAP 18. LEVEL AND EXTENT OF SOIL COMPACTION IN EUROPE



Source: European Environment Agency

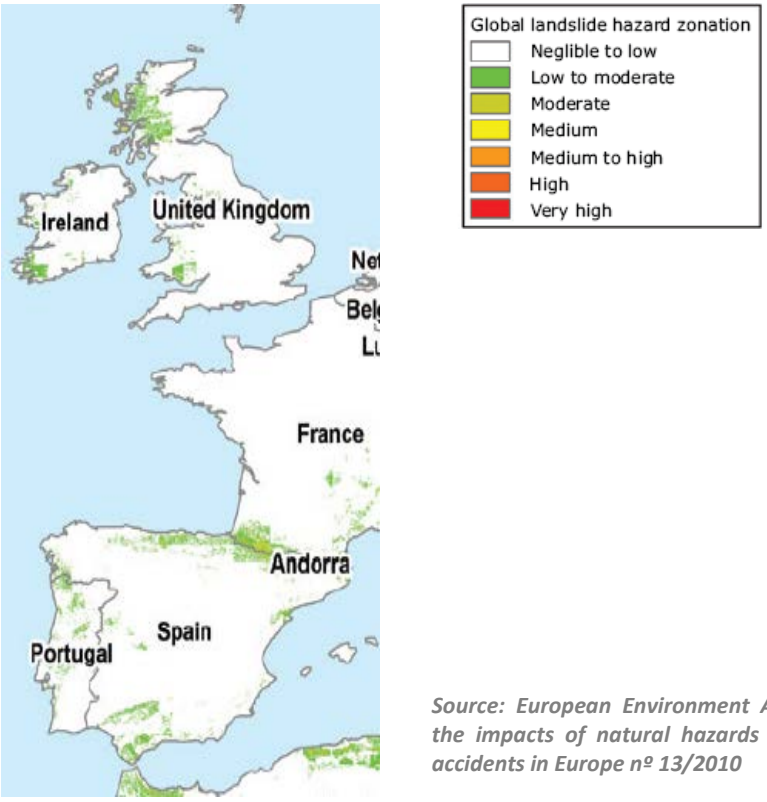
11.7.4. Landslides

For the period 1998-2009, there were almost 70 large landslides recorded in different databases in Europe.

The potential impacts of the landslides are often exacerbated by land use management and include uncontrolled urbanization. Mountain areas are the most prone to landslides.

Map 19 represents Europe's landslide hazard zonation. It is an adaptation at the Atlantic Area level, where it can be seen that moderate risk of landslide would only exist in the north of the United Kingdom, southern Ireland, part of the Pyrenees, in the eastern half of the Cantabrian coast and in the west coast of the Iberian Peninsula, and even going down to the valley of the Valle del Guadalquivir and Cadiz.

MAP 19. EUROPE´S LANDSLIDE HAZARD ZONATION. ADAPTATION FROM THE EUROPE LEVEL TO THE ATLANTIC AREA LEVEL



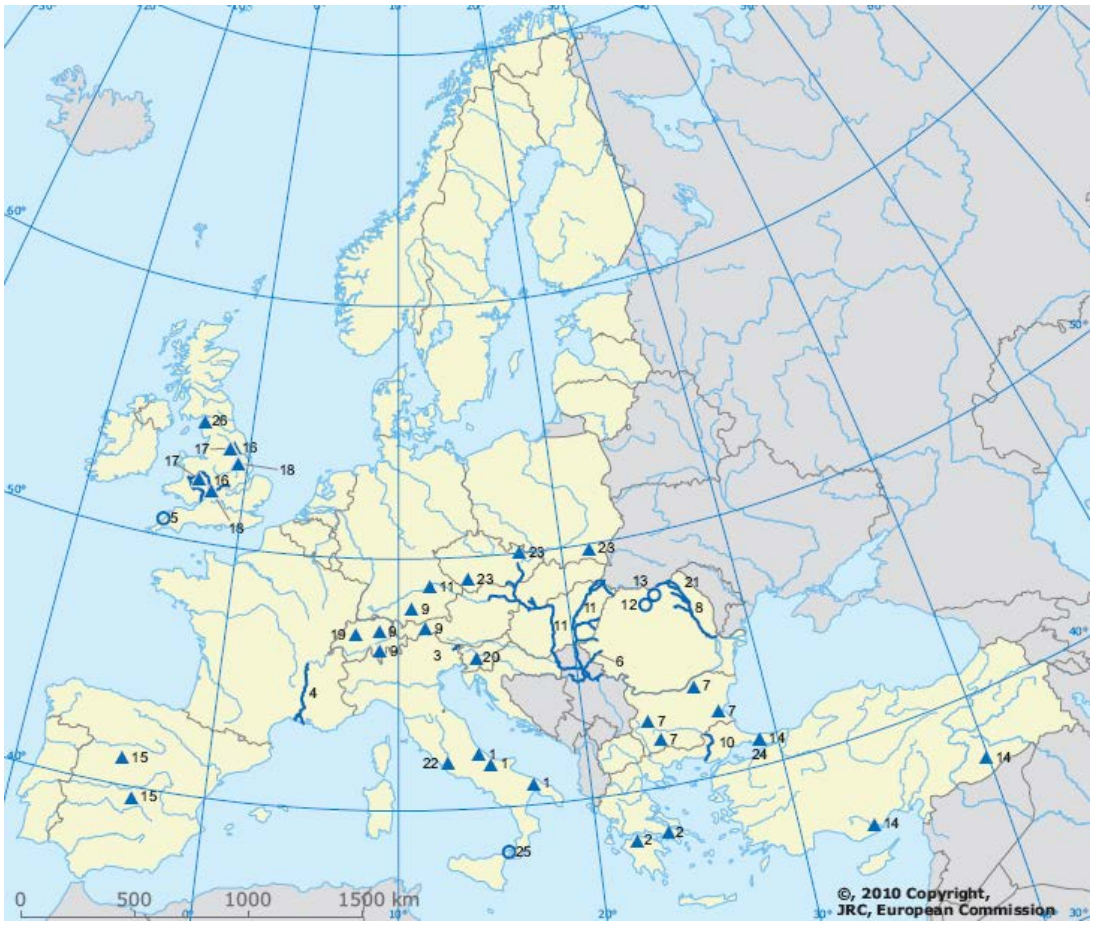
Source: European Environment Agency - Mapping the impacts of natural hazards and technological accidents in Europe nº 13/2010

11.7.5. Floods

Many regions of the Atlantic Area (especially in coastal areas) have for a priority the protection against floods and the prevention and reduction of its effects. The flood effects are aggravated in mountain areas and are directly related to the rising sea level.

Map 20 shows the major floods occurred in Europe between 2003 and 2009. In this period there were 26 major floods. One of the most affected countries in terms of number of disasters was the United Kingdom, with 5 occurrences. In general, it stands out flooding in parts of the United Kingdom and north-western France.

MAP 20. IMPORTANT FLOODS IN EUROPE 2003-2009



Source: European Environment Agency- Mapping the impacts of natural hazards and technological accidents in Europe nº 13/2010

11.7.6. Forest fires

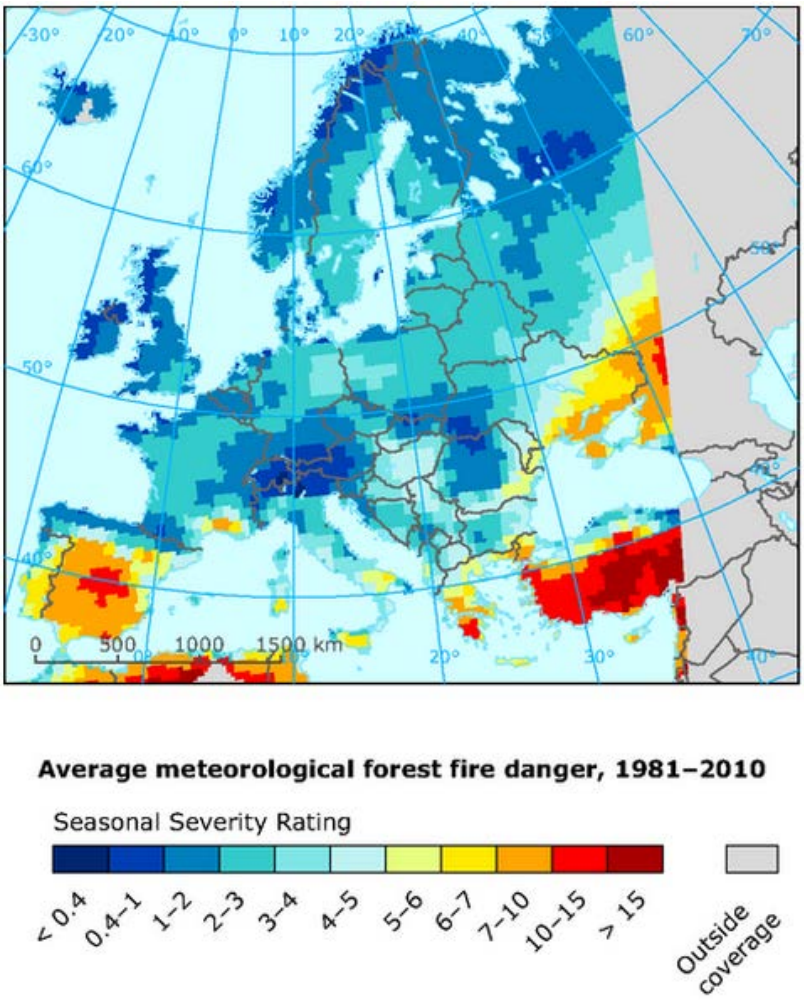
Some of the projections on Climate Change suggest rising temperatures, heat waves, desertification, increase in the number of droughts and extended periods of drought in most of the Mediterranean area and, more specifically, in southern Europe. These projected climate changes could increase the time and severity of the fire season, the hazard area and the likelihood of large fires to happen.

Fires and fire effects are concentrated in the European Mediterranean region. About 70% of fires occur in this area, and are responsible for 85% of the total burned area in Europe.

Given the problem of large forest fires, statistics vary considerably each year. This indicates that the amount of burned area depends largely on seasonal weather conditions and forest maintenance regarding the accumulation of biomass in fire-prone regions.

Map 21 shows the danger of forest fires in the period 1981-2008, on average, expressed through the Seasonal Severity Rating (SSR). This index allows objective comparison of fire risk from year to year and from region to region. The highest values regarding danger and severity of fires are found in the Iberian Peninsula.

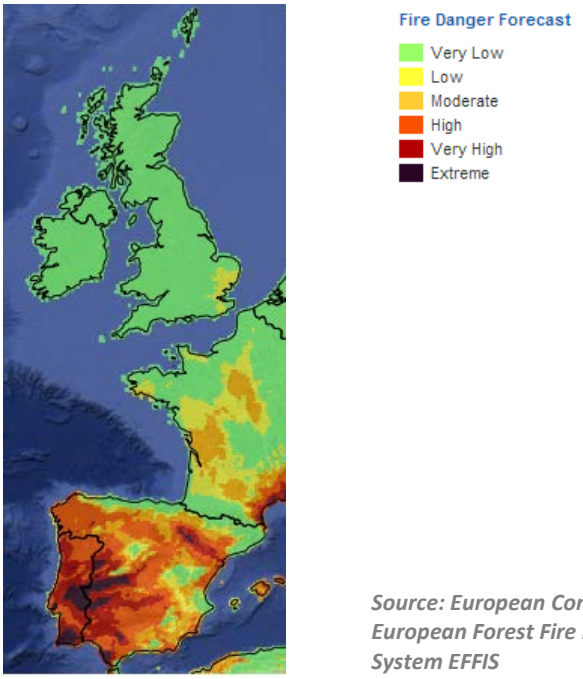
MAP 21. FIRE DANGER – SEASONAL SEVERITY RATING (1981-2008)



Source: European Environment Agency

Map 20 shows the fire danger for the current situation in September 2013, which facilitates the European Forest Fires Information System (EFFIS). The fire danger is high, very high and extreme in Spain and Portugal.

MAP 22. FOREST FIRE DANGER (SEPTEMBER 2013)

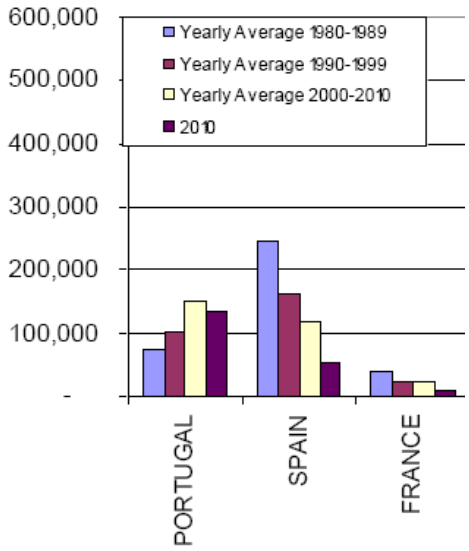


Source: European Commission- European Forest Fire Information System EFFIS

For some countries from southern Europe and under the Atlantic Area, such as Spain, Portugal and France, the European Environment Agency provides data sets of 25 years in the European Forest Fire Information System (EFFIS).

FIGURE 2 shows the burned area by forest fires in hectares and by decades, from 1980 to 2010, in the countries of the Atlantic Area with fire incidence (Spain, Portugal and France). Spain and Portugal are the countries with higher values of burned area, but if in Spain there is a trend of reduction in the past decade, in Portugal the levels of area affected by fire are maintained. From these data, it is deduced that Spain has developed measures of fire control and fire management, yet to be developed in Portugal.

FIGURE 2. BURNED AREA BY FOREST FIRES IN SPAIN, PORTUGAL AND FRANCE



Source: European Commission- JRC-Fire Report 2010

11.7.7. Drought

Large parts of Europe are affected by drought and water shortages, while pressures on Europe's water resources have increased due to the population growth and the new uses.

The supply of drinking water is a matter of concern to Spain, Portugal and the south of France, where, facing the growing scarcity of water in part of the territory, there is an increasingly controlled use.

In the last decade, there were more severe droughts in the south-western Europe, including the Iberian Peninsula, France and the south of the United Kingdom.

Uncontrolled use, and sometimes excessive to the water table, causes increased salinity of groundwater in coastal areas.

11.7.8. Climate Change in the coastline

Coastal areas and shorelines from the European Atlantic Area are areas potentially vulnerable to sea level rise caused by Climate Change, related flooding and erosion.

Almost 9% of the whole European coast (12% of the EU Member States) is below 5meters elevation.

In France and the United Kingdom, between 10% and 15% of their coasts are below the 5meters elevation.

Map 23 shows the lands below 5meters above the sea level in coastal EU countries for 2005. Thus, on the Atlantic coast of Andalusia, western France and with less relevance in Portugal, southern United Kingdom and Ireland, the sea level rise would have an impact on the coastline.

MAP 23. LOWLAND IN COASTAL COUNTRIES (2005)

Source: European Environment Agency

11.8. Technological Disasters

Technological disasters are the so-called oil slicks and industrial accidents. Among the technological damages, those related to oil transportation can not be ignored on the Atlantic coast. Some areas are particularly exposed: United Kingdom, northwest of

France (particularly Normandy), the Charente and the Aquitaine coast, the Cantabrian coast, western Galicia, Lisbon and Alentejo.

Between 1998 and 2009, there were nine major oil spills from ships in coastal areas of Europe and a major one from a pipeline. The most significant ones were from the tankers Erika (1999, Atlantic coast of France, 20.000 tons of oil spilled) and Prestige (2002, Atlantic coast of Spain, 63.000 tons of oil spilled).

Apart from this traffic, the presence of refineries and other facilities for the extraction or processing of oil and its inherent risks are also considered as technological risks.

The decrease in the number of spill incidents in recent years is due, in part, to the new EU legislation that imposes greater obligations, including the construction of ships such as the double-hull ships (EC Regulation 417/2002, and EC Regulation 1726/2003), and the common system of traffic monitoring (EC Directive 2002/59).

The main source of information on accidents in the industry is the database MARS (Major Accident Reporting System), managed by the Joint Research Centre of the European Commission and the Major Accident Hazards Bureau.

Spatial planning that includes the proper separation of industry, infrastructures and residential settlements in industrial areas provides an effective mechanism for mitigating these risks.

11.9. Climate Change

According to the climate models and data from the European Environment Agency, there are expected for the year 2100 increases of 2 Celsius degrees, compared to 1990 levels, with higher increases in northern Europe, if compared with the south.

The main causes of Climate Change are the use of fossil fuels, agriculture and changes in land use, including deforestation, some industrial processes such as cement production and landfills, cooling, production of foaming agents and the use of solvents.

Possible consequences include sea levels rising, higher temperatures that increase crop evapotranspiration thus increasing water needs, storms, variations in the patterns of runoff, which can cause flooding and more intense and frequent droughts, as well as changes in biota and food production.

European policy on Climate Change is often articulated in two main areas: mitigation and adaptation.

Under the Kyoto Protocol, the fight against Climate Change and reducing emissions of greenhouse gases (GHG) are one of the main priorities of the European environmental policy.

In an environment of great uncertainty about the future effects of Climate Change, risk prevention emerges as an adaptation strategy.

Cohesion policy has evolved significantly in the treatment of the maritime dimension through the Integrated Maritime Policy (IMP) for a cross-sectoral and transnational integration. It represents a new opportunity for adaptation and furthermore it strengthens the international dimension of the European maritime policy.

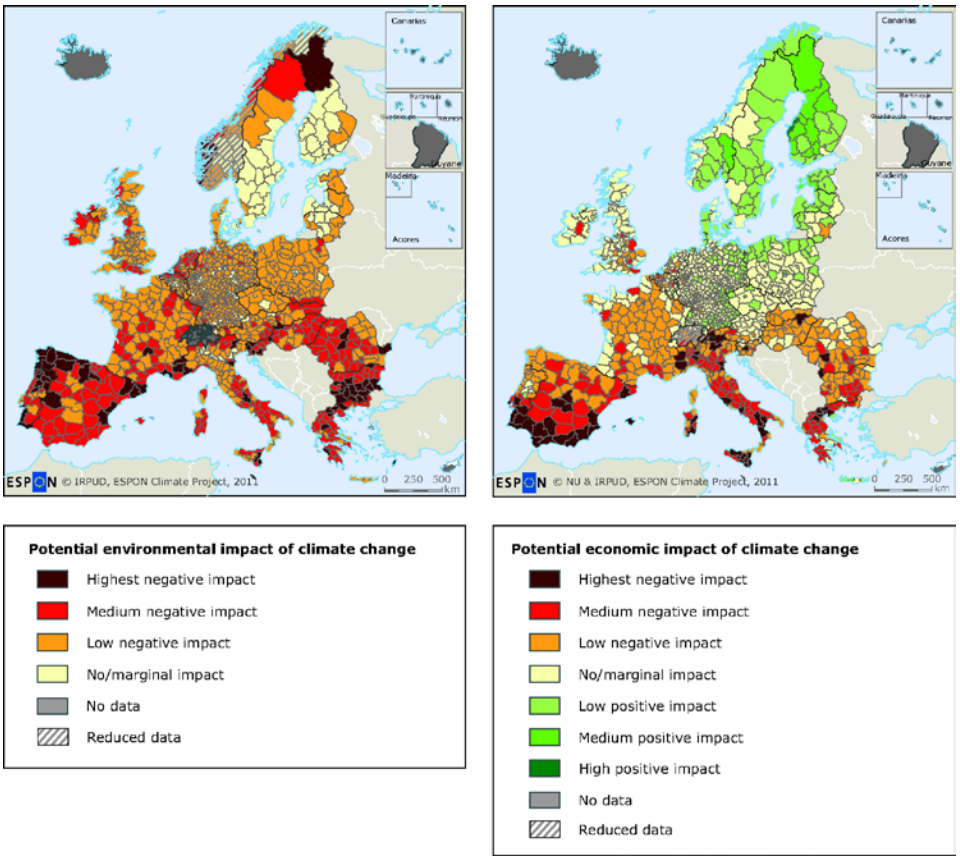
Map 24 shows the potential environmental and economic impact of Climate Change in the European Union. Specifically, the map on the left shows the potential environmental impact of Climate Change. The methodology used combines the measurements of summer and winter rainfall, days of heavy rainfall, the average annual temperature, summer days, freezing days, snow days and annual average evaporation of erosion, land organic carbon content, protected natural areas and forest fires sensitivity.

It is observed that the greatest negative impact occurs in part of the Algarve, Alentejo, Centro and Norte regions of Portugal, Galicia, Asturias, Cantabria, Cáceres, Burgos and La Rioja in Spain, turning the Atlantic Area of the Iberian Peninsula into the potentially most affected area, which makes adaptation actions necessary. In the regions of France, the United Kingdom and Ireland the negative impacts are low or moderate.

The map on the right provides details on the potential economic impact of Climate Change. In this case, it has been measured through the combination of several variables such as average annual evaporation, summer days, snow days, freezing days, changes in the height of flooding and sea level rising, forestry, summer and winter tourism, the supply and demand of energy.

The major negative impacts are estimated in southern Portugal, the coast of Alentejo and Algarve regions, and in the Spanish provinces of Huelva, Cadiz and Seville. Thus, while environmental impacts are larger in the Atlantic Area of the north of the Peninsula, the economic forecast seems to be higher in the south. Therefore, this requires taking comprehensive adaptation measures to the whole Peninsula.

MAP 24.POTENTIAL, ENVIRONMENTAL AND ECONOMIC IMPACT OF CLIMATE CHANGE



Source: European Environment Agency

11.10. ENERGY

11.10.1. Renewable Resources

Given the inevitable depletion of fossil energies, their cost and their impact on global Climate Change, the development of new energy forms, green and renewable, is a commitment by all countries signatories to international agreements.

In the EU, renewable energies should represent, by 2020, 20% of final energy consumption, compared to 7% in 2008. To this purpose, Europe is in favour of onshore wind energy, hydro and solar power, but it also focuses on less conventional sources, and still not used at a large scale such as Marine Renewable Energies. The European potential of marine energy is related to the 32.000 kilometres of coastlines and the 25

million square kilometres of sea area. The Atlantic Area, oceanic in nature, offers potential for renewable energy in marine and coastal environments.

Relatively well-known technologies such as biomethane, biofuels, marine biomass and windmills can also be exploited. However, other more experimental technologies should be explored, including tidal power, sea currents, thermal sea energy, osmotic power (salinity gradient), waves and offshore wind energy.

The development of sea power is essential. These European cooperation initiatives regarding technology mainly focus on the phases of R&D, especially through the Framework Programme for Research and Technological Development. There are different strategies adopted by the Atlantic Area countries:

- Spain, after an extensive development of onshore wind and solar energy, massively supports sea wind power. The possible implementation areas are already defined for offshore wind farms, which thus facilitates its implementation.

- The United Kingdom is the first country of the world legislatively endowed with a binding target in terms of emissions of greenhouse gases: 34% reduction by 2020 and 80% in 2050. It is also the world's first largest producer of offshore wind energy aiming at producing power enough to feed electricity to the whole country, by 2020.

- Portugal aims to use the energy of the waves. In Aguçadoura, it was inaugurated a first project to exploit wave power, in September 2008. The country has innovated from a legislative point of view with the "Marine Occupation Plan", which authorizes the government to establish a legal framework in order to use the property of the maritime public domain for the production of electrical energy from the waves.

- Ireland extremely dependent on imports of electricity, in 2005, headed itself to the offshore energy and has developed a strategy for the development of ocean energy. The country acquired, in 2004, an offshore wind farm and the development of this type of energy continues with several large projects.

- France, although possessing the second seafront and the first tidal power plant (1966), only recently has been interested in the potential of sea renewable energies.

11.10.2. Transport and mobility

The shortcomings in the accessibility to the Atlantic Area are a brake on balanced and polycentric development of the European territory. As regards freight transport, road transport is increasingly more common, which is gaining ground to railways. The railway freight volume has remained stable or slightly declined in the Atlantic Area regions. It should be outlined the significant maritime traffic growth in recent years, which is likely to continue, although the levels remain low.

The EU initiative to promote the concept of intermodality in freight transport, set in the Transport White Paper, included the promotion of Short Sea Shipping (SSS). The enhancement of SSS in the Atlantic Arc was enrolled in the community programme Interreg III B in order to promote shipping lanes in the Atlantic Area.

Table 5 shows the main ports of the Transnational Atlantic Area included in this initiative.

TABLE 5. PORTS INCLUDED IN THE SHORT SEA SHIPPING (SSS) INITIATIVE

COUNTRY	REGION	PORT
Portugal	Oporto	Leixões
Spain	Basque Country	Bilbao, Bermeo, Pasajes
	Asturias	Gijón
	Galicia	Vigo
France	Poitou Charentes	La Rochelle-La Pallice, Tonnay CharenteRochefort
	Aquitaine	Bayonne, Bordeaux
United Kingdom	South West	Bristol/Avonmouth, Sharpness, Penzance, Isles of Scilly, Falmouth, Fowey, Plymouth, Teignmouth, Weymouth/Portland, Poole

Source: Webgate EC Europe

11.11. WASTE

Waste occupies an important place on the political agenda of all EU countries. The amounts produced are generally growing, in part by the improvement of control systems and waste monitoring.

The main waste sources are urban areas, industry, farming, agriculture and forestry activities, mining activities, health activities or clinics, and those that generate hazardous waste such as radioactivity.

In 2010, the total generation of waste from economic activities and households in the UE-28 was 2.570 million tons. Table 6 shows the total waste generated, in 2010, in the EU and by each country of the Atlantic Area.

TABLE 6. TOTAL WASTE FROM ECONOMIC AND DOMESTIC SECTORS IN EUROPE AND THE ATLANTIC AREA COUNTRIES (2010, 1000 TONES)

COUNTRY	TOTAL	OUT OF WHICH, HAZARDOUS
UE28	2.570.518	94.505
Portugal	38.347	1.625
Spain	137.519	2.991
France	355.081	11.538
United Kingdom	334.127	7.285
Ireland	19.808	1.972

Source: EUROSTAT

Table 7 shows the total waste generated by sector in Europe and by each Atlantic Area country. The sectors or activities within the Eurostat statistics are agriculture, forestry and fisheries, the activities under mining and quarrying, manufacturing, energy, construction and demolition activities, domestic activity and other economic activities.

TABLE 7. WASTE BY SECTORS – EUROPE AND ATLANTIC AREA COUNTRIES 2010

Region/ Country	Agriculture, forestry and fisheries	Mining and quarrying activities	Manufacturing	Energy	Construction and demolition activities	Other economic activities	Domestic
EU-28	39.570	727.321	280.114	84.880	854.552	363.139	220.940
Portugal	193	1.206	9.766	456	11.071	10.193	5.464
Spain	5.817	31.732	16.480	2.339	37.947	20.006	23.198
France	1.682	1.053	20.382	993	260.226	41.439	29.307
United Kingdom	681	85.963	22.837	4.885	100.999	87.223	31.539
Ireland	101	2.196	3.259	334	1.610	10.578	1.730

Source: Eurostat

Waste volume is a loss of materials and energy and imposes costs on economic growth, the environment and society for its collection, treatment and disposal. Some countries have shown that they can grow economically without increasing the volume of waste, using policies for prevention and reuse of wastes as resources.

Europe is using different policies, which include waste prevention, recycling, clean technologies, incineration, pre-treatment and disposal in landfills. Cities such as Bristol, Cardiff, Nantes, Bilbao, Lisbon, among others, are distinguished by urban redevelopment plans and recycling integrated in waste policy.

11.12. AIR POLLUTION

Air pollution comes mainly from emissions of six greenhouse gases (GHGs): carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O) and halogenated compounds such as CFCs, perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6), and water vapour.

Data on emissions of greenhouse gases are given officially under the United Nations Framework Convention on Climate Change (UNFCCC). The Kyoto Protocol includes legally binding commitments regarding the reduction of the six gases.

These gases and particles arise from various sources of pollution, both anthropogenic and natural origin:

- Energy: the burning of fossil fuels in power generation, transport, industry and households.
- Industrial process and use of solvents, for example, in chemical and minerals industries.
- Agriculture.
- Waste treatment.
- Volcanic eruptions, the wind-blown dust, sea salt spray and emissions of volatile organic compounds from plants.

Air pollution affects human health and causes acidification in the environment, eutrophication and crop damage by the exposure to high concentrations of ozone.

In Europe, there has been a substantial reduction of air pollutants in recent decades, although air pollution problems persist in most cities. Nevertheless, the Atlantic air quality is, on average, one of the best in Europe.

Table 8 shows the total GHGs emissions for the EU-27 and the Atlantic Area countries in 2010. It also includes an index of the degree of compliance with the Kyoto Protocol target for 2008-2012 based on 100. On the other hand, it includes weight of GHGs emissions in million tones of CO_2 equivalent.

TABLE 8. GHG EMISSIONS AND KYOTO OBJECTIVE (2010)

Country	Total GHGs emissions (Base Kyoto=100)		Weight of GHG emissions (Million tones of CO_2 equivalent)	
	2010	Kyoto objective 2008-2012	2010	% UE-27
UE-27	-	-	4.720.878	100
Portugal	117	127	70.599	1,5
Spain	123	115	355.898	7,54
France	93	100	522.373	11,07
United Kingdom	76	87,5	590.247	12,50
Ireland	110	113	61.314	1,30

Source: Eurostat

As indicated above, Spain is the only country with a deviation above the Kyoto targets, while the other countries of the Atlantic Area are within the established levels.

11.13. URBANIZATION

The Atlantic coast seems to be less saturated than other coastlines in Europe, for example, the Mediterranean. In areas where natural areas predominate, such as Scotland, the majority of the Irish coast, the North of England, Wales, Aquitaine and much of the northern Spanish coast, the urban global pressure remain moderate.

Other regions of the Atlantic Area have suffered major urbanization actions, such as building housing complexes on the shores of the sea, for example in the Algarve, Andalusia or south-western France. The same applies to the uncontrolled urban sprawl of cities in regions of the Atlantic, such as the South and West of England, most of the French coast, or the Cantabrian coast.

11.14. TOURISTIC AND CULTURAL RESOURCES

11.14.1. Tourism

The Atlantic tourism is mostly familiar. It has a large seasonality, increasing spatial concentration regarding the accommodation capacity and a polarization of the resorts, especially in France and Portugal.

The Atlantic has nearly three hundred nautical facilities and water sports.

This sector is experiencing significant growth, but poses serious problems of coastal management and tourism pressure.

11.14.2. Atlantic heritage of transnational interest

The Atlantic Area continues to be central to the most important intercontinental shipping routes. The maritime heritage of the Atlantic regions gives them a common identity. Ports and shipping are not the only elements that share this space; there are also a whole range of historical elements, shared activities and places of interest related to the proximity of the sea.

Based on the common means that the ocean offers to Atlantic Area, it was historically established in this western European area a cultural exchange due to the Celts and Vikings path that has led to the so-called Celtic culture or Atlantic culture.

Celtic is considered to Scotland, Ireland, Galicia and the entire north-western Spain, Wales, South West England and French Bretagne. The Celtic period extends from the VIII century BC until the III century AD. The Celts inhabited most of south-western Europe before the arrival of the Germans and the Vikings.

The Celts had been gradually dominated by the Romans from the II century BC and this domination was completed in the V century AD, when the Roman Empire fell apart. The Celts were then conquered by the Germans. Linguistically, the Celtic and Germanic languages are derived from the common Indo-European root.

The Vikings (Norsemen) from the north of Europe, explorers, traders and Scandinavian invaders that peaked between the VIII and XI centuries, have among their large stakes in Europe the invasion and conquest of England by William the Conqueror in the XI century, from France, where they were vassals of the King.

It is essential to understand that this culture is a key component of the European identity. They were called barbarians by the Roman Empire. Those remote lands symbolized the unknown and were more than a potential conquest.

Celtic culture appeared in French medieval literature *Matière de Bretagne,* and the classic authors like Strabo or Poseidonio left descriptions of this land and its sea.

In the middle Ages, an enclave of note are the monks in Ireland, which retain not only the European culture against the barbarian invasions, but also translated poems of ancient Celtic language as, for example, Goidelic. The second centre is Normandy. Indeed, the arrival of the Normans to Great Britain in 1066 BC means more than a war of conquest and occupation of land. In literature, for example, there are new

translations from Latin into French, so that this culture becomes Atlantic European culture through the Normans.

A great historical change occurred in the Renaissance, through some of the best writers, like Shakespeare in England and Cervantes in Spain. The first author created masterpieces like the Celtics-named legends.

The expression "Celtic art" is used especially in relation to late pagan and early Christian art of the British Isles, whose most notable expression are the early medieval illustrated manuscripts richly ornamented with aesthetic elements typical from native island art. Examples are the Book of Kells, the Book of Durrow or the Lindisfarne Gospels. They also highlight the Scottish Pictish stones, chalices, brooches and Celtic crosses.

As for the music, there is a new stage of this cultural legacy. This is particularly visible in the so-called Celtic music. For cultural exchanges between Ireland, Scotland, Brittany, Wales, Asturias and Galicia numerous artists have emerged.

Celtic culture allows to identify a legacy and elements that they all share. It stands out the transnational advocacy of elements inherited from the common history, as the Celtic culture, which include Interceltic Watersports Games, which are a nautical sporting event held annually in different countries and regions that make up the European Atlantic Arc. These games are framed in a cooperative project among Atlantic countries and regions to promote sports, cultural and economic exchanges and promote understanding.

It is also worth mentioning the great discoveries of Vasco de Gama and his successors, offering an interesting potential for cultural tourism, cultural landmarks such as the Mont Saint Michel or the Santiago de Compostela and the *Camino de Santiago* itself, which has significance in European history for being the first unifying element of the old continent for its central role in promoting cultural exchanges between the Iberian Peninsula and the rest of Europe during the Middle Ages.

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