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Managing Authority:
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Area for Economic Policies, Human Capital and Programming of European Funds
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Organisational Unit Italy-Croatia Managing Authority

Strategic Environmental Assessment of Interreg VI A Italy – Croatia 2021-2027 Programme

Environmental report

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ACRONYMS

CBC : Cross Border Cooperation Programme
CP : Cooperation Programme
CPR : Common Provisions Regulation
DPSIR : Driving force, Pressure, State, Impact, Response model
EA : Environmental Authority
EEA : European Environment Agency
EC : European Commission
ESDAC : European Soil Data Centre
ETC : European Territorial Cooperation
EU : European Union (27 countries)
ICT : Information and Communication Technologies
IP : Interreg Programme
ISPRA : Italian Institute for Environmental Protection and Research
ISTAT : Italian National Institute of Statistics
IUCN : International Union for the Conservation of Nature
JS : Joint Secretariat
Ktoe : Thousand tonnes oil equivalent
LUCF: Land Use Change and Forestry
MA : Managing Authority
MS : Member State(s)
PA : Priority Axis
SDG: Sustainable Development Goal
SEA : Strategic Environmental Assessment
SO : Specific Objective
TF : Task Force
TO : Thematic Objective
Teq : Tonne Equivalent CO2
UNCCD : United Nations Convention to Combat Desertification
UNECE : United Nations Economic Commission for Europe
UNEP : United Nations Environment Programme
UNFCCC : United Nations Framework Convention on Climate Chang
WFD : Water Framework Directive
WHO : World Health Organisation

This draft Environmental report provides an environmental evaluation of the Interreg VI A Italy – Croatia 2021-2027 programme, in compliance with Directive 42/2001/EC[1] (the 'SEA Directive'). As stated in Article 1 of the Directive '*The objective of this Directive is to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations in the preparation and adoption of plans and programmes with a view to promoting sustainable development [...]*'

The Environmental report is structured in six parts, including conclusions, and eleven chapters. The SEA methodology and evaluation steps are outlined in chapter 1, while chapters 2 to 11, consistently with the Directive requirements as in annex II, address the following topics:

- Programme background and SEA framework
- Vertical and horizontal integration of environment and sustainable development
- Environmental effect analysis
- Recommendation for better environmental integration
- Follow-up for the implementation phase
- Conclusion

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

PART I – PROGRAMME BACKGROUND AND SEA FRAMEWORK

Part I includes a presentation of the Interreg cooperation area, an outline of the Interreg Programme's strategy for the period 2021-2027, a presentation of the SEA procedure and a presentation of the environmental context.

I. INTERREG 2021-27

I.1 PROGRAMME AREA

The Italy – Croatia Interreg Programme (hereinafter IP) is a cross border cooperation Programme between Italy and Croatia, co-financed by the European Regional Development Fund (ERDF). The Programme contributes to the European cohesion policy, which pursues harmonious development across the Union by strengthening economic, social and territorial cohesion[2] The cooperation Programme extends to both sides on the Adriatic Sea and includes the following NUTS 3 regions (see Map in figure 1):

- Provinces of Udine, Gorizia, Trieste, Pordenone, Venezia, Padova, Rovigo, Ferrara, Ravenna, Rimini, Forlì-Cesena, Pesaro e Urbino, Ancona, Macerata, Fermo, Ascoli Piceno, Teramo, Pescara, Chieti, Campobasso, Foggia, Barletta-Andria-Trani, Bari, Brindisi, Lecce;
- County of Primorje-Gorski Kotar, County of Lika-Senj, County of Zadar, County of Šibenik-Knin, County of Split-Dalmatia, County of Istria, County of Dubrovnik-Neretva, Karlovac County.

At this stage of discussion (end October) there is not still a full agreement on the future geographical scope of the cooperation area, particularly for NUTS3 Brindisi and Lecce. However, a confirmation of the past cooperation area is very likely. The SEA report in this current version encompasses all the potential NUTS3 as discussed in the Programme task forces up to recently, consistently with the past Programme cooperation area.

[2] EU Cohesion Policy contributes to strengthening economic, social and territorial cohesion in the European Union. It aims to correct imbalances between countries and regions. It delivers on the Union's political priorities, especially the green and digital transition

Figure 1: INTERREG VA Italy – Croatia CBC Programme area

I.2 PROGRAMME STRATEGY

During a first step in the analysis, SEA experts should provide '*an outline of the contents, main objectives of the plan or programme and relationship with other relevant plans and programmes*'[3].

The Programme will draw its own orientations from the Common Provisions Regulation (CPR)[4], which focuses its resources on five policy objectives, instead of 11 'thematic objectives' (TO) as in the 2014-2020 period.

(1) A more competitive and smarter Europe by promoting innovative and smart economic transformation and regional ICT connectivity;
(2) A greener, low-carbon transitioning towards a net zero carbon economy and resilient Europe by promoting clean and fair energy transition, green and blue investment, the circular economy, climate change mitigation and adaptation, risk prevention and management, and sustainable urban mobility;
(3) A more connected Europe by enhancing mobility;
(4) A more social and inclusive Europe implementing the European Pillar of Social Rights;

[3] See Annex I(a) of the SEA Directive.

[4] EU Regulation No 2021/1060 of the European Parliament and of the Council of 24 June 2021 laying down common provisions on the European Regional Development Fund, the European Social Fund Plus, the Cohesion Fund, the Just Transition Fund and the European Maritime, Fisheries and Aquaculture Fund and amending Regulation (EU) No 1387/2013 (OJ L 347, 20.12.2013, p. 320–469).

(5) A Europe closer to citizens by fostering the sustainable and integrated development of all types of territories and local initiatives.
Source: Regulation (EU) No 2021/1060

The Programme 2021-2027 is structured as follows, in five priorities and 7 Specific objectives:

1. Policy Objective 1: A smarter Europe
   - SO1.1: Developing and enhancing research and innovation capacities and the uptake of advanced technologies;
   - SO1.4: Developing skills for smart specialisation, industrial transition and entrepreneurship
2. Policy Objective 2: A greener Europe
   - SO2.4: Promoting climate change adaptation and disaster risk prevention, and resilience, taking into account eco-system based approaches
   - SO2.7: Enhancing protection and preservation of nature, biodiversity and green infrastructure, including in urban areas, and reducing all forms of pollution.
3. Policy Objective 3: A more connected Europe
   - SO3.2: Developing and enhancing sustainable, climate resilient, intelligent and intermodal national, regional and local mobility, including improved access to TEN- T and cross-border mobility.
4. Policy Objective 4: A more social Europe
   - SO4.6: Enhancing the role of culture and sustainable tourism in economic development, social inclusion and social innovation
5. Interreg Specific Objective 1: A better cooperation governance
   - Legal and administrative cooperation and cooperation between citizens, civil society actors and institutions; Institutional capacity to implement macro-regional, sea-basin and other territorial strategies.

Table 1: Programme Strategy

Specific objectives	Challenges	Actions
1.1 Developing and enhancing research and innovation capacities and the uptake of advanced technologies	01. Building on the research capacities to activate dynamics of technological transfer especially on Blue Economy sectors, through a stronger dialogue of the quadruple helix actors and attracting private and public financial resource for R&D	• Support joint industrial (pre-) feasibility studies for new products applications and territorial/marine monitoring systems • Promote synergies with other ETC Programmes, Horizon Europe and LIFE • Promote applied research and technological transfer through a stronger cross-border collaboration among quadruple helix actors, in blue economy sectors, circular economy practices and digitalisation • Provide ICT services and web/cloud facilities for private companies • Promote a cross-border innovation ecosystem through long-term cooperation agreements among the relevant actors of the quadruple helix approach
	02. Attracting and maintaining a higher number of young researchers by widening career perspectives towards market-oriented research and cross-border research projects	• Facilitate cross-border mobility of researchers through cooperation agreements among Italian and Croatian institutions • Implement joint research on emerging market needs and new business opportunities, in the blue economy sectors, fostering the attraction of public/private investments and increasing number of researchers in the private sector
1.4 Developing Skills for smart specialisation, industrial transition and entrepreneurship	06. Strengthening the SMEs through increased collaboration practices and support to innovation in competitive domains	• Enhance entrepreneurial capacities to foster innovation in products and processes, through the collaboration with cultural/ creative industries and the development of new sustainable technologies/ circular economy approach • Build or reinforce transformation and digitalisation skills of SMEs and their networks, in order to boost innovation mainly in blue economy sectors and adopting circular economy practices • Develop and consolidate entrepreneurial skills referred to internationalisation and the capacity to attract foreign investments and/or to jointly promote products and services on international markets • Support SMEs to develop the needed skills to access market intelligence services for exploring emerging opportunities and to develop innovative business concepts in order to comply with international markets' needs
	07. Intensifying the smart specialisation governance processes, with more focused priorities on which investing with policies for human	• Foster the setting-up of cross-border knowledge hubs to stimulate dialogue and increase cooperation in the common areas of expertise of smart specialisation strategies • Foster the diffusion of new approaches to the use of technology and applied research for transformative change in SMEs

	resources knowledge and for business initiatives	• Support cross-border initiatives, training programmes and mutual learning (know-how and best practices) in order to qualify human capital and to improve entrepreneurial skills in common smart specialisation domains, with special focus on blue and green skills, ICT skills and digital transition • Boost entrepreneurial skills of graduates in order to facilitate their entry into labour market and the added value in innovation and smart specialisation capacities for the private companies they join
2.4 Promoting climate change adaptation and disaster risk prevention and resilience, taking into account eco-system based approaches	12. Improve the knowledge base for climate change monitoring and adaptation, and coordinate methodologies, processes and resources	• Promote cooperation between public authorities, research institutions and private companies in order to take advantage of new scientific results and multidisciplinary research to improve observation of climate change effects and plan and define the adaptation strategies in line with 2030 Agenda for Sustainable Development and with the European Green Deal • Study and test integrated climate-adaptation solutions for different domains/target groups of population and enhance the definition of common datasets on atmospheric parameters for climate analysis and impact assessment or improving the usability of existing ones • Exchange good practices to monitor, manage, mitigate and support the adaptation to climate change effects on the most relevant economic sectors • Encourage the development or capitalisation of data gathering tools (i.e. sensor systems, web-based platforms) and small-scale infrastructure for observing climate change effects, especially where monitoring systems are absent at cross-border level • Promote networking activities and exchanges in order to define common indicators and increase the usability of existing database • Develop training courses for policy makers and general service providers on relevant topics linked to climate change and its consequences in order to design new policies and promoting workshops/seminars dealing with new sustainable and adaptive climate smart models • Integrated cross-border community-based initiatives aiming at fostering active awareness about anthropogenic changes on local ecosystems and related adaptation measures • Students and teachers' exchanges aimed at developing common projects on climate change adaptation
	13. Improve the effectiveness of all the phases of the civil protection process (assessment, monitoring,	• Improving digital competences, fostering the use of new monitoring technologies and tools and reinforcing exchange of data to increase safety and risk forecasting capacities

	alert, reaction, reconstruction) through more intense cooperation	• Increasing climate resilience of cultural/natural heritage sites developing and implementing disaster risk reduction policies and actions in local and regional development plans • Promoting joint tools and standardised procedures to prevent disasters related to economic activities • Reinforcing cooperation between local authorities and non-governmental organisations to define and apply integrated emergency/rescue plans • Developing standardised early warning systems, contingency planning and decision support tools (also for uncertainty management processes), especially through new technologies and robotics, and financing small scale infrastructure to face natural disasters and other hazards • Developing cross-border agreements for accelerating mutual supply of goods/equipment for the management of the first phases of the emergency/recovery • Exchange of good practices to increase post disaster management capacities of relevant actors
2.7 Enhancing protection and preservation of nature, biodiversity and green infrastructure, including in urban areas, and reducing all forms of pollution	16. Improve the knowledge base and the monitoring system for policies of protection of biodiversity and fight to pollution	• Develop homogenous indicators through the exchange and comparison of existing good practices in order to harmonise data collection and monitoring systems • Set-up cross-border monitoring systems and shared platforms to assess the status of the marine habitats and species (also the alien ones) and predict the effects of biodiversity's policies on marine ecosystem, as a basis for pollution prevention, mitigation and reduction policies • Extend the use of digital solutions to evaluate ecosystem services especially in the sea basins • Provide new tools for the integrated management of sea, coast and river environment and of cross-border natural resources (i.e. coordinated Maritime Spatial Planning (MSP) and Integrated Coastal Management (ICM)) • Develop integrated strategies and instruments and finance small scale infrastructure for biodiversity protection and habitats and coastal landscape preservation • Support feasibility studies for setting up cross-border protected marine areas and other effective area-based conservation measures (OECMs) • Implement training and educational activities to raise awareness among policy makers and general service providers for the design of strategies more focused on the economic value of a healthy marine environment

		• Promote community-based initiatives that combine the regeneration of marine resources with the preservation of local livelihoods • Promote information campaigns for responsible tourism activities for safeguarding ecosystem and reducing pollution • Develop joint strategies to spread good practices on nature protection, biodiversity and bioeconomy • Develop and test innovative and ecological technical solutions to reduce pollution caused by human activities • Design integrated policies aimed at limiting the anthropogenic pressure on coastal and inner regions with a focus on the promotion of green ports and sustainable fisheries and aquaculture models
3.2 Developing and enhancing sustainable, climate resilient, intelligent and intermodal national, regional and local mobility, including improved access to TEN- T and cross-border mobility	18. Improve the inter-modality capacities of ports to make them greener, more ICT based, secure, effective and more integrated with the hinterland needs	• Set up common analysis and data exchanges on existing connections in order to define new sustainable solutions for the access to ports and the integration of transport networks in port towns • Improve the environmental performance of ports by supporting suitable small-scale infrastructures and innovative equipment/ICT tools, also in order to improve boarding /disembarking procedures • Promote innovative solutions for implementing the circular economy approach in the management of the ports • Foster the use of alternative fuels and the diffusion of new ecological transport modes • Develop innovative cross-border strategies, for logistic and mobility solutions interconnecting ports with railways, airports, inland terminals, industrial areas in order to enhance the processing of passengers and freight • Establish action plans and common standards to manage physical and cybersecurity of freight and passengers' transports also in real time through the use of ICT and web-based tools
	20. Setting up rapid, sustainable and well spread cross-border connections	• Exploit ICT technologies to pilot sustainable, seamless passenger and freight transport solutions and to develop new joint models of multi-modal approach • Design cross-border strategies for maritime transport (including new maritime lines and interchange nodes) in order to reduce seasonal road traffic and bottlenecks in coastal and inner areas especially due to tourism • Share expertise, developing common strategies and organizing training courses for traffic management in the coastal and inner areas • Promote joint monitoring and data analysis helping defining cross border policies on greener maritime routes and sea pollution reduction

		• Design cycle routes of macro-regional relevance and testing new services to encourage inter-modality (bike and train/ ferry/ tram/ bus/ plane) also considering tourism needs
4.6 Enhancing the role of culture and sustainable tourism in economic development, social inclusion and social innovation	29. Diversify, de-seasonalise and delocalise the tourism flows within the area	• Implement the results of joint studies, projects and comparative researches aimed at assessing trends, flows and impacts of tourism on the area, and develop smart and sustainable destination management strategies through the exchange of data, planning tools and digital solutions • Draft and implement sustainable development and promotion strategies of tourist destinations and territorial marketing campaigns engaging local stakeholders to diversify tourism offer also to enhance the potential of the peripheral areas • Encourage the use of existing sustainable tourism management systems and labels, and financing the creation of new cross-border brands and sustainable heritage interpretation • Plan cross-border information campaigns and training activities for administrators and operators on sustainable tourism concepts • Promote sustainable tourism in peripheral areas through the enhancement of experiential tourism, the diffusion of slow mobility, the creation of new routes linked to local specificities and new services provided by cultural and creative industries
	30. Promoting new and innovative integrated offers of coastal tourism, to maintain the competitiveness of the sector	• Design and test innovative digital solutions and new technological equipment to interpret and promote coastal and inner areas tourism resources also through the involvement of cultural and creative industries • Promote the development of thematic networks such as, for instance, nautical/ cultural routes, windsurfing/kitesurfing, fisheries traditions, diving and fishing-related tourist activities • Foster agreements between tourist operators of the coastal and the inner areas in order to set up coordinated and innovative offers and itineraries • Design and create interpretation centres (e.g. visitors centres, eco-museum etc.) for joint promotion of transnational routes and products
	31. Improve and modernise the policies for valorisation of the cultural heritage	• Support the cross-border exchange of know-how and experiences concerning the digitalisation of natural and cultural heritage and implementing joint solutions to innovate cultural fruition (i.e. through artificial intelligence) also in view to overcome the post-COVID constraints • Develop integrated strategies (including the provision of small-scale infrastructure and new ICT tools and services) aimed at better monitoring,

		interpreting and preserving landscapes and cultural resources also with a view to the tourism valorisation of the area • Support the joint valorisation of cultural immaterial heritage from the two countries thus contributing to the sector recovery after the pandemic • Enhance the places of culture as multidisciplinary hubs by reinforcing their spill-over effects in the economic and tourism sector • Promote cross-border education activities and training, also through knowledge exchange, for raising skills in the tourism sector, with a special focus on landscapes and cultural heritage preservation, sustainable tourism, digitalisation, destination management and heritage interpretation

The IP 2021-2027 follows on from the past programming period 2014-2020. The themes addressed in the IP are based on thematic objectives addressed in the previous programme, including strengthening research, technological development and innovation, promoting climate change adaptation, risk prevention and management, preserving and protecting the environment and promoting sustainable transport. The table below shows the priority axes addressed by the past programming period.

Thematic Objective	Priority Axis		Specific Objectives		Investment priority
TO1	PA 1	Blue Innovation	SO1.1	Enhance the framework conditions for innovation through cooperation of the system players mainly in the sectors of the blue economy	IP 1b
TO5	PA 2	Safety and resilience	SO2.1	Implementing of climate change monitoring or planning of adaptation measures	IP 5a
			SO2.2	Safeguard the Programme area from natural and man-made disaster	IP 5b
TO6	PA 3	Environment and cultural heritage	SO3.1	Make natural and cultural heritage a leverage for economic and territorial development	IP 6c
			SO3.2	Contribute to protect and restore biodiversity in the Adriatic Basin	IP 6d
			SO3.3	Improve the environmental quality conditions of the Adriatic Basin by use of sustainable and innovative technologies and approaches	IP 6f
TO7	PA 4	Maritime Transport	SO4.1	Improve the quality, safety and environmental sustainability of marine and coastal transport services and nodes by promoting multimodality in the Programme area	IP 7c
\	PA5	Technical Assistance	SO5.1	To assure efficiency and effectiveness in the management and implementation of the cooperation Programme	\
			SO5.2	To assure the support to applicants and beneficiaries and to strengthen the involvement of relevant partners in the Programme implementation	\

To now, the past programming period has funded, in addition to seven Technical Assistance projects, 83 projects (50 Standard, 22 Standard+ and 11 Strategic projects) for a total of EUR 221 828 235.34, following the allocation per priority axis as in the table below[5]. Around 64% of the financial resources for 53 projects, have been spent for priority axis which contribute directly to environmental and climate objectives.

Priority Axis	Standard+	Standard	Strategic	Grand Total	Budget available	% per PA
PA1	2.877.635,40	19.529.327,09	5.555.755,45	27.962.717,94	28.426.903,00	**13%**
N° of projects	3	8	1	**12**		
PA2	3.125.191,80	22.453.428,16	34.727.872,43	60.306.492,39	60.407.166,00	**27%**
N° of projects	3	10	3	**16**		
PA3	10.752.370,66	52.329.431,09	19.552.123,71	82.633.925,46	82.911.797,00	**37%**
N° of projects	11	22	4	**37**		
PA4	5.093.521,00	24.410.745,65	21.420.832,90	50.925.099,55	50.931.532,00	**23%**
N° of projects	5	10	3	**18**		
Total N° of projects	**22**	**50**	**11**	**83**		
Total amount per call	**21.848.718,86**	**118.722.931,99**	**81.256.584,49**	**221.828.235,34**		
% per call	10%	54%	37%			

[5] Operational evaluation 2021, Interreg VI Italy Croatia CBC Programme 2014-2020, Evaluation Service. June 2021.

The provisional overall allocation of the IP 2021-2027 is EUR 172.986.266,26. This is an estimation, which may change before the Programme is definitively adopted. This budget will be used to co-finance cross-border cooperation projects. The maximum co-financing rate priority level is still under discussion.

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

Table 2: Financial allocation per priority

Priority	Number of SOs	Budget share in%
1 – A smarter Europe	2	14,62%
2- A greener Europe	2	38,88%
3 - A more connected Europe	1	20,76%
4 – A more social Europe	1	19,24%
5 - Interreg specific objective 1	1	6,50%

II. GENERAL PRESENTATION AND OBJECTIVES OF THE SEA

II.1 THE SEA PROCEDURE

The Strategic Environmental Assessment (SEA) legislative dispositions[6] states that environmental assessment must be carried out for all plans and programmes which are likely to have significant effects on the environment. The Directive includes the following steps:

- a consultation with environmental authority about the contents of the Environmental Report (scoping phase);
- the preparation of the Environmental Report for the assessment of environmental effects;
- the public consultation on Environmental Report and Programme;
- the decision on SEA.

For the Interreg VI A Italy – Croatia 2021-2027 programme, the SEA steps are carried out according to the box below. In preparing the environmental report and before the submission to the public consultation, the preliminary report was reviewed in the first steps by Environmental Authorities during the scoping phase.

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

II.2 THE SCOPING PHASE

The SEA Directive establishes that environmental authorities have to be consulted '*when deciding on the scope and level of detail of the information which must be included in the environmental report*'[7].

On the basis of the draft of the IP, a scoping report has been prepared. The consultation has taken place in August-September 2021 and has involved Environmental Authorities (hereinafter EA) of all the Italian and Croatian administration implicated in the IP (the list of the EA is reported in the annex 1 of the scoping report). According to the SEA Directive, the EAs have presented suggestions and observations for the Environmental Report (ER), as well as orientations the Programme strategy. These include suggestions for the improvement of the Environmental Report, clarifications regarding data sources, plans and programmes in force at regional level, methodological recommendations and recommendations on measures and actions to be included in the cooperation Programme.

For the inclusion of the contributions in the final draft of the ER, the following general criteria have been applied:

- Environmental objectives, if pertinent to the IP contents, to the territorial scale of the cooperation area and to the scope of the SEA procedure, have been included in the ER;
- Plans or Programmes designed at regional and sub-regional level, have not been used for the coherence analysis, but they have been listed in Appendix 3 for further used in the project preparation phase (i.e. compliance with the plans and programmes in the list should be mandatory for the projects);
- Environmental data, indicators or studies have been taken into account only if information were available for the most part of the territory covered by the Programme. The other data sources suggested during the consultation phase have been reported in Appendix 2 and made available for project design (i.e. this information can be used to prepare the context or identify projects indicator system);
- The methodology followed for the assessment has been made explicit considering the single effects, the cumulative effects;
- A logical scheme (as the DPSIR one) has been used to integrate the information from the context analysis to the construction of the monitoring system, through the assessment phase.

A complete list of recommendations and suggestions is provided in annex 4 of this report. While the following table summarised the first orientation measures proposed, as emerged from the scoping review.

Table 3: Suggestion for the improvement of sustainability of the Programme

Administration	Suggestion
Emilia Romagna: regional authority	In continuity with the previous programming, the Programme should aim to create a clearer and more extensive knowledge base to implement a closer collaboration in some important common areas such as risk management, planning of the maritime space,

[7] Art.5, c.3 Directive 2001/42/EC

	fisheries and aquaculture. Concerning new technologies, the Program should enhance the previous experiences that led to the realisation of shared IT platforms (web GIS). Example of platforms: EU project Portodimare (https://www.portodimare.eu/) and ADRIPLAN - ADRiatic Ionian maritime spatial PLANning Tools4MSP data portal (http://data.tools4msp.eu/)
	In order to face the coastal erosion of the coast closed to Ferrara, the Programme should promote research and improve knowledge of the territory and of the marine hydrodynamics, also through the use of modelling, targeted intervention on the most critical stretches of the entire Comacchio coast, such as plano-altimetric adjustment of the emerged cliffs and beaches, as well as reconstruction of the dunes, in order to reduce the flooding risk and preserve the protected ecosystems of the area (SCI-SPA site and Po Delta Regional Park)
Marche: Mountain union of the Sibylline	The programme should promote specific interventions in the Natura2000 areas related to habitat conservation and connectivity, hunting ban, restauration of agro-ecosystems, particularly exposed to flooding risks, re-naturalisation of watercourses, monitoring of invasive species, reforestation, fires protection, reduction of pesticides uses, promotion of rural tourism, measures of economic compensation for damage to owners of chestnuts.
Ministry of Economic Transition	Concerning the transnational, national and regional mobility, the Programme should ensure that interventions do not concern Natura2000 sites or other protected areas.
Veneto region: Ministry of culture (Regional Secretariat)	The Programme should guarantee the conservation of archaeological sites (best practices art.25 codes of public contracts).

III. CONTEXT ANALYSIS, ENVIRONMENTAL INDICATORS AND CHARACTERISTICS OF THE AREA TO BE SIGNIFICANTLY AFFECTED

SEA directive requires the analysis of the status of the environment in absence of the Programme as basis for the further evaluation of environmental effects. In this chapter, a brief presentation of the main environmental issues related to the CBC Programme will be presented and possible environmental criticality and trends will be pointed out. According to the DPSIR (Determinant, Pressure, State, Impact, Response) model, here state and pressure indicators will be described. The state indicators used here to describe the context, will be part of the SEA monitoring system (see Section 9).
The context analysis included in the first part of this ER has used data as much homogeneous as possible for the whole area. As a consequence, some specific and localised data source suggested during the scoping phase and reported in appendix 2 has not been used in the analysis. This list could be used in further steps of Programme implementation, supporting project design and evaluation.

Concerning the trends highlighted by the context analysis below, please be careful to interpret the data because the statistics available is referred to the pre-pandemic picture, not showing the changing situation from March 2020 onwards and the implications of the Covid-19 outbreak.

III.1 CLIMATE CHANGE AND ASSOCIATED RISKS

The main human-caused driving of climate change are GHG emissions[8]. Among the primary consequences are increases in average temperature and sea level, a decrease of the average precipitation level and an increasing frequency of extreme weather events such as heat waves, storms and floods.

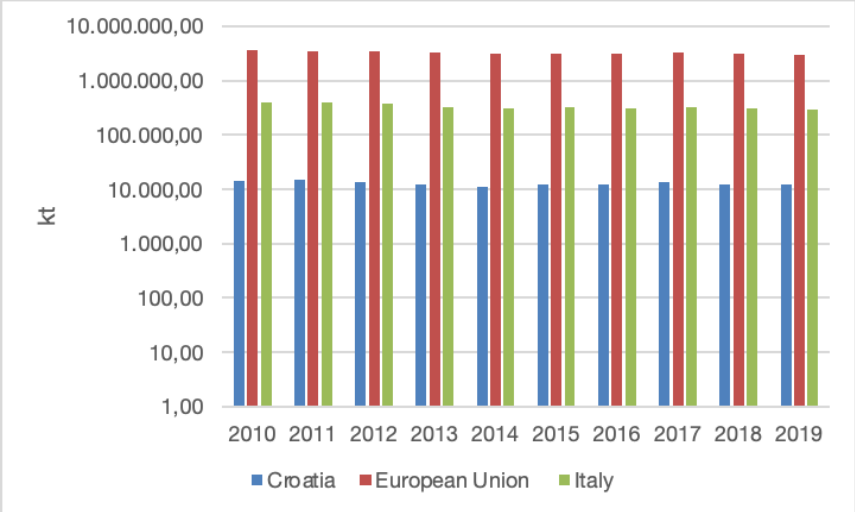
GHG emissions

The **GHG emissions** are monitored inside the United Nations Framework Convention on Climate Change (UNFCCC). In Croatia, for the year 2019 the total GHG emissions (considering also those becoming from land use, land use change and forestry - LULUCF) were 18,048.25 Gg of CO2 eq., with a reduction of ~27.6% in respect to year 1990. In Italy, the emissions including LULUCF in 2019 were 376,719.37 Gg CO2 eq., with a reduction of ~26.8% in respect to year 1990.

The main sector responsible for GHG emissions in Italy is Energy (supply: 27.3%, use: 14.8%) followed by Transport (31.3%). Other sources of CO2 emissions are less important such as industrial process (10%), agriculture (8.7%) and waste (5.4%). In Croatia, the largest contribution to the GHG emissions in 2018–derives from the energy sector with 69.1 percent, followed by agriculture with 11.4 percent, industrial Processes with 10.8 percent, waste with 8.6 percent[9]. In Italy, CH4 and N2O emissions were equal to 10.3% and 4.1%, respectively, of the total CO2 equivalent greenhouse gas emissions in 2019. Both gases showed a decrease from 1990 to 2019, equal to 12.9% and 33.9% for CH4 and N2O, respectively[10].

[8] Fifth IPPC report, which confirms the global trends and underline the human responsibility to global warming, available on the International Plant Protection Convention's website at www.ipcc.ch.
[9] NIR, Croatia 2020
[10] Italian Greenhouse Gas Inventory 1990-2019, National Inventory Report 2021. ISPRA, 2021.

Figure 2: Emissions CO2 (in kt CO_2 equivalent, the scale is logarithmic for visualisation purpose) (Source: United Nations Framework Convention on Climate Change - UNFCCC. Elaboration: t33)



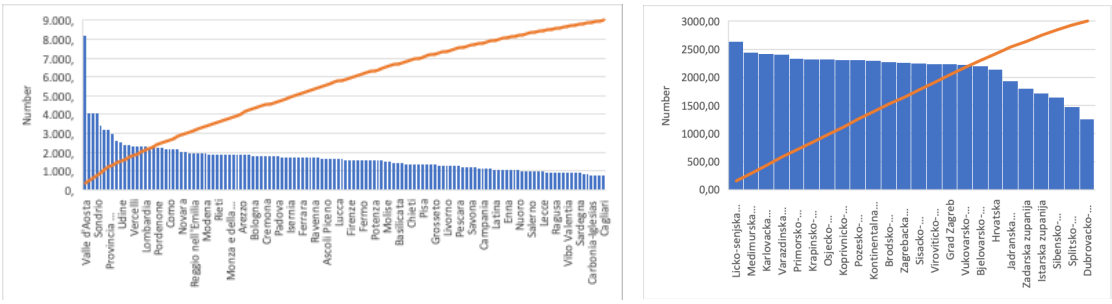
Temperature and precipitations

The Mediterranean Basin has been affected by recent climate change at rates exceeding global averages, in particular by more rapid warming during all seasons, in the air and sea. Recent climate change in the Mediterranean exceeds global trends[11]. While global mean surface temperature is now about 1.1°C (±0.10°C likely range, IPCC[12]) above pre-industrial values, the Mediterranean region approaches 1.54°C (Cramer et al. 2018[13]). In the Mediterranean region, the trend is about 0.03°C per year, implying that, when the world passes the 1.5°C level identified in the Paris Agreement, the region will already have warmed by +2.2°C. Since the mid-20th century, the major cause of air temperature increase in the Mediterranean region is anthropogenic forcing[14].

This also includes the observed increases in hot extremes and decreases in cold extremes. The annual maximum daily high temperature has already increased by 2°C, the annual minimum daily low temperature by only 1°C. At EU level, the cooling and heating degree days (annual data) in 2020 are equivalent to 2.758,95, with a decrease of ~9,03% compared to year 2016. At national level, in Croatia the cooling and heating degree days in 2020 are equivalent to 2.137,64, with a decrease of ~5,6% compared to year 2016. In Italy, the cooling and heating degree days in 2020 are equivalent to 1.750,40, with a decrease of ~0,9% compared to year 2016. At regional level, the values related to heating degree days in year 2020 are reported in the table below.

[11] United Nations Environment Programme/Mediterranean Action Plan and Plan Bleu (2020). State of the Environment and Development in the Mediterranean. Nairobi
[12] IPCC. (2019). Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems. Geneva, Switzerland. In press.
[13] Cramer, W., Guiot, J., Fader, M., Garrabou, J., Gattuso, J-P., Iglesias, A., Lange, M.A., Lionello, P., Llasat, M.C., Paz, S., Peñuelas, J., Snoussi, M., Toreti, A., Tsimplis, M.N. & Xoplaki, E. (2018). Climate change and interconnected risks to sustainable development in the Mediterranean. Nature Climate Change, 8, 972-980.
[14] Adloff, F., Somot, S., Sevault, F., Jordà, G., Aznar, R., Déqué, M., Herrmann, M., Marcos, M., Dubois, C., Padorno, E., Alvarez-Fanjul, E. & Gomis, D. (2015). Mediterranean Sea response to climate change in an ensemble of twenty first century scenarios. Climate Dynamics, 45(9-10), 2775-2802.

Figure 3: **Total number of heating degree days at regional level for Italy and Croatia in year 2020 (Source: Eurostat)**



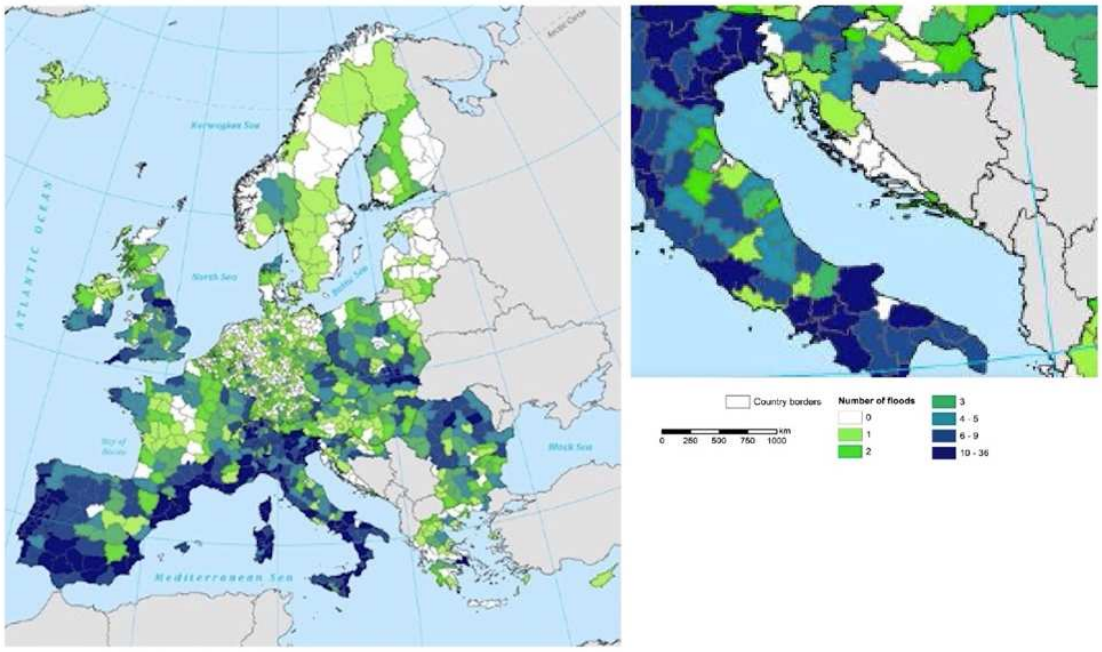
Precipitation varies very strongly from year to year and also between Mediterranean regions - it is therefore not possible to assume a reduction in rainfall across the whole Mediterranean. But the frequency and intensity of droughts have increased since 1950[15]. Mean annual precipitation in Croatia is 1,082.7 mm (considered period 1991–2020). Precipitation levels increase from October to December and the largest rainfall occurs in November (117mm)[16]. Future precipitation trends for the country are projected to decline steadily over the century, (eastern areas may experience increased rainfall), however these negative trends are primarily recognised in the summer months in the mountain regions as well as in the Adriatic areas. Annual decreases in precipitation are also expected in Istria and Gorski Kotar, due to reduced spring rainfall. An increased number of consecutive dry days are expected to be seen over the spring season for the northern Adriatic, with summer seasons seeing an extended number of dry days reach the southern coast of Croatia[16]. Long-term (1961-2015) average annual precipitation is equivalent to 927 mm for Italy[17]. With an average cumulative precipitation anomaly in Italy of approximately -5%, 2020 ranks 23rd among the least rainy years of the entire series since 1961. Year 2019 ranks 11th among the wettest years of the entire series historical, from 1961 to 2019. During 2019, very rainy months alternated with others drier; throughout the country, November was the month on average rainier[18]. Year 2017 was characterised by a widespread and generalised deficit of precipitation that affected most of the national territory. The total annual precipitation in 2017 deviated by -20% compared to the long-term average 1961-2017. The rainfall deficit in 2017 affected the entire national territory[19].

Floods risks

Change in the magnitude and frequency of floods at regional scale can be associated to climate change as well as land use. In recent decades, the number of major flood events and associated economic loss has risen in Europe.

[15] United Nations Environment Programme/Mediterranean Action Plan and Plan Bleu (2020). State of the Environment and Development in the Mediterranean. Nairobi
[16] Climate Risk Profile: Croatia (2021): The World Bank Group.
[17] United Nations Environment Programme/Mediterranean Action Plan and Plan Bleu (2020). State of the Environment and Development in the Mediterranean. Nairobi
[18] ISPRA. Environmental data yearbook, 2020
[19] ISPRA. Environmental data yearbook, 2019

Figure 4: Total number of floods events recorded in HANZE database by NUTS3 region (1870–2016) (Source: HANZE database[20])



In Croatia, between 1990 and 2020, there have been nine flood events (2 flash flood and 7 riverine flood), with 3 deaths affecting 13.776 people and causing a damage equivalent to 80.000 USD[21]. In Croatia, the hydrological variability is more pronounced than the climate diversity. Moreover, intensity of short-term severe precipitation will increase in the future, of both rare and frequent possibilities of the phenomenon, creating preconditions for frequent occurrences of floods in flood watercourses, urban areas and river basins[22]. The high flood hazard zones in Italy amount to 12,405 km2, the medium flood hazard zones to 25,398 km2 and the low hazard zones to 32,961 km2[23]. Data at regional level for medium flood hazard zones are reported in the table below.

Table 4: flood hazard zones at regional level (Source: ISPRA, 2018)

Medium flood hazard zones		
Region	km2	%
Veneto	1.713,40	9,3
Friuli Venezia Giulia	610,3	7,8
Emilia Romagna	10.252,50	45,7
Marche	241	2,6

[20] Paprotny, D., Sebastian, A., Morales-Nápoles, O. et al. Trends in flood losses in Europe over the past 150 years. Nat Commun 9, 1985 (2018).
[21] Climate Risk Profile: Croatia (2021): The World Bank Group.
[22] Ministry of environment and energy. Seventh National communication and third biennial report of the Republic of Croatia under the United Nations framework convention on climate change (UNFCCC).
[23] ISPRA, 2018. Landslides and floods in Italy: hazard and risk indicators.

Abruzzo	149,90	1,4
Molise	139,4	3,1
Apulia	884,50	4,5

The estimate of the population exposed to flood risk in Italy is equal to 2,062,475 inhabitants (3.5%) in the scenario of high hydraulic hazard P3 (return time between 20 and 50 years); to 6,183,364 (10.4%) in P2 average hazard scenario (return time between 100 and 200 years) and 9,341,533 (15.7%) in the P1 hazard scenario (poor probability of floods or extreme event scenarios). In Italy, in 2019, flood events have been 27, and the victims due to floods has been 5[24].

The river basin of the Po River is more subject to increased flood risk, and the Alpine and Apennine areas, subject to increased flash flood risk. An analysis of flood risk showed that around 4.0%, 8.1% and 10.6% of the Italian territory was prone to high (return period 1: 20–50 years), medium (return period 1: 100–200 years) and low risk (return period 1: 300–500 years), respectively[25]. About 4500 km2 of Italian coastal areas are at risk of sea flooding from sea level rise (SLR) by the next 100 years; most of them are located in the North Adriatic Sea, but some Tyrrhenian and Ionian coasts may be at risk too.

Landslide

In Italy in 2019 the main landslide events were 220 and caused 4 deaths, 27 injured and damage mainly to the road network. At national level, the surface of landslide hazard areas (classification: very high) is equal to 9,153 km2 (3%)[26]. Data at regional level for the areas interested by the Programme are reported in the table below.

Table 5: Landslide hazard areas (km2) at regional level (Source: ISPRA, 2019)

Region	**Landslide hazard areas (km2)**	
	Very high	**High**
Veneto	47,7	58
Friuli Venezia Giulia	154	36,4
Emilia Romagna	1.078,10	2.199,60
Marche	78,5	657,1
Abruzzo	637,3	1.040,90
Molise	228,6	488,3
Apulia	119,7	475,1

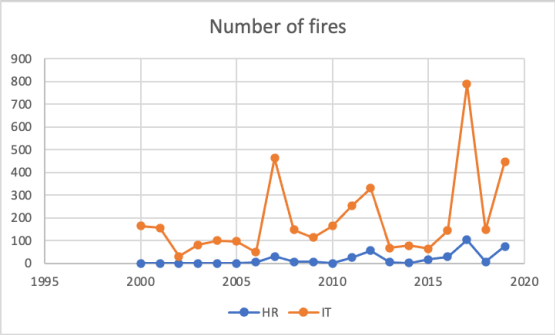
[24] ISPRA. Environmental data yearbook, 2020.
[25] Seventh National Communication under the UN Framework Convention on Climate Change. Italy, December 2017.
[26] ISPRA. Environmental data yearbook, 2020

Considering the most dangerous classes (P3 + P4) of landslide, the population exposed amounts to 1,281,970 inhabitants, equal to 2.2% of the total resident population (ISPRA, 2019).

Forest fires

Concerning fires, the historical series presented above shows that the phenomenon of forest fires has a fluctuating trend with peak years (2007, 2017) alternating with years of attenuation. The is no a clear tendance emerging from the observation, but it seems that from 2005 the number of fires is on average increasing, especially in Italy[27].

Figure 5: Number of fires by country (Source: European Forest Fire Information System)

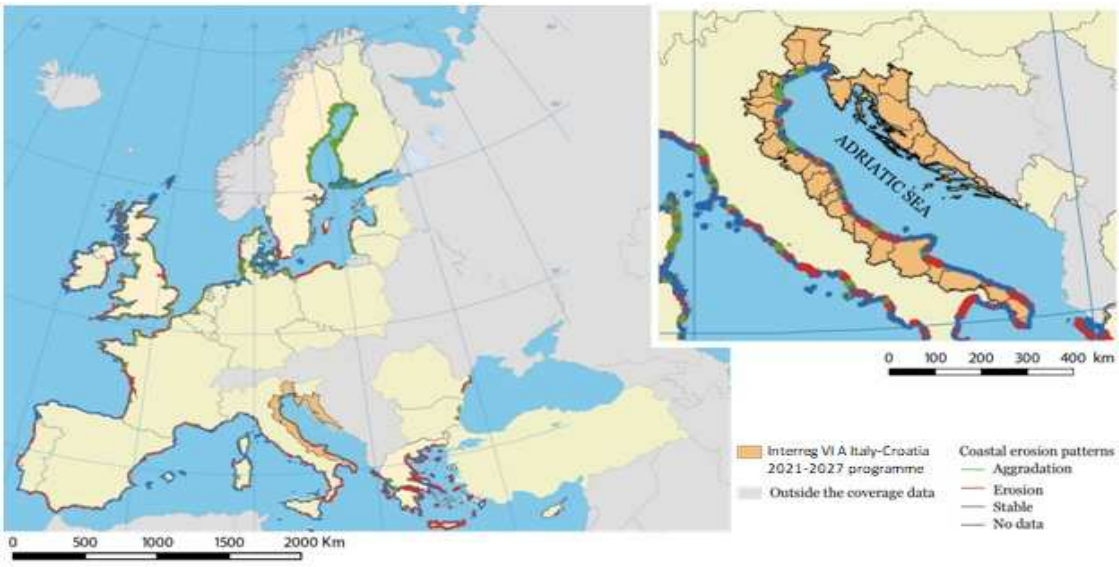


Coastal erosion

Coastal erosion is a threat that is increasing in last years, both for climate change causes (especially sea level rise) and human pressure. The Croatian coastline extends for 5,835 km and consists mostly of carbonate rocks. Due to its characteristic composition, coastline in Croatia is more subject to karst processes that mechanical weathering. Erosion and general degradation started to occur along with the intensive coastal construction related to tourism growth. Losses of beach sediment are mostly related to diminishing sources and losses to offshore due to the very steep submarine slopes[28]. On the other side, about the 46% of Italian beaches, are already under erosion[29]. This problem is stressed in the Adriatic coastline, in reason of its predominant composition of beaches and low elevation coast. In particular, the Italian region which stand out for the higher percentage of coastal erosion is Abruzzo region (63%), followed by Apulia (55%) and Molise region (53%)[30].
In the Po delta, high erosion rates can be observed (10 m/year retreat). Principal factors inducing beach erosion in Italy are dam construction in rivers (with consequent reduction of sediment supply to the coast) and land subsidence of river deltas (from water extraction for agriculture and industry, and gas extraction).

[27] ISPRA. Environmental data yearbook, 2019
[28] Implementing an efficient beach erosion monitoring system for coastal management in Croatia, Kristina Pikelja, Igor Ružićc , Suzana Ilića , Mike R. Jamesa , Branko Kordićd, 2018.
[29] Legambiente, Rapporto Spiagge 2021. La situazione e i cambiamenti in corso nelle aree costiere italiane.
[30] MATTM-Regioni, 2018. Linee Guida per la Difesa della Costa dai fenomeni di Erosione e dagli effetti dei Cambiamenti climatici. Versione 2018 - Documento elaborato dal Tavolo Nazionale sull'Erosione Costiera MATTM-Regioni con il coordinamento tecnico di ISPRA, 305 pp

Figure 6: Pattern of coastal erosion (Source: European Environment Agency. Elaboration: t33)



In Italy, the indicator related to the variations in erosion of the low coasts (> +/- 5m) in the period 2006-2019, estimated on a regional basis, is reported in the table below. The indicator, updated periodically, is a basic parameter for assessing the vulnerability of coastal areas and the degree of risk to which urban centers, infrastructures and socio-economic activities are exposed. The observation of the coastal erosion trend is a reference data both to determine the solutions and economic resources necessary to mitigate the phenomenon and to evaluate the effects and effectiveness of the coastal defense measures and interventions implemented by the various management levels (regional, municipal, basin authority and other).

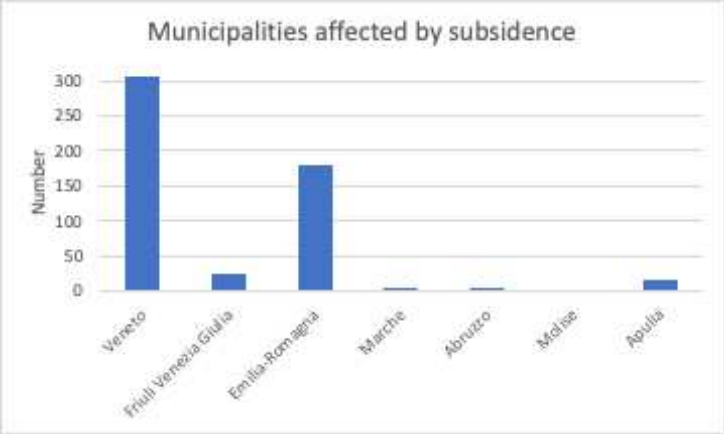
Table 6: Analysis of the variations of the low coasts (> +/- 5m) in the period 2006-2019 (Source: ISPRA)

Region	Low natural coast	Analysis of the variations of the low coasts (> +/- 5m) in the period 2006-2019			
	Total	Erosion		Progress	
	Km	Km	%	Km	%
Abruzzo	104,9	22,7	21,7%	43	41,1%
Emilia-Romagna	105,8	34,1	32,3%	38	36,0%
Friuli-Venezia-Giulia	66,3	7,1	10,8%	11	16,6%
Marche	134,4	21,9	16,3%	61	45,7%
Molise	32,4	10,4	32,0%	12	38,3%
Apulia	673,3	94,8	14,1%	77	11,4%
Veneto	127,3	35,9	28,2%	65	51,3%

Box 1: focus on specific situations in Italy

Subsistence phenomenon in the Italian coast

The subsidence, which consists of a slow process of lowering of the soil that mainly affects coastal and lowland areas, involves about 14% of Italian municipalities, mainly located in the regions of northern Italy, in particular in the Po Valley, while in central and southern Italy the phenomenon mainly affects the coastal plains. In recent decades, the phenomena has been locally aggravated by human action and has reached dimensions greater than those of natural origin. The graphic below shows the municipalities of the cooperation programme affected by subsidence (Ispra, 2018).



In the Mediterranean Sea, the rate of sea level rise has accelerated and has now reached a unprecedented level in the last century of 3.6 mm per year, around 2.5 times the 1901-1990 rate of 1.4 mm per year (SoED, 2020).

Venice lagoon

Concerning the medium / long-term variations of the average sea level in Venice, which is due to the combined effect of eustatism phenomena (rise in the mean sea level due to global warming phenomena) and subsidence (lowering of the following the compaction of the soils), records an increased trend since the beginning of the observations (1872). Subsidence occurs naturally in the Lagoon, and is accentuated by the accidental convergence of various human activities, which cause the lowering of the water table (over-exploitation of the aquifers, dredging of canals, fishery practices which have an impact on the bottom of the Lagoon, lack of inflow of sediments of fluvial origin etc.). This fact has repercussions both on the natural ecosystem and on the normal life of the city. Thus, the frequency of extraordinary high tides and the increased impact they have on the urban system are causing the flooding of a considerable part of Venice at certain periods of the year. In Venice, the sea level in the period 1872-2019 increases on average by 2.53 mm / year (ISPRA, 2020). Concerning high tide in Venice, in year 2019, 28 exceedances of the threshold have been reported with 110 cm (ISPRA, 2020). Since 2009 there has been a notable increase in the frequency of tides between 80-89 cm, which determines a more intense erosion of the coasts, of the salt marshes inside the lagoon, as well as a rise of the saline wedge, the latter able to reduce the compactness and resistance to erosion of the soil. Operation of the industrial area around Porto Marghera has led to high levels of chemical pollution in the waters and the substrate, often with heavy metals. Furthermore, many of the rivers coming from the Alps, which formerly provided sediments for the lagoon, now carry a heavy load of pollutants.

Situation, trend and threats for the CBC area

The trend of GHG emissions has been reduced in 2019 relative to 1990 in both countries: of ~26.8% for Italy and ~27.6% for Croatia.

Natural risks associated to climate change – e.g. heat waves, droughts - are increasing, and they represent a threat for the CBC area, both for climate change causes and human pressure. Mainly due to morphological reason, floods and landslides represent a criticality more in the Italian side than in the Croatian one. Data also differs based on Italian region: Emilia-Romagna Region, as well as Marche and Molise, have 100% of municipalities affected by high and very high landslide hazard and/or medium flood hazard zones and Emilia-Romagna and Veneto have the highest values of population living in medium flood hazard zones.

Similarly, coastal erosion is particularly strong in the Italian side of the CBC area, whereas Croatian coastlines are more subject to karst processes than mechanical weathering. In Italy, the higher percentage of coastal erosion is reported for Abruzzo region, followed by Apulia and Molise region.

Macro-indicators for the theme Climate Change

Indicator	State	Trends
GHG emissions	😐	➡
Temperature and variation of rainfall regimes	☹	↘
Flood events	☹	↘
Coastal erosion	☹	↘

III.2 INLAND WATER QUALITY AND SUPPLY

Water is essential for life, for meeting basic human needs, in sustaining economic and social development and it plays a key role in the climate regulation cycle. As stated by Eurostat (2013), '*The management and protection of water resources, of fresh and salt water ecosystems and of the water we drink and bathe in is therefore one of the cornerstones of environmental protection.*' The continental water issue is addressed in this section looking at quality and supply. The Water Framework Directive[31] (hereinafter WFD) is the main EU Directive for water-related issues.

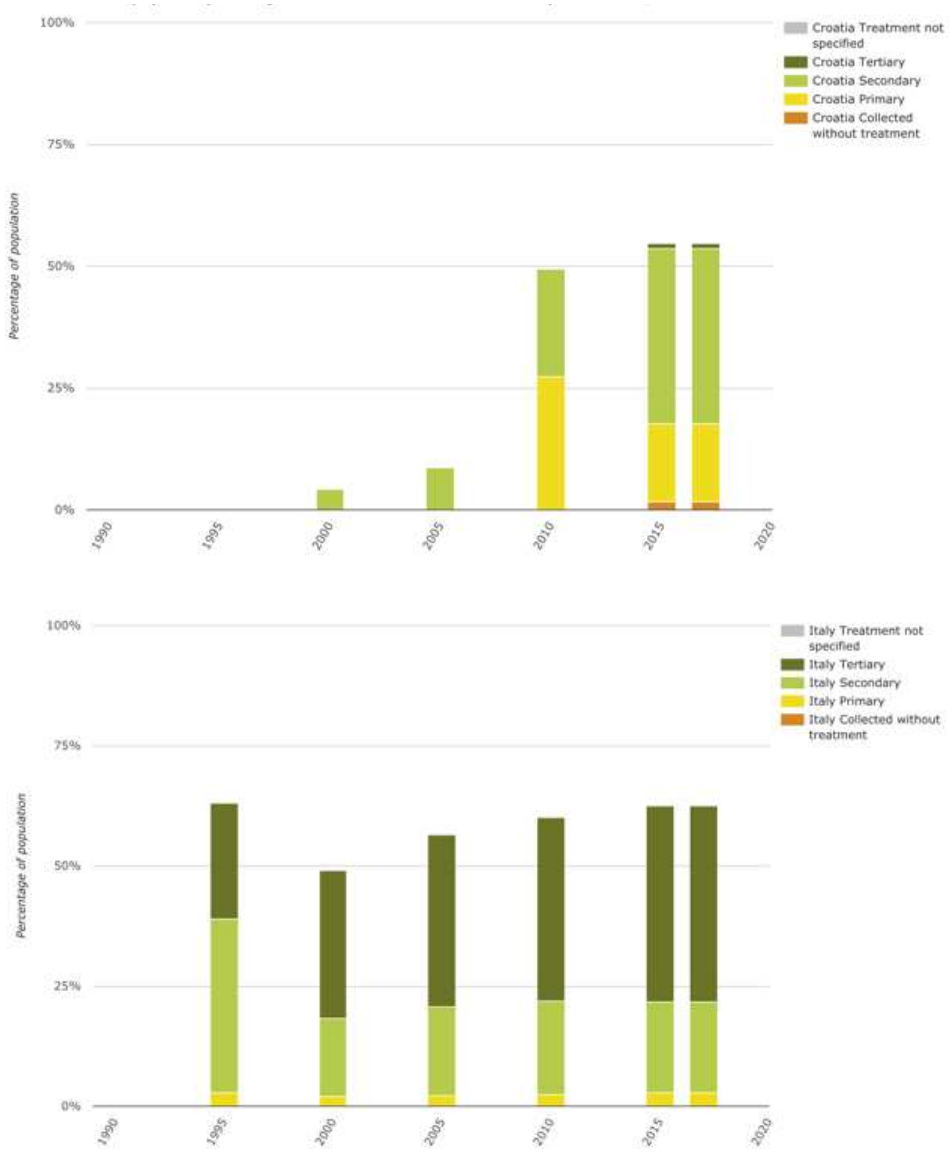
[31] Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (OJ L 327, 22.12.2000, p. 1.).

Water supply and sewage systems

A reliable supply of safe drinking water and sanitary disposal of excreta are two of the most important means of improving human health and protecting the environment.

The treatment of urban wastewater is fundamental to ensuring public health and environmental protection. Urban wastewater treatment in all parts of Europe has improved over the last 30-40 years. In EU-27 countries (EEA 2020), 69 % of the population were connected to tertiary level treatment and 13 % to secondary level treatment. Countries where less than 80 % of the population were connected to public urban waste-water treatment systems were Croatia and Italy, among others. In 2018, in Italy the public urban waste-water treatment, guaranteed by 18,140 plants in operation nationwide, treated an average annual pollutant load of about 68 million population equivalents. In particular, Italy and Croatia show a very different scenario if only the value related to tertiary treatment are considered. The value related to Italy is equivalent to 40.9% of the population connected and for Croatia is equivalent to 1%. The values related to the different categories of treatment for each country are reported in the graphics below.

Figure 7: Urban waste water collection and treatment in Croatia and Italy (Source: European Environment Agency)



Water supply

Data for Croatia for 2019 shows that population connected to public water supply is equivalent to 93%, with an increase of 11.4% compared to 2015. Concerning Italy, almost all Italian municipalities had a public water supply in operation (7,937 on 7,954, 99.8%). There were only 17 municipalities without this service in 2018. In these municipalities, the population (around 79 thousand persons) resorted to self-supply, for instance with private wells[32]. It is evident that situation regarding water supply and sewage systems is getting better rapidly in cooperation area with specific difficulties in micro locations, especially in rural areas.

In 2018, the fresh water uses by the manufacturing industry (NACE C) and households, from public water supply and self and other supply (m^3 per inhabitant) for Croatia is represented by 42,0 m^3 per inhabitant for manufacturing industry and 41,6 for households, while for Italy is represented by 61,9 for manufacturing industry[33] and the volume of water supplied was 4.7 billion cubic meters (215 litres per inhabitant at day). In Italy, in the public water supply network the total water losses are equivalent to 42.0%, which implies that every 100 litres input into the supply system, 42 were not supplied to end-users, confirming the critical state of the water infrastructure. In the end, 3.4 billion cubic meters were lost in distribution: 156 litres per person per day which, estimating a daily consumption per capita of 215 litres (national value), would have guaranteed the water needs of about 44 million people for a whole year[34]. In the Italian municipalities, water use for civil purposes shows a reduction between 2012 and 2016, taking into account the trends of volumes supplied for both authorised and domestic uses. On the one hand the reduction of water use allows to detect a positive trend, maybe connected to a more sustainable and responsible usage; on the other hand public water supply network is characterised by increasing water losses and water rationing episodes, causing negative impacts on the environment and on the quality of life of urban citizens. Croatia has around 37.7 km3 of renewable water resources (FAO, 2019) for a population just above 4 million, with the majority (90%) of Croatia's drinking water coming from groundwater. However, Croatia's water resources are unevenly distributed in time and space. In fact, there is high water demand in the summer, for the presence of tourists. Climate change is estimated to cause a decrease of 10-20% in water run-off in Western Croatia by 2050, affecting the availability of domestic water supply during the summer months (Climate Change Post, 2017).

In Italy, public water supply networks supplied for authorised uses, in the observed 120 municipalities, 239 litres per capita in 2016 (5 litres less with respect to 2015, 27 litres less with respect to 2012). Volumes invoiced for domestic use amounted to 149 litres per capita per day (2 litres less with respect to 2015 and 22 litres less with respect to 2012). The lack of maintenance on public water supply networks is causing a worsening in water losses, equal to the 39,0% of the total volume input in the municipal distribution networks in 2016 (one percent point more with respect to 2015 and 3,6 percent points more with respect to 2012)[35].

32 ISTAT WATER STATISTICS | YEARS 2018-2020
33 EUROSTAT, water statistics
34 ISTAT WATER STATISTICS | YEARS 2018-2020
35 De Gironimo et al. / Quality of rural areas –– XIV Report (2018) ISPRA Stato dell'Ambiente 82/18 pagg. 294-303

Inland water quality

The CBC area presents some problems in water quality. The pollution tends to be localised in hotspots downstream of cities, industrialised and agricultural areas and mining regions. Croatia entails two (international) river basin districts (RBDs), as established following the requirements of the WFD: the Danube River basin district and the Adriatic River basin district. According to Hrvatske code, a legal entity for water management established by the Water Act, there are six water management departments (WMDs) on the territory of the Republic of Croatia: Middle and Lower Sava River, Upper Sava River, Mura and Upper Drava Rivers, Danube and Lower Drava Rivers, Northern Adriatic Basins, and Southern Adriatic Basins. According to a 2019 EC Report on the implementation of the WFD on River Basin Management Plans, 42% of the Croatian surface water bodies had a good or better ecological status/potential, as defined by the Water Framework Directive.
Italy has eight RBDs: Eastern Alps, Po Basin, Serchio, Northern Apennines, Central Apennines, Southern Apennines, Sardinia, and Sicily. Three Italian RBDs share catchments with other European States. According to a 2019 EC Report on the implementation of the WFD on River Basin Management Plans, 43% of the Italian surface water bodies had at least a good ecological status. Even if the WFD clearly define the monitoring parameter and index for water quality assessment, the situation of availability of data in the CBC region is not uniform. In the following table are summarised the information available at regional level on the Ecological Status of river as defined by the WFD.

Table 7: Ecological status of water bodies

Region	Number of water bodies/monitored stations	% of water bodies 'good' or 'high'
Friuli Venezia Giulia[36]	424	54%
Veneto[37]	351	39%
Emilia Romagna[38]	200	28%
Marche[39]	185	42%
Abruzzo[40]	111	39%
Molise[41]	13	61.5%
Apulia[42]	41	10%

In Friuli Venezia Giulia Region, at the end of the first six years of monitoring (2010-2016), with regard to rivers, it emerges as 54% of the water bodies monitored have a 'good' or higher ecological status and 46% 'sufficient' or less. For the Veneto Region, the 39% of the bodies has been reported, in 2020, with an Ecological Status (Limeco) good or higher. In Emilia Romagna Region, in the three-year period 2014-2016, 28% of the bodies river water has reached the goal of 'good' quality in the

[36] Rapporto Sullo Stato dell'Ambiente Regione Friuli Venezia Giulia, 2018 (ARPA Friuli Venezia Giulia)
[37] Corsi d'acqua del veneto - LIMeco Anno 2020 (ARPA Veneto)
[38] la qualità dell'ambiente in Emilia-Romagna. DATI AMBIENTALI 2019 (ARPA Emilia Romagna)
[39] ARPA Marche
[40] MONITORAGGIO DELLE ACQUE SUPERFICIALI ANNO 2019, ARTA ABRUZZO
[41] INDICE DI QUALITA' STATO ECOLOGICO DELLE ACQUE SUPERFICIALI. ISPRA
[42] INDICE DI QUALITA' STATO ECOLOGICO DELLE ACQUE SUPERFICIALI. ISPRA

evaluation of ecological status. The assessment of the ecological status of the coastal-marine waters has achieved the quality objective 'good' in the central-southern area, while it remains the 'sufficient' one in the northern area. In the Marche Region the ecological status of water bodies corresponds for 17% to poor, 41% sufficient and 42% good (period 2015-2017).

In Italy, concerning the quantitative status of the underground water, the number of water bodies classified on a national scale is 791 compared to the total 1,052 (coverage of 75.2%) for an area equal to 230,866 km compared to the total 267,017 km (86.5% coverage). There are 261 water bodies not yet classified for a total area of 36,151 sq. km. On a national scale, 60.8% of groundwater bodies are in the good class, 14.4% in the poor class and the remaining 24.8% not yet classified. The regions with a high percentage of water bodies in a 'good' quantitative state is considerable: Veneto has all water bodies in a 'good' quantitative state, Friuli-Venezia Giulia and Emilia-Romagna the values are higher than 80%, while for some regions is worst, such as Apulia region (41%)[43].

Situation, trend and threats for the CBC area

The wastewater treatment and collection show global convergence between the two Countries involved in the CBC Programme; although the tertiary treatment remains rare in Croatia. Data for Croatia for 2019 shows that population connected to public water supply is equivalent to 93%, with an increase of 11.4% compared to 2015. Concerning Italy, almost all Italian municipalities had a public water supply in operation (7,937 on 7,954, 99.8%). In Italy, there were only 17 municipalities without this service in 2018. In these municipalities, the population (around 79 thousand persons) resorted to self-supply.

43% of the Italian surface water bodies had at least a good ecological status while 42% of the Croatian surface water bodies had a good or better ecological status/potential, showing a high degree of convergence. The values are different taking into consideration the Italian regions: in Friuli Venezia Giulia Region 54% of the water bodies monitored have a 'good' or higher ecological status, while in Veneto Region, the 39% of the bodies are in a good or higher status. On the contrary, in Apulia region only 10% of the bodies are in a good or higher status.

Macro-indicators for the theme Water

Indicator	State	Trends
Population connected to public water supply system	☺	⇨
Population connected to public sewage system	😐	⇨
Inland water quality	😐	⇨

[43] ISPRA. Environmental data yearbook, 2019

III.3 INLAND BIODIVERSITY AND TERRESTRIAL ECOSYSTEM

Biodiversity is the richness of life and the diversity of its forms. Biodiversity also provides ecosystem services that are, following the definition of the Millennium Ecosystem Assessment, 'the multiple benefits supplied by ecosystems to humankind'. These include the production of food and water, the control of climate and disease as well as spiritual and recreational benefits.

Despite its importance, biodiversity is threatened everywhere and its loss is accelerating all over Europe. European strategies and policies addressing the problem have been implemented during recent decades. The most recent is the EU's biodiversity strategy for 2030[44], which aims to put Europe's biodiversity on a path to recovery by 2030, and contains specific actions and commitments and sets targets on nature conservation and restoration, sustainable agriculture, forestry and fisheries. In Croatia, it is the Croatian State Institute for Nature Protection that carried out professional state tasks regarding nature protection. In Italy, the legal framework for natural protected areas is the D.P.R 357/97.

An important tool for biodiversity protection is the Natura 2000 network, based on the Habitats Directive[45] and Birds Directive[46] to protect habitat and species of peculiar importance. The aim of the network is to assure the long-term survival of Europe's most valuable and threatened species and habitats. Natura 2000 is based on management and assessment tools and not on strict reserves. It works for the sustainable management (both ecological and economical) of ecosystems. The Natura 2000 network includes Special Areas of Conservation (SAC) designated by Member States under the Habitats Directive, and incorporates Special Protection Areas (SPAs) which are designated under the 1979 Birds Directive. Natura 2000 it is not based on prohibitions but drives the use of social and economic activity as instruments for conservation. This allows conservation goals to be integrated into ordinary management and improves ecological connectivity between separated protected areas.

Nationally designated protected areas

In Croatia, with the Nature Protection Act, 433 areas have been placed under protection in eight national parks and 11 nature parks which in total cover 515.093 ha. All the eight national parks and seven of the 11 nature parks are located in the Mediterranean region (Adriatic River Basin).
In the Regions of Italy, involved in the CBC, the national natural protected areas cover a surface of 674.176 ha and are represented for over 90% (610.801 ha) by National Natural Parks. The typology of ecosystems protected range from the mountain Alpine and Apennine environment (Gran Sasso, Dolomiti Bellunesi) to the characteristic Mediterranean environment (Gargano).
A list of National Natural Parks and National Nature Reserve and Nature Parks is drawn in Table 8.

[44] EC, COM(2020) 380 final.
[45] Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (OJ L 206, 22.7.1992, p. 7).
[46] Council Directive 147/2009/CE of 30 n0vembre 2009 on the conservation of wild birds (OJ L 20, 26.01.2010).

Table 8: List of Natural Protected areas at National levels in the Administration involved in the CBC Programme

	National Parks	Nature Parks / Natural reserves		
Italy (CBC area)	Abruzzo Lazio e Molise Alta Murgia Appennino Tosco-Emiliano Dolomiti Bellunesi Foreste Casentinesi, Monte Falterona Gargano Gran Sasso e Monti della Laga Maiella Monti Sibillini	Cucco Rio Bianco Val Alba Forra del Cellina Badia Prataglia Bassa dei Frassini Bosco della Mesola Campigna Destra Foce Fiume Reno Duna costiera P.to Corsini Duna costiera ravennate e foce Torrente Bevano Dune e Isole della Sacca di Gorino Foce del Fiume Reno Guadine Pradaccio Pineta di Ravenna Po di Volano Sacca di Bellocchio I Sacca di Bellocchio II Sacca di Bellocchio III Salina di Cervia Sasso Fratino Collemeluccio Montedimezzo Pesche	Somadida Bus della Genziana Campo di Mezzo - Pian Parrocchia Monte Faverghera Monte Pavione Monti del Sole Piani Eterni - Errera - Val Falcina Piazza del Diavolo Pian di Landro Baldassare Schiara occidentale Abbadia di Fiastra Gola del Furlo Montagna di Torricchio Colle di Licco Fara San Martino - Palombaro Feudo Intramonti Feudo Ugni Lago di Campotosto Lama Bianca di Sant'Eufemia a Majella Monte Rotondo Monte Velino Pantaniello Piana Grande della Maielletta Pineta di Santa Filomena Quarto S.Chiara	Valle dell'Orfento I Valle dell'Orfento II Val Tovanella Valle Imperina Valle Scura Vette Feltrine Vincheto di Cellarda Falascone Foresta Umbra Il Monte Ischitella e Carpino Isola di Varano Lago di Lesina (parte orientale) Marinella Stornara Masseria Combattenti Monte Barone Murge Orientali Oasi WWF Le Cesine Palude di Frattarolo Saline di Margherita di Savoia San Cataldo Sfilzi Stornara Torre Guaceto
Croatia (CBC Area)	Brijuni Kornati Krka Mljet Paklenica Plitvičkajezera Risnjak Sjeverni Velebit	Nature park Biokovo Nature park Kopačkirit Nature park Lastovskootočje Nature park Telašćica Nature park Učka Nature park Velebit Nature park Vranskojezero Nature park Dinara		

Natura 2000 network

Croatia Natura 2000 network consists of 783 sites, covering 25.936 km2 (745 SCI and 38 SPA). Terrestrial sites are covering 20.772 km2 corresponding to 36.7% of the country surface (Natura 2000 barometer, EEA). In Italy in 2020, the land surface of the protected areas of the Natura 2000 network increased slightly, reaching an extension of over 58,000 sq. km and a coverage of 19.3% of the national surface. The region with the highest number of sites is Emilia Romagna (158 sites).

Table 9: List of Natura 2000 Network sites (including marine and terrestrial) in the Italian Administration involved in the Programme (Source: ISPRA, 2020)

REGION	SPA			SCI-SAC			SCI-SAC/SPA			Natura 2000		
	n. sites	sup. (ha)	%	n. sites	sup. (ha)	%	n. sites	sup. (ha)	%	n. sites	sup. (ha)	%
Abruzzo	4	288115	26,6	42	219967	21,4	12	36036	3,34	58	390494	35,7
Emilia Romagna	19	29457	1,3	71	78202	3,5	68	161753	8,7	158	269413	11,8
Friuli Venezia Giulia	4	65886	8,6	58	81309	13,1	4	56631	10,1	66	152378	18.7
Marche	19	117841	12,7	69	95431	10,3	8	10300	1,1	96	142833	15,1
Molise	3	33877	7,6	76	65607	14,8	9	32143	7,3	88	118724	26,6
Apulia	7	101199	5,2	75	303576	16,5	5	170105	8,8	87	482818	20,6
Veneto	26	182997	10,1	63	199434	11,7	41	170606	9,3	130	418157	22,5
TOT CBC*	**82**	**819372**		**454**	**1043526**		**147**	**637574**		**683**	**1974817**	
TOT IT	**278**	**3474712**	**13,6**	**1995**	**3933797**	**15,7**	**352**	**1676315**	**6,7**	**2625**	**7597398**	**30,7**

Other vulnerable areas

The area of the Danube River basin in Croatia is located in the Pannonian plain and its hilly, mountainous boundary areas, whereas the Adriatic River basins cover the hilly, mountainous regions of Central Croatia, the coastal zone and the islands. Wetland ecosystems (swamps and frequently flooded areas) have extremely high level of biodiversity, and are found in all Croatia. The major sites in the Danube River basin are located in the areas of the Drava River mouth into the Danube, the Central Sava and Kupa areas, in the area of Spacva forests and in the areas of karst fields around the watershed divide with the Adriatic River basins. Planned large-scale river regulation schemes, sediment extraction and irrigation projects along the Danube, Drava, Mura, Sava and Neretva Rivers can represents a big threat for these ecosystems, as well as infrastructure development and unsuitable tourism activities.

The Po Delta is the last stretch of the Po river and possesses the typical characteristics of lowland waterways, with shallow, slow, rich in vegetation, muddy bottom and subject to wide environmental variations. The Po Delta, with the interconnection of aquatic and land habitats, of fresh and salt water, represents a very important environmental ecological complex, where many different ecosystems coexist (terrestrial freshwater ecosystems, terrestrial brackish ecosystems and dulcicoli water ecosystems). The territory of the Po Delta includes a vast area located in the south-eastern part of the Veneto Region. It is found for the most part in the Province of Rovigo (between Venice and Ferrara) and is included between the river Adige (Rosolina Mare) to the north and the Sacca di Scardovari (Gorino and Gnocca) to the south, for an extension that reaches 400 sq km. This is an area of recent formation, created by a slow sedimentation of the soil and extraordinary interventions of human reclamation; it is still in continuous evolution and in continuous expansion (60 ha / year) due to the great contribution of sediments. The Po Delta is divided into seven active branches: Po

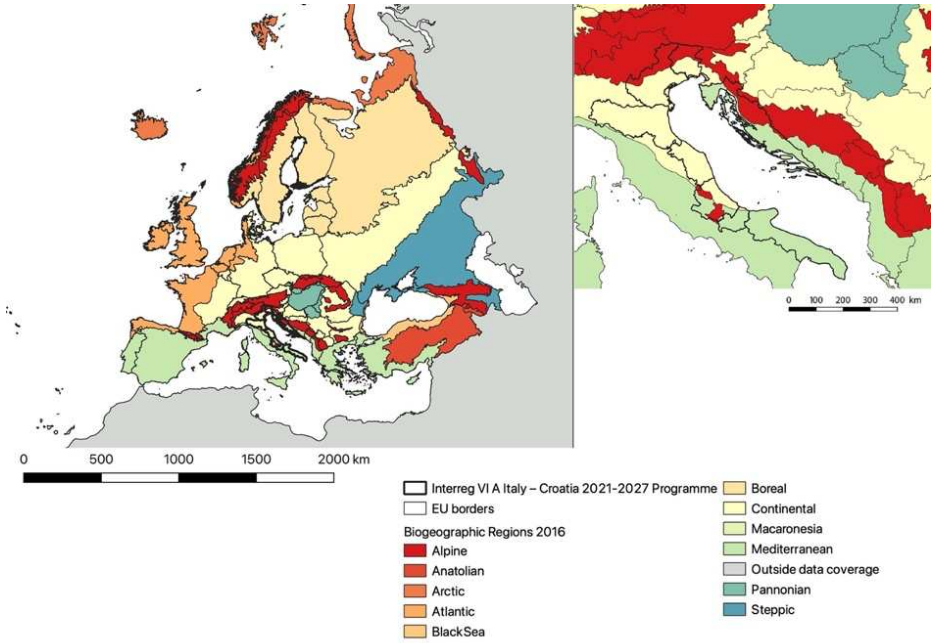
di Levante, Po di Maistra, Po di Pila (with the mouths of Scirocco and Tramontana), Po di Tolle, Po di Gnocca, Po di Goro and extends into the nine common Rovigo hills of: Adria, Ariano Polesine, Corbola, Loreo, Papozze, Porto Viro, Porto Tolle, Rosolina, Taglio di Po[47]. A paper published in 2016[48] pointed out that high levels of endocrine-disrupting chemicals found in sediments and fish from the Italian River Po and its Lambro tributary.
The Venice lagoon[49] is a winter migration halt and breeding area for 200,000 birds, representing one of the most important wetlands in the Mediterranean Basin. The difficulties of accommodating the needs of the vast numbers of tourists who flock to Venice are well known, and their very number undoubtedly puts heavy pressure on the city. This increase in the numbers of visitors has resulted in changes in use of the buildings, in saturation of urban spaces, and in the generation of a vast quantity of solid and liquid waste, causing a loss of cultural identity. In this way it is clear in recent years that there are ever less services for local residents and ever more tourist businesses. On the other hand, there has been an increase in service areas (car parks, road and port facilities etc.), which has led to the loss of the essential character of certain parts of the city[50].

Natural and semi-natural ecosystem

According to the Habitat Directive, there are nine Biogeographical regions in EU countries, (see Figure 8), each with its own blend of vegetation, climate and geology. The definition has been extended to the EMERALD Network set up under the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention). Sites in the CBC area belong to the Mediterranean, Alpine and to the Continental biogeographic regions. The Continental biogeographic region has some of the continent's most productive ecosystems. The Mediterranean biogeographic region is around one third agricultural land, including grasslands. It worth noting that 23% of habitats in the Mediterranean have a 'favourable' conservation status, whereas 41% are 'in declining poor with unfavourable-inadequate' conservation status, and 30% are 'in declining bad with unfavourable-bad' conservation status. In the Alpine region, 26% of habitats are favourable, 45% are in poor status, and 19% are in bad conservation status. In the Continental region, 16% of habitats are 'favourable', 46% poor, and 33% in 'bad' conservation status[51]. For coastal dunes, habitat decline has been estimated at more than 20% over the past 50 years in EU Mediterranean countries[52]. In Italy, from the Habitats Directive and Birds Directive requirements, 89% of the habitats are in 'poor' (40%) or 'inadequate' conservation status (49%) and only 8% in a 'favourable' state of conservation[53].

[47] ARPAV, Po Delta lagoons.
[48] Viganò, L., Mascolo, G. & Roscioli, C. (2015) Emerging and priority contaminants with endocrine active potentials in sediments and fish from the River Po (Italy). Environmental Science and Pollution Research. 22:14050–14066.
[49] Area Plan of the Lagoon and the Venetian area and, for the archaeological aspects, the proposal for a Landscape Plan of the Area implemented by the Regional Council (Giunta Regionale con delibera n. 699 del 14/05/2015).
[50] The Lagoon of Venice as a Ramsar Site, RAMSAR.
[51] European Commission, The State of Nature In The EU, publication on-line, 2020
[52] United Nations Environment Programme/Mediterranean Action Plan and Plan Bleu (2020). State of the Environment and Development in the Mediterranean. Nairobi.
[53] Ercole S., Angelini P., Carnevali L., Casella L., Giacanelli V., Grignetti A., La Mesa G., Nardelli R., Serra L., Stoch F., Tunesi L., Genovesi P. (ed.), 2021. Rapporti Direttive Natura (2013-2018). Sintesi dello stato di conservazione delle specie e degli habitat di interesse comunitario e delle azioni di contrasto alle specie esotiche di rilevanza unionale in Italia. ISPRA, Serie Rapporti 349/2021.

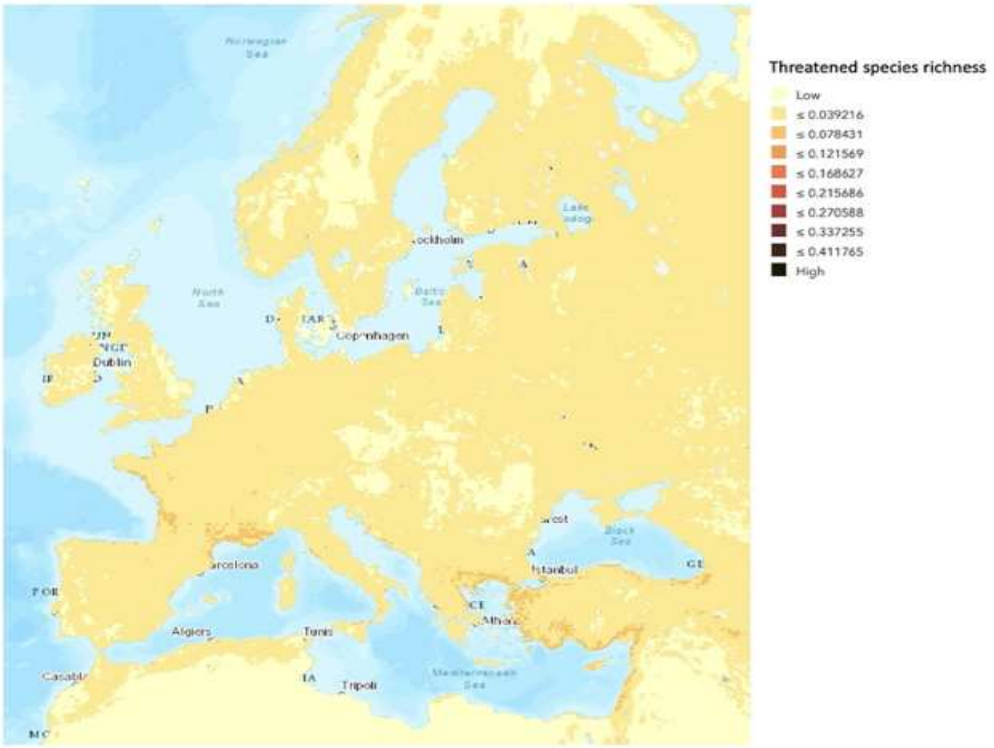
Figure 8: Biogeographic regions for the Habitats Directive (92/43/EEC) and for the EMERALD Network (Source: European Environment Agency. Elaboration: t33)



Species protection

In Croatia, conservation of wild animal and plant species is based on the Croatian Nature Conservation Law (1976). In Italy, main instruments of species protection are natural protected area and Natura 2000 Network (Decree of the Republic President n. 357 of 8 September 1997). One of the most important fact-finding tools about species conservation is the IUCN European Red List. The CBC area is interested by species richness usually greater than the European average. The area hosts also a high concentration of threatened species, for amphibian, and reptiles.

Figure 9: Threatened species richness (amphibians, birds, mammals, reptiles, and plant species) refined by area of habitat (Source: UNEP, 2021)



At least 168 (14%) of the coastal species assessed in the IUCN (101 of which are endemic) are threatened with extinction at a global or regional level in the Mediterranean region[54]. Half of the threatened coastal species are animals (84 species), with birds and insects (18 and 17 species) making up the greatest number of threatened animals. The other half are plants accounting for 84 threatened species[55]. The table below shows the number of threatened coastal species by country, interested by the Programme.

[54] IUCN. (2018). The IUCN Red List of Threatened Species. Version 2018-2. http://www.iucnredlist.org. Downloaded on 14 December 2018.
[55] United Nations Environment Programme/Mediterranean Action Plan and Plan Bleu (2020). State of the Environment and Development in the Mediterranean. Nairobi.

Table 10: Coastal taxa threatened by Italy and Croatia (Source: SoED 2020)

Coastal taxa threatened in the Mediterranean region												
Countries	Amphibians	Aves	Reptiles	Mammals	Freshwater fish	Freshwater molluscs	Freshwater crabs, shrimps and crayfish	Butterflies	Dung beetles	Saproxylics	Plants	**Total**
Italy	2	16	-	3	2	1	-	-	4	2	19	49
Croatia	1	14	1	4	3	-	-	-	1	-	3	27

Tourism and recreation areas, urbanisation, agriculture, livestock, recreational activities and invasive species are the main drivers of species extinction in coastal areas, coastal lowlands, the Mediterranean has experienced urbanisation and development associated with tourism for decades, leading to the reduction in plant diversity and the deterioration or destruction of coastal dunes. Moreover, the drainage of wetlands is leading to a loss of habitat for migratory birds and many other aquatic species[49].

Situation, trend and threats for the CBC area

The area interested by the CBC Programme hosts numerous Natural Protected areas, mainly National Parks. For the Croatian side, most of the Parks are in the Adriatic Basin region. Richness of wild species is particularly pronounced in the area. However, habitat protection is not favourable and has the highest percentage of threatened amphibian and reptile species in Europe.

Macro-indicators for the theme Inland Biodiversity and Ecosystem

Indicator	State	Trends
Nationally designated protected areas	☺	⇨
Natura 2000 network	☺	⇨
Species and habitats conservation status	☹	⇘

III.4 BIODIVERSITY AND MARINE ECOSYSTEMS

To address marine issues and improve the quality of marine and coastal ecosystems, the Commission has provided a clear framework of intervention in the EU marine areas, the Marine Strategy Framework Directive (Directive 2008/56/EC)[56] with the objective of preserving the natural

[56] Direttiva 2008/56/CE del Parlamento europeo e del Consiglio, del 17 giugno 2008 , che istituisce un quadro per l'azione comunitaria nel campo della politica per l'ambiente marino (direttiva quadro sulla strategia per l'ambiente marino) (GU L 164 del 25.6.2008, pagg. 19–40).

resources upon which human activities depend. The Directive wants to achieve a 'Good Environmental Status' for the marine water, defined by the following parameter[57]:

- Ecosystems, including their hydro-morphological (i.e. the structure and evolution of the water resources), physical and chemical conditions, are fully functioning and resilient to human-induced environmental change;
- The decline of biodiversity caused by human activities is prevented and biodiversity is protected;
- Human activities introducing substances and energy into the marine environment do not cause pollution effects. Noise from human activities is compatible with the marine environment and its ecosystems.

In accordance with these principles, the Commission also underlined the opportunity offered by the Blue economy strategy (Blue growth COM (2012) 494 final)[58] and the potential for the development of marine activities in a sustainable way. The Italy-Croatia CBC area of cooperation is characterised by long coast lines: hundreds of kilometers of beaches, cliffs, estuaries and human infrastructure along the coasts of Adriatic Sea.

Marine protected areas

The Adriatic Sea has 5.8% of its area covered by marine protected areas (MPAs), for a total surface of 120 069 km².
There are ten marine protected areas in Croatia: Brijuni and the Lim Canal off the Istria peninsula's coast, near Pula and Rovinj respectively; Kornati and Telašćica in the Middle Adriatic basin, near Šibenik; Lastovo, Bay of Mali Ston (Croatian: *Malostonskizaljev*), Mljet in southern Dalmatia, Neretva Delta – Southeastern part Special Reserve, Pantan Special Reserve and Prvic and Grgur Channel Special Reserve. Along the Adriatic coasts in the Italian side, there are five marine protected areas, three of them in Apulia Region: the Marine Natural Reserve of Tremiti Islands, that of Porto Cesareo and that of Torre Guaceto. The other two are the Marine Natural Reserve of Torre Cerrano in Abruzzo region and the reserve of Miramare in the Gulf of Trieste (Friuli Venezia Giulia). In addition, for its ecological characteristic, the 'PO Delta Park' (Emilia Romagna and Veneto Regions), is one of the most important in the Adriatic basin for the protection of transitional environment.

Natura 2000 marine sites

More than 440 000 km2 of the EU's marine waters were protected as marine Natura 2000 areas in 2019. Unlike the terrestrial Natura 2000 sites, where the designation process is much more advanced and the coverage in Member States has remained largely unchanged for the past years, for marine areas Italy (76 % or ca 5 200 km2) and Croatia (5 % or ca 300 km2), among other countries, achieved major progress in their designation between 2018 and 2019[59].
Concerning the regional data at Italian level, the surface and percentage of marine sites of Natura2000 is reported in the table below.

[57] http://ec.europa.eu/environment/marine/good-environmental-status/index_en.htm.
[58] Blue growth COM (2012) 494 finale.
[59] Eurostat, 2021.

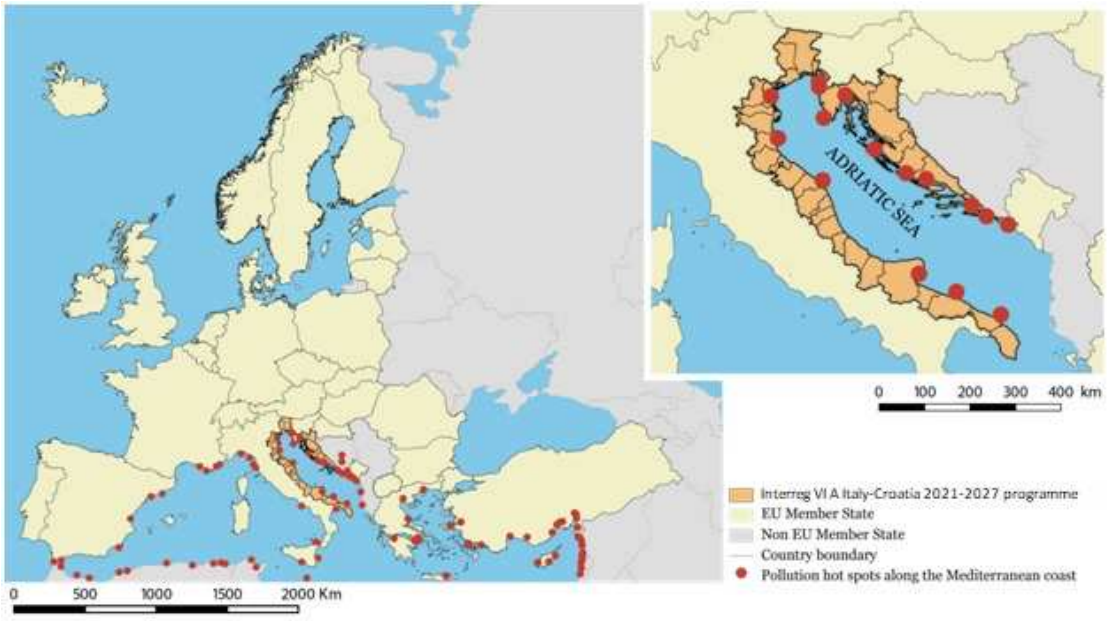
Table 11: Marine sites designated under Natura2000 at regional level (Source: ISPRA)

Region	Number of sites (SPA + SCI/SAC)	Marine sites Natura 2000	
	n.	Ha	%
Veneto	130	3.849	1,10%
Friuli-Venezia Giulia	66	5.411	6,50%
Emilia-Romagna	158	3.714	1,71%
Marche	96	1.241	0,32%
Abruzzo	58	3.410	1,36%
Molise	88	0	0
Apulia	87	80.276	5,22%
TOT IT	**2.625**	**1.763.604**	**11,42%**

Pollution issues

Marine areas in Italy and in Croatia are facing major environmental problems such as urban effluents and solid wastes, oily effluents, coastal eutrophication and coastal urbanisation.
In 2006, then updated in 2012, an EEA report gathered information on pollution hotspot (red points on Figure 10) and causes on Mediterranean coastal and marine environment.

Figure 10: Coastal pollution hotspots in Italy and Croatia (Source: European Environment Agency, 2012. Elaboration: t33)



In Croatia, major pollution problems are urban wastewater, eutrophication of coastal waters, and urbanisation and destruction of the marine coastal habitat in several cities. Rijeka, Zadar, Pula, Sibenik and Dubrovnik coastal areas are mainly altered by untreated wastewater from urban and industrial sources. The Kastela Bay, between the cities of Trogir and Split, faced the same problem, ultimately causing eutrophication and accumulation of organic matter, metals and organ halogen compounds in the sediment. Over-fertilisation in the agricultural areas around the bay of Liopetri

and Ayia Napa is leading to nitrogen leaching while mining activities close to the Vassilikos bay resulted in the marine environment being contaminated by metals.
In Italy, major pollution problems are urban and industrial wastewater, agricultural run-off and shipping. Eutrophication problems caused by the nutrients carried by the Po River and by coastal discharges have altered the North Adriatic and especially the lagoons of Venice and Comacchio. Due to intense maritime traffic, the Adriatic harbours of Trieste, Venice, Ravenna, Ancona, Taranto, and Brindisi face contamination by petroleum hydrocarbon. In addition, the Gulf of Trieste suffers of problems of contamination by tributyltins (TBT).
Concerning marine litter, the quantity of waste found on the coasts is high, with median values which, in some cases, exceed 550 objects per 100 linear meters of beach. The data regarding beached marine litter is the result of monitoring campaigns conducted in the years 2015-2017 in the western Mediterranean, the Ionian and the central Mediterranean and the Adriatic Sea. The Adriatic coast is the most compromised, with a median of 559 objects / 100 m. The most common waste category found in coasts is single-use plastic, especially in the Adriatic Sea (170 objects / 100 m)[60]. Data for the countries show the number of plastic wastes littered (see table below)[61].

Table 12: Plastic waste littered by country (Source: SoED 2020)

Country	Plastic waste littered (kg/person/year)	Plastic waste littered (tonnes/day)
Croatia	1,8	8
Italy	1	89,8

Bathing water quality

Under the provisions of the Bathing Water Directive, more than 22 000 bathing waters are monitored in Europe. The bathing water quality in Croatia is for the 98.8% in compliance with guide values (the 95.1% is of excellent quality)[62], while 0% is of poor quality.

[60] ISPRA. Environmental data yearbook, 2019
[61] United Nations Environment Programme/Mediterranean Action Plan and Plan Bleu (2020). State of the Environment and Development in the Mediterranean. Nairobi.
[62] Croatian bathing water quality in 2020, Country report, EEA 2020.

Figure 11: Bathing water quality in Croatia

		Total number of bathing waters	Excellent		Good		Sufficient		Poor		Not classified	
			Count	%	Count	%	Count	%	Count	%	Count	%
Coastal	2017	949	909	95.8%	10	1.1%	1	0.1%	0	0.0%	29	3.1%
	2018	981	938	95.6%	8	0.8%	1	0.1%	1	0.1%	33	3.4%
	2019	953	938	98.4%	9	0.9%	2	0.2%	0	0.0%	4	0.4%
	2020	894	883	98.8%	9	1.0%	1	0.1%	0	0.0%	1	0.1%
Inland	2017	27	4	14.8%	3	11.1%	1	3.7%	0	0.0%	19	70.4%
	2018	27	14	51.9%	12	44.4%	1	3.7%	0	0.0%	0	0.0%
	2019	35	7	20.0%	17	48.6%	3	8.6%	0	0.0%	8	22.9%
	2020	41	6	14.6%	20	48.8%	5	12.2%	0	0.0%	10	24.4%
Total	**2017**	**976**	**913**	**93.5%**	**13**	**1.3%**	**2**	**0.2%**	**0**	**0.0%**	**48**	**4.9%**
	2018	**1008**	**952**	**94.4%**	**20**	**2.0%**	**2**	**0.2%**	**1**	**0.1%**	**33**	**3.3%**
	2019	**988**	**945**	**95.6%**	**26**	**2.6%**	**5**	**0.5%**	**0**	**0.0%**	**12**	**1.2%**
	2020	**935**	**889**	**95.1%**	**29**	**3.1%**	**6**	**0.6%**	**0**	**0.0%**	**11**	**1.2%**

In Italy, the 97.3% bathing water is compliant with guide values (the 88.6% is of excellent quality), while the 1.7% is of poor quality[63].

Figure 12 : Bathing water quality in Italy

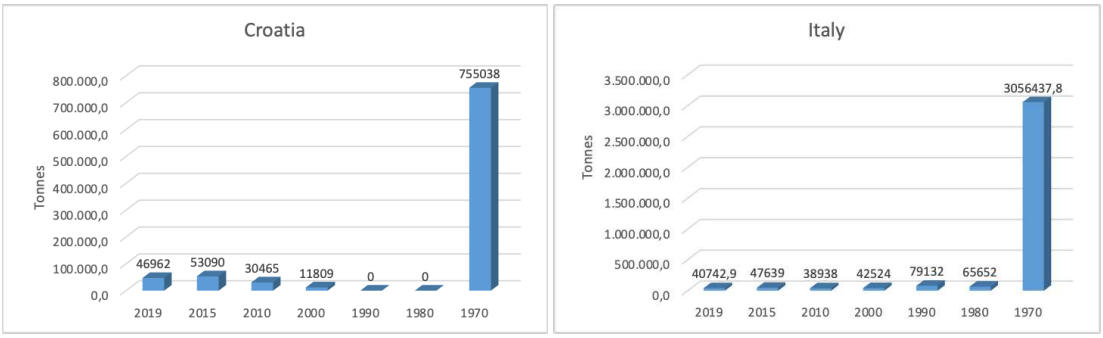
		Total number of bathing waters	Excellent		Good		Sufficient		Poor		Not classified	
			Count	%	Count	%	Count	%	Count	%	Count	%
Coastal	2017	4864	4373	89.9%	253	5.2%	88	1.8%	75	1.5%	75	1.5%
	2018	4871	4382	90.0%	251	5.2%	102	2.1%	79	1.6%	57	1.2%
	2019	4864	4290	88.2%	292	6.0%	126	2.6%	90	1.9%	66	1.4%
	2020	4848	4299	88.7%	290	6.0%	130	2.7%	84	1.7%	45	0.9%
Inland	2017	667	599	89.8%	31	4.6%	16	2.4%	4	0.6%	17	2.5%
	2018	668	605	90.6%	28	4.2%	14	2.1%	10	1.5%	11	1.6%
	2019	671	604	90.0%	34	5.1%	14	2.1%	7	1.0%	12	1.8%
	2020	672	592	88.1%	47	7.0%	13	1.9%	9	1.3%	11	1.6%
Total	**2017**	**5531**	**4972**	**89.9%**	**284**	**5.1%**	**104**	**1.9%**	**79**	**1.4%**	**92**	**1.7%**
	2018	**5539**	**4987**	**90.0%**	**279**	**5.0%**	**116**	**2.1%**	**89**	**1.6%**	**68**	**1.2%**
	2019	**5535**	**4894**	**88.4%**	**326**	**5.9%**	**140**	**2.5%**	**97**	**1.8%**	**78**	**1.4%**
	2020	**5520**	**4891**	**88.6%**	**337**	**6.1%**	**143**	**2.6%**	**93**	**1.7%**	**56**	**1.0%**

Pressure on marine system from human activities

[63] Italy bathing water quality in 2020, Country report, EEA 2020

The activity that traditionally represents a main pressure on marine ecosystem is the fishery. Overfishing and several techniques of fishing contribute directly or indirectly to the disruption of ecosystems, habitats and species. Over-exploitation causes the loss of genetic diversity within species, and it also reduces the absolute number of species in an area. The catches by the two Countries involved in the Programme is consistent. In Italy and Croatia, after a peak in 1970, we assist to a decrease in catches values. In the graphic below, the catches of the main commercial species are reported.

Figure 13: Catches by main aggregated commercial species (European hake, Sardine, Anchovy, Mullus ssp, Norway lobster, Blue and red shrimp, Deep-water rose shrimp) for Italy and Croatia (Source: FAO. Elaboration: t33)



Situation, trend and threats for the CBC area

The area interested by the CBC Programme hosts numerous Marine Protected areas. Despite this, marine areas along Adriatic coasts are facing major environmental problem such as urban effluents and solid wastes, oily effluents, coastal eutrophication and coastal urbanisation. The quality of bathing water shows fewer problems in Croatia than along the Italian coasts but is in both sides of good quality for a very high percentage, thus showing convergence in the two countries. Plastic pollution is an emerging threat in the Mediterranean where the Adriatic coast is the most compromised. Fishing represents a pressure in Adriatic Sea for marine ecosystem. The number of catches is quite elevated, even if the data shows a decreasing trend over the past years.

Macro-indicators for the theme biodiversity and marine ecosystem

Indicator	State	Trends
Marine protected area and marine Natura2000 sites	☺	⇗
Pollution sources	😐	⇒
Bathing water quality	☺	⇗
Catches	☹	⇘

III.5 SOIL QUALITY AND LAND USE

Soil is a non-renewable resource with many vital functions. The Soil Thematic Strategy[64] sets the basis for a framework Directive and an Impact Assessment on this issue at EU level. Soils provide physical support to economic activities, especially for buildings, human settlements and urban infrastructure. Soil also provides numerous ecological services: it regulates the water, nitrogen and carbon cycles, it represents a carbon sink and it is life support system for many species of animals and plants. For years, soil has been under human pressure in the Italy-Croatia cooperation area.

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

Both Italy and Croatia have above European average degree of soil sealing. According to the data of the European Environmental Agency[65], the proportion of areas converted to urban land between years 2012 and 2018 in Italy and Croatia was respectively of 64.4 m2/km2 and 123.5 m2/km2. At the European level, land take had decreased to 860 km2/year by the period 2006-2012 and amounted to only 539 km²/year from 2012 to 2018.
In Croatia agricultural areas were characterised by the uptake of pasture by arable and complex cultivation land, while forests were expanding through the loss of open spaces and re-growth of the many-burnt areas. In Italy a growth of economic sites in particular along the Po lowland in northern Italy and recycling of urban land occurred. Outside the city, agricultural areas faced: loss of farmland, less farming withdrawal and arable/pasture transition, reduced expansion on to farmland, transitions of natural land cover.

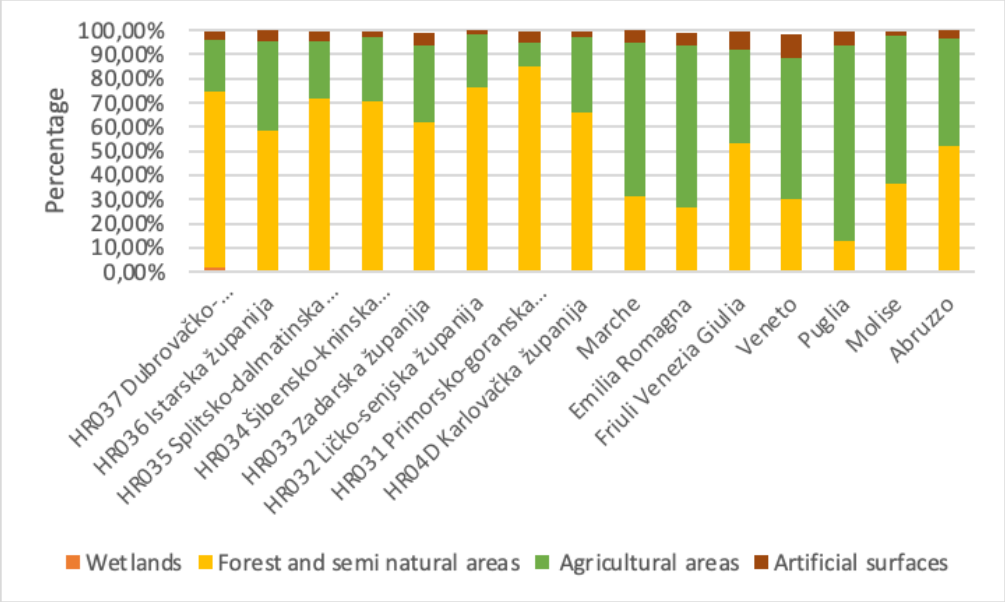
Table 13: Percentage of surface categories in the cooperation area in 2018 (Source: European Environment Agency. Elaboration: t33)

Countries	Artificial surfaces	Agricultural areas	Forest and semi natural areas	Wetlands
Croatia	3,83	39,69	55,13	0,36
Italy	5,56	51,82	41,32	0,23

The percentage of surface categories is also reported at regional level in the graphic below. We obverse high differences in land coverage between Regions. In general Forest areas are larger in Croatia than in Italy, where agriculture areas are dominant.

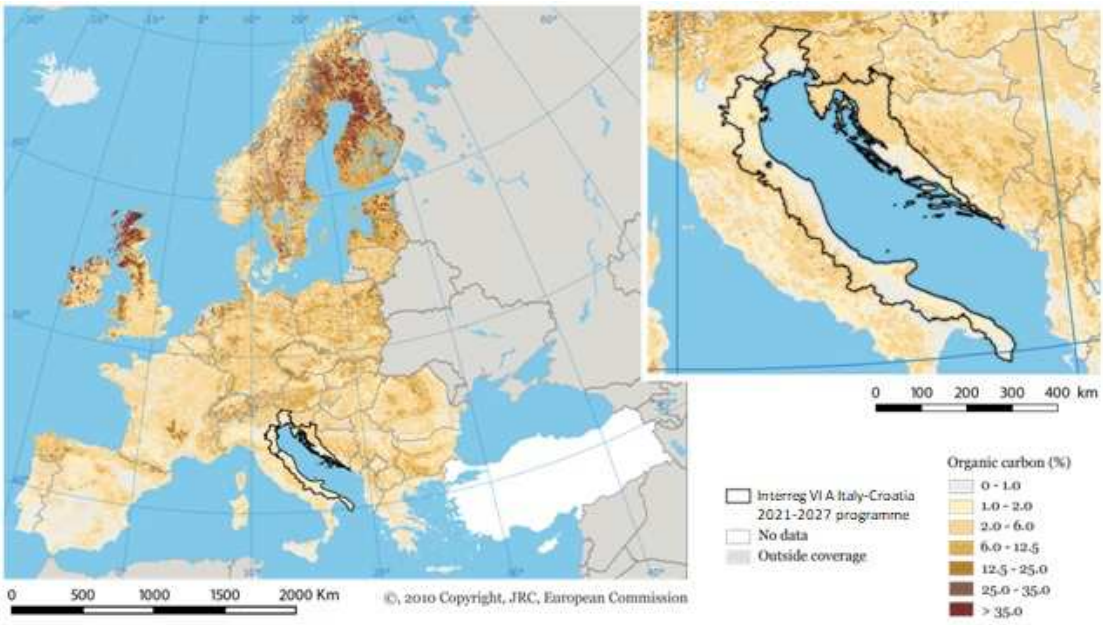
[64] EC COM (2006) 231, see also the Proposal for a Soil Framework Directive – COM (2006) 232.
[65] https://www.eea.europa.eu/data-and-maps/indicators/land-take-3/assessment.

Figure 14: Percentage of surfaces categories in the cooperation area at NUTS2 level (Source: European Environment Agency. Elaboration: t33)



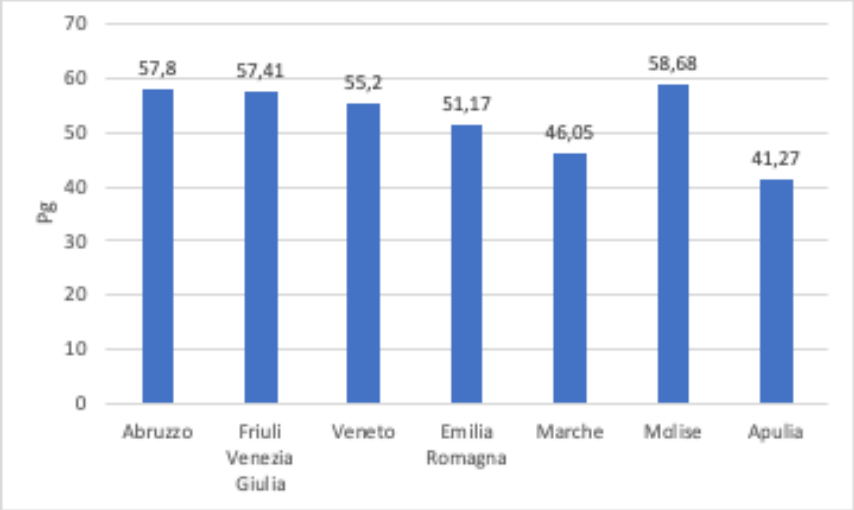
The map below shows the percentage of organic carbon content in the surface horizon of soils in Europe. The darker regions correspond to soils with high values of organic carbon. The CBC area is mainly covered by the classes of organic carbon percentage '1.0-2.0' and '2.0-6.0'; with some areas (as those in Apulia) in the class '0-1.0'. In general, organic content in the CBC area is low compared to what observed in other regions in the EU.

Figure 15: Topsoil organic carbon content (Source: ESDAC. Elaboration: T33)



Concerning the distribution of organic carbon in the soils of the Italian regions, affected by the Programme, the values are reported in the graphic below. The values are expressed in picogram (Pg), which is a measure of mass equivalent to one billionth of a gram (1 Pg = 10^{15} g). The soils of the world contain about 1500 Pg of organic carbon, about three times the amount of carbon in vegetation.

Figure 16: Organic carbon at regional level (Source: ISPRA)



Higher values are observed in areas characterised by greater rainfall, with lithologies mainly calcareous and in wooded areas. Vice versa values lower occur in areas characterised by higher temperatures, clayey lithologies and in agricultural areas. As showed by the graphic, Apulia is the region where the most carbon-poor soils are present, followed by Marche region.

Soils act as significant carbon sink. Land-use and land-cover therefore strongly influence climate change. The conversion of grasslands, forest or wetlands to other type of use cause a decrease in the level of organic matter and organisms in soil, as well as in the CO2 sequestration capacity. Forest fires, occurring in the Adriatic area, also diminish the GHG sinks. In Italy, the close link between carbon organic and selected covariates is evident: higher values are observed in areas characterised by greater rainfall, with lithologies mainly calcareous and in wooded areas. Vice versa values lower occur in areas characterised by higher temperatures, clayey lithologies and in agricultural areas. The final results, represented on a 1km grid, show an overall accumulation of organic carbon in the first 30 cm of soil equal to 1.67 Pg; Sicily, Sardinia, Valle d'Aosta and Puglia are the regions where the poorest carbon soils are present on average; the areas agricultural crops (vineyards, orchards and olive groves) are the most penalised from a stored carbon point of view, contrary to wood areas.

Soil use

Land consumption continues to transform the land at high speeds. In 2020, in Italy 775105 hectares of land were consumed. At regional level, in 14 regions, the soil consumed exceeds 5% of the

national average with the highest percentage values in Veneto (11.87%), followed by Emilia-Romagna, Apulia and Friuli-Venezia Giulia, with values above the national average and between 7 and 9%[66].

Table 14: Data on soil consumption (Source: ISPRA, 2020)

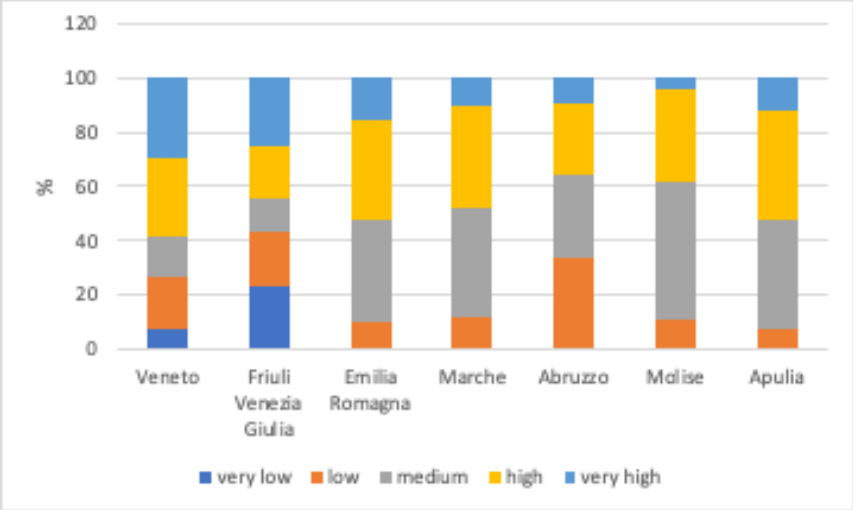
Region	Soil consumption 2020 [%]	Soil consumption 2020 [ha]	Increment 2019-2020 [annual net soil consumption in hectares]
Veneto	11,9	217744	682
Friuli-Venezia Giulia	8,0	63267	65
Emilia-Romagna	8,9	200404	425
Marche	6,9	64887	145
Abruzzo	5,0	53768	247
Molise	3,9	17317	64
Apulia	8,1	157718	493
Italy	**7,1**	**775105**	**2122**

Fragmentation of the natural and agricultural territory

The degree of fragmentation is closely related to the level of land consumption affecting the territory. In Croatia, fragmentation of habitats was increased due to increased building of highways and other roads. According to EEA data, during the period 2009-2012, the area of very strongly fragmented landscape increased by almost 70 %, from 11.9 % to 20.1 % of the country's area and from 6 627 km2 to 11 192 km2 in absolute terms. In Italy about 36% of the territory is characterised by a very high and high fragmentation. Regions with greater territorial coverage with very high fragmentation is Veneto (26%), confirming the close correspondence between fragmentation and urbanisation density. At the regional level the distribution of the territory into the 5 fragmentation classes presents a diversified picture among the Northern regions, with slightly higher percentage values for the extreme classes of fragmentation (high and low fragmentation), and the regions of the Center-South and Islands in which, on the other hand, medium-fragmented areas are predominant with values ranging between about 30% and 60% of their territory[67].

[66] Munafò, M. (a cura di), 2021. Consumo di suolo, dinamiche territoriali e servizi ecosistemici. Edizione 2021. Report SNPA 22/21
[67] ISPRA. Environmental data yearbook, 2020

Figure 17: Class of fragmentation at regional level in year 2018 (Source: ISPRA)



Contaminated sites

Soil contamination is the occurrence of pollutants in soil above a certain level causing a deterioration or loss of one or more soil functions. Also, soil Contamination can be considered as the presence of man-made chemicals or other alteration in the natural soil environment. This type of contamination typically arises from the rupture of underground storage tanks, application of pesticides, percolation of contaminated surface water to subsurface strata, leaching of wastes from landfills or direct discharge of industrial wastes to the soil. The most common chemicals involved are petroleum hydrocarbons, solvents, pesticides, lead and other heavy metals (ESDAC). The occurrence of this phenomenon is correlated with the degree of industrialisation and intensity of chemical usage. Various human activities contaminate soils with environmentally hazardous substances, such as heavy metals, organic materials and pesticides.

Table 15: Main sources causing soil contamination (Source: European Environment Agency)

Key sources of local soil contamination	Average
Waste disposal & treatment	38.1
Industrial & commercial activities	34
Storage	10.7
Others	8.1
Transport spills on land	7.9
Military	3.4
Nuclear operations	0.1

Both Croatia and Italy have below average (41.4%) share of soil contamination caused by industrial production and commercial activities. Both countries noticeably have above average share of soil contamination due to waste treatment and disposal. Croatia also has a significant share of soil contamination linked to mining activities.

Situation, trend and threats for the CBC area

Soil and landscape quality in the cooperation area is threatened by soil sealing and contamination, from both agricultural practices and industry, in particular in Italy.
Most partners have realised the importance of greenbelts and are now setting limits for urban development, which is one of the main factors in soil sealing. The area also favours soil decontamination, using brownfields in new development projects. However, there is still a loss of organic matter in agricultural soil, putting future production at all the more risk since soil is a non-renewable resource that performs many vital functions.

Both Italy and Croatia show a higher degree of fragmentation. In both countries the proportion of areas converted to urban land is high, even it is below the European average. In Italy about 36% of the territory is characterised by a very high and high fragmentation. Regions with greater territorial coverage with very high fragmentation is Veneto (26%), confirming the close correspondence between fragmentation and urbanisation density.

Macro-indicators for the theme Soil quality and Landscape

Indicator	State	Trend
Land fragmentation	☹	
Artificial soils and surfaces	😐	
Contaminated sites	😐	

III.6 TECHNOLOGICAL RISKS

Technological risks refer to specific industrial activities such as chemical plants, energy production sites and transport of hazardous substances. Issues in the Italy-Croatia CBC territory include the shipping of harmful products by sea, industrial chemical sites and energy production.

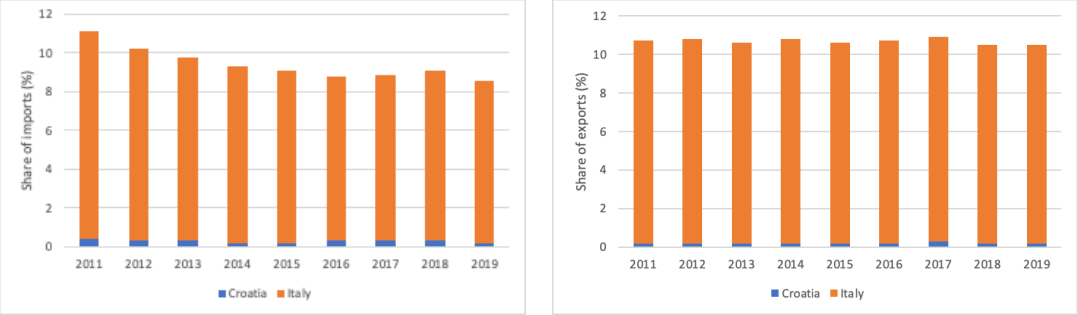
Industry, trade and services

In the EU, there is a high concentration of industrial production in five economies, including Italy (18%), generated nearly 76% of the total gross value added of industrial production. Almost 70% of Europeans working in manufacturing were concentrated in Germany, Italy, France, Great Britain (until 2019), and Poland[68].
The international trade in goods statistics cover both extra- and intra-EU trade: Extra-EU trade statistics cover the trading of goods between Member States and a non-member country. Intra-EU

[68] Industrial production statistic. Eurostat 2021

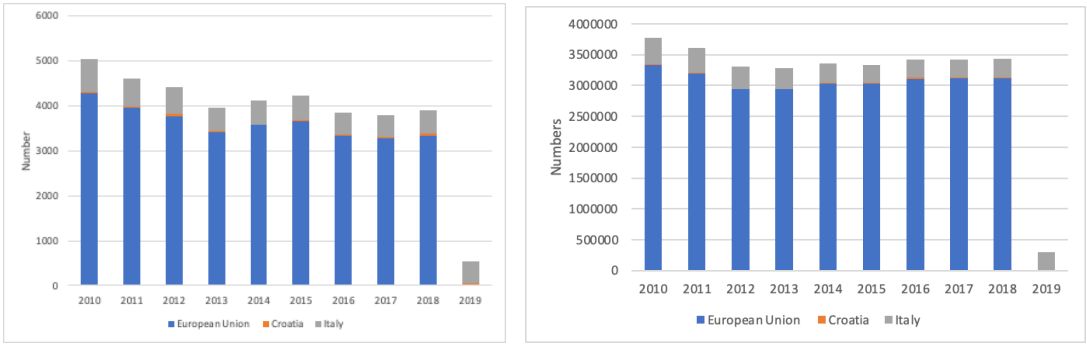
trade statistics cover the trading of goods between Member States. Along the years, there is a wide variation in the value of exports of goods. Trade among EU countries as a share of total trade (imports and exports) in goods ranged from just 0,4% for Croatia to 19,2% for Italy in 2019.

Figure 18: Intra and Extra-EU trade by Italy and Croatia (Source: Eurostat)



In 2019, in Croatia the number of fatal accidents at work is equivalent to 43, as well as the number of non-fatal accidents is equivalent to 10373, while in Italy the number of fatal accidents at work is equivalent to 491, as well as the number of non-fatal accidents is equivalent to 289283. There was an increase between 2010 and 2019 in Croatia in the total number of fatal accidents, respectively of +23%, while for Italy there was a decrease in the same years in the total number of fatal accidents, respectively of -32%.

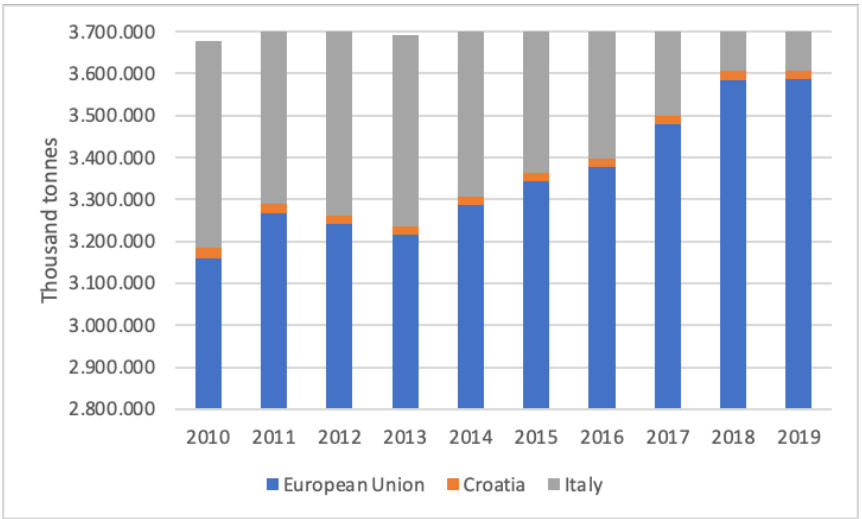
Figure 19: Fatal and non-fatal accident at work (Source: Eurostat)



Maritime transport

The total gross weight of goods transported as part of EU short sea shipping was estimated at almost 1.8 billion tonnes in 2019. Italy was the major short sea shipping country in the EU in 2019, with a share of almost 15 % of the total EU short sea shipping tonnage. In 2019, the value for Croatia was equivalent to 20580 thousand tonnes, showing a decrease of -15% in 2019, compared to year 2010. In 2019, the value for Italy was equivalent to 508074 thousand tonnes, with an increase of +2.8% in 2019, compared to year 2010.

Figure 20: Gross weight of goods handled in all ports (Source: Eurostat)



The Mediterranean region has seen a significant and rapid rise in cruise ship movements over the past two decades: the number of individual cruise passengers in 2017 was almost 26 million, more than double compared to 2006, with 12 million cruise passengers (MedCruise Association, 2018). Because of this continuous growth, ports are facing the challenge of providing proper infrastructure to accommodate large cruise ships and upgraded facilities to be able to accommodate an ever-growing number of cruise passengers as well as to collect and dispose of related waste[69]. Ports accommodating more than 120,000 cruise passengers each year are considered major ports. 36 ports in the Mediterranean fall under this category, 25 of which are located in the Western Mediterranean area, 7 ports in the Adriatic and 4 ports in the Eastern Mediterranean area (MedCruise Association, 2018). For three years in a row, Mediterranean cruise ports hosted, on average, more than 2,000 cruise passengers per cruise call. The increase from previous years is an indication of the continuous increase in the cruise shipping business in the Mediterranean region, but also of the increase in size of cruise vessels sailing in the Mediterranean (MedCruise Association, 2018).

In Italy, in 2019 in the CBC region, the statistics on passengers carried on seagoing vessels in the ports are the following[70]:

Table 16: Passengers embarked and disembarked in year 2019 (Source: ISTAT)

Ports	passengers disembarked (thousands)	passengers embarked (thousands)	passengers embarked and disembarked (thousands)
Ancona	546	562	1108
Bari	711	680	1390
Brindisi	268	252	520
Termoli	103	105	209

[69] United Nations Environment Programme/Mediterranean Action Plan and Plan Bleu (2020). State of the Environment and Development in the Mediterranean. Nairob

[70] Maritime transport - Data ISTAT

Tremiti	105	104	209
Venezia	410	444	854

Situation, trend and threats for the CBC area

Italy was the major short sea shipping country in the EU in 2019, with a share of almost 15 % of the total EU short sea shipping tonnage. On the contrary, values related to Croatia show a decrease sea of the shipping tonnage among the years. Due to tourism, in the CBC area there has been a significant and rapid rise in cruise passenger. In Italy, the value of passengers embarked and disembarked differs for different regions, with Bari that shows the higher number, followed by Ancona port.

III.7 AIR QUALITY AND HEALTH

Health, sanitary risks and nuisances are difficult to monitor; the situation very much depends on local conditions and people, who are differently impacted according to age, origin and behaviour. Transport, and in particular road traffic, has important consequences on people's health, especially in urban, industrial and populated areas where traffic concentrates.

All CBC regions fall under the NEC Directive on national emission ceilings[71]. Regarding the particular issue of air quality, the Directive 2008/50/EC[72] on ambient air quality and cleaner air for Europe entered into force on 11 June 2008. Also relevant for this marine-oriented Programme, Directive 2012/33/UE addresses sulphur and particulate matter emissions from marine shipping. Since the Channel is considered a fragile ecosystem, the maximum sulphur content of marine fuels will be limited to 0.1% by 2015.
Note that Member States have also been pursuing air quality policies. Croatia adopted its Environmental Strategy and National Environmental Action Plan (Official Gazette 46/02) and an Air Quality Protection and Improvement Plan for the Period 2008-2011.

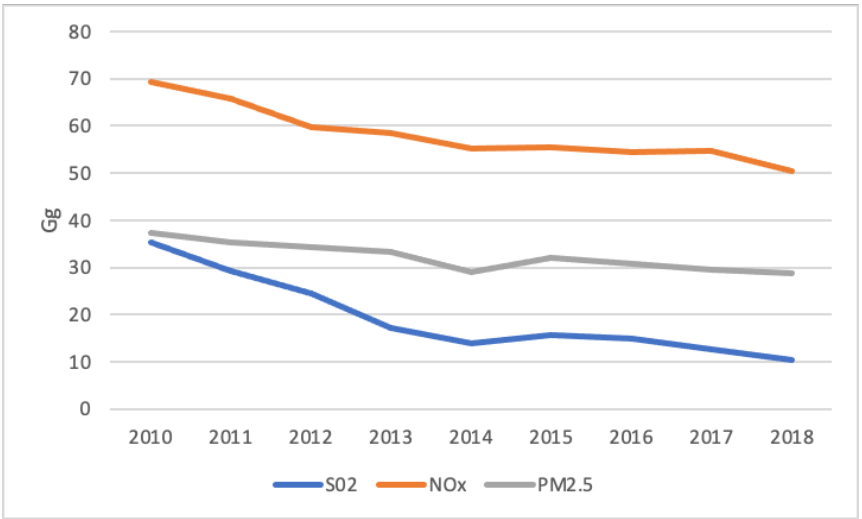
Air pollution

Environmental pollutants significantly affect health in all Programme regions. Particulate matter is mainly produced by traffic pollution, particularly from diesel engines. Emissions tend to be concentrated in urban areas and along major roads. In Italy, the main contribution to total emissions is given by diesel vehicles, in 2019 equal to 93.9% out of the total. Despite of the decrease, road transport is the second source of emissions (the main source is non industrial combustion) at national level in 2019 (30.1%)[73].
Atmospheric pollution of particulate matter with aerodynamic diameter less than 10 μm (PM) is a widespread problem in Croatia. The particles primarily come from traffic, large combustion plants and large point sources. Indeed, the energy sector contributes with 68% of total $PM_{2.5}$ emissions

[71] Directive 2001/81/EC of the European Parliament and of the Council of 23 October 2001 on national emission ceilings for certain atmospheric pollutants (OJ 309, 27.11.2001).
[72] Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe. (OJ L 152, 11.6.2008).
[73] Italian Greenhouse Gas Inventory 1990-2019. National Inventory Report 2021, ISPRA.

(EEA, 2018). Between 2010 and 2018, air pollutants emissions generally decreased in Croatia, except for particulate matter (EEA).

Figure 21: Air pollution emissions for Croatia (Source: European Environment Agency)



The table below shows the percentage of urban population exposed to concentrations above the EU standards for selected air pollutants such as PM10, PM2.5, O3, NO2, and BaP for the years 2014-2018.

Table 17: Air pollutant concentrations above the EU standards in Croatia (Source: European Environment Agency)

		2014	2015	2016	2017	2018
BaP	annual mean	100,0	100,0	100,0	100,0	100,0
NO2	annual mean	0,0	3,3	3,3	3,3	0,0
O3	percentile 93.15	0,0	93,6	80,6	99,5	0,0
PM2.5	annual mean	6,8	6,8	5,9	5,9	5,9
PM10	percentile 90.41	86,7	86,0	99,1	99,1	99,1

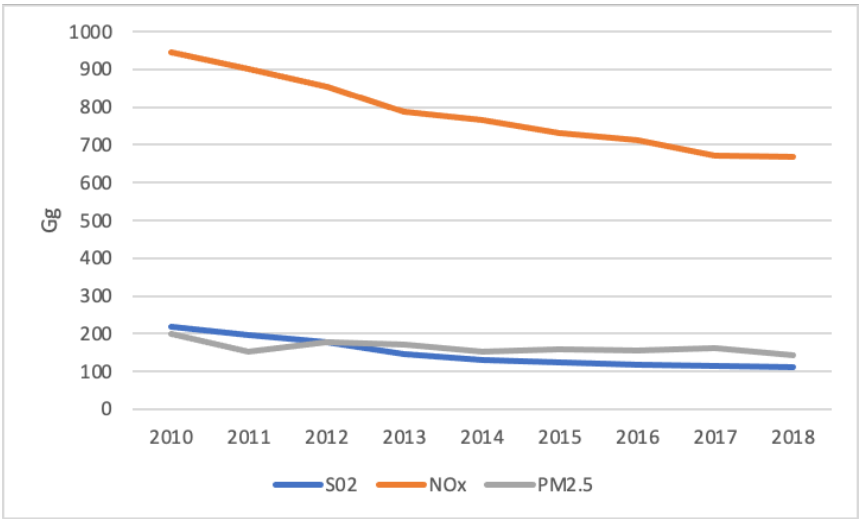
The colour coding of exposure estimates refers to the fraction of urban population exposed to concentrations above the reference level:

0%	< 5 %	5-50 %	50-75 %	> 75 %

In Italy, a downward trend of emissions has also been observed between 2010 and 2018. However, the most critical pollutants remain tropospheric ozone (O3) during summer time, PM atmospheric particulate, especially in the winter months, and nitrogen dioxide (NO2) (EEA, 2018). Road transport is responsible for about half the nitrogen oxide (NO + NO2) emissions and overall emissions of $PM_{2.5}$ and NMVOC, while industrial emissions significantly dropped since the 1990s. Higher PM concentrations are noted in the Po Valley and in the major inhabited centres, concentrations of NO2 higher in the major metropolises of north and in correspondence with the

main road arteries. The ozone levels are higher in altitude, on the Apennine and Alpine, and generally show a positive gradient from the inside out of inhabited centres[74].

Figure 22: Air pollution emissions for Italy (Source: European Environment Agency)



Air quality is a critical problem especially in urban areas where the levels of population and transport density are highest.

Table 18: Urban population exposed to air pollutant concentrations above the EU air quality objectives in Italy (2010-2018) (Source: European Environment Agency)

		2014	2015	2016	2017	2018
BaP	annual mean	2,3	7,8	5,7	6,6	0,5
NO2	annual mean	15,9	27,9	23,2	23,8	7,3
O3	percentile 93.15	25,2	72,5	44,6	62,7	56,7
PM2.5	annual mean	9,1	26,1	19,7	25,0	1,5
PM10	percentile 90.41	49,2	64,7	42,7	44,4	34,4

Concerning the exposure of the population to noise levels of 55 dB or higher for the most recent round of noise within and outside urban areas, data at European level showed that road traffic is by far the biggest source of environmental noise, followed by railway, air and industrial noise[75].

Table 19: Percentage of countries' total population exposed to Lden ≥ 55 dB in areas by countries (Source: European Environment Agency)

Countries	Inside urban areas				Outside urban areas		
	Road	Rail	Air	Industry	Road	Rail	Air
Italy	13,7	0,9*	0,7*	0,1*	12,0*	3,3	0,3*

[74] Exposure of the Italian population to air pollution, and relationship with Covid-19, ISPRA 2021.
[75] EEA Report No 22/2019, Environmental noise in Europe.

Croatia	7,7	0,6	0,0	0,0	2,8	0,0	-

In Italy in 2018, 2,495 noise sources were detected in 43.5% of the controlled sources exceeding the regulatory limits, which highlights a significant noise pollution problem and an increase compared to what was found in 2017 (+11.4 percentage points), in line with what was recorded in the 2014-2016 period (in 2016 it was 40.6%, in 2015 45.9% and in 2014 46.3%). Studies on the exposed population in the agglomerations show that the prevailing noise source is vehicular traffic[76].

Table 20: Percentage of sources with the overcoming limits at regional level in year 2018 (Source: ISPRA)

Region	Production activities	Service and / or commercial activities	Temporary activities	Road Infrastructure	Railway Infrastructure	Airport infrastructure	Port infrastructure
Veneto	43,5	47,2	9,1	21,7	100	60	100
Friuli Venezia Giulia	84,2	71,4	0	33,3	100	0	0
Emilia Romagna	53,9	61,4	50	23,1	0	0	_
Marche	50	75	_	33,3	_	_	_
Abruzzo	66,7	73,3	50	0	100	_	_
Molise	_	_	_	_	_	_	_
Apulia	36,4	54,5	0	_	_	_	_

[76] ISPRA. Environmental data yearbook, 2019

Situation, trend and threats for the CBC area

Environmental pollutants significantly affect health in all Programme regions. Particulate matter is mainly produced by traffic pollution, in both countries. Even if a decreasing trend of pollutants emissions is visible along the years for each country, hotspots still remain in the countries especially related to transport emissions in urban centres and highly populated territories. In Italy, higher PM concentrations are noted in the Po Valley and in the major inhabited centres, while concentrations of NO2 higher in the major metropolises of north and in correspondence with the main road arteries. Population exposed to noise is increasing, especially from the vehicular traffic.

Macro-indicators for the theme Health, Sanitary risks and Nuisance

Indicator	State	Trends
Particulate matter emissions	😐	⇨
Other air pollutant emissions	😐	⇨
Exposure to pollutants in urban areas	☹	⇘

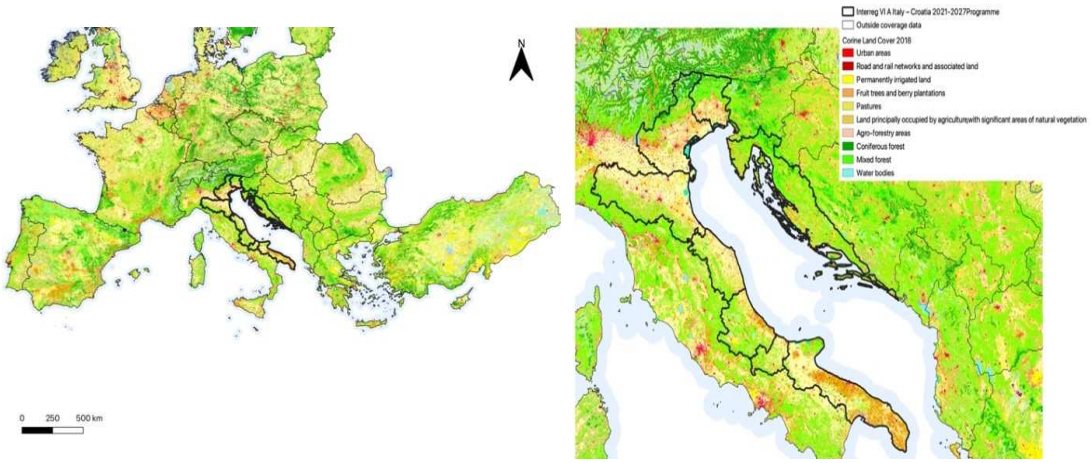
III.8 LANDSCAPE AND CULTURAL HERITAGE

Natural and cultural heritage are part of the landscape, as well as being sources of recreational, aesthetic or historic values for inhabitants and people visiting them. Such heritage includes buildings, monuments, gardens, parks, battlefields and all the surrounding natural and built-up areas, which give them value and sense. Tourism takes particular advantage of natural and cultural heritage sites. The European Landscape Convention is also known as the Florence Convention. It was adopted on 20thOctober 2000 in Florence (Italy) and came into force on 1st March 2004. The convention promotes European landscape protection, management and planning and organises European co-operation on these issues. Regarding cultural and natural heritage, the UNESCO World Cultural and Natural Heritage Convention 1972 is today still the main policy for protection and preservation at an international level. The Convention for the Protection of the Archaeological Heritage of Europe 1992, also known as the Valletta Convention, supplements the general provisions of the UNESCO World Heritage Convention. It is an international treaty covering Europe as a whole, which establishes the basic common principles to be applied in national archaeological heritage policies.

Landscape

The dominant landscape types of the Programme region include mountains, forests and farmland, with little urban and industrial zones (Figure 23).

Figure 23: Dominant landscape types based on Corine Land Cover 2018 (Source: European Environment Agency. Elaboration: t33)



Land use and landscape fragmentation are two burning issues. Comparing Corine land cover of the years 2006 and 2018, we can clearly notice a widespread increase of urban areas at the expenses of agricultural and to a less extent forest. In the period 2006-2018 agricultural areas decreased progressively all over the country[77]. Italy and Croatia both also have a high level of landscape fragmentation, due in many built-up coastal areas along the Adriatic coast (Metis, 2014).

Table 21: Comparison between CLC 2018 and CLC 2012, classes at level 3 (Source: European Environment Agency, Corine land cover data)

CLC level3	Values of CLC2018 in km2	Values of CLC 2006 in km2	Variation in respect to CLC 2006 (%)
Croatia			
Urban fabrics	1630	1626	+0,2
Artificial surfaces	92	89	+3,4
Heterogenous agricultural areas	12793	12829	-0,3
Forests	20056	20548	-2,4
Italy			
Urban fabrics	11912	11824	+0,7
Artificial surfaces	443	421	+5,2
Heterogenous agricultural areas	47270	47405	-0,3
Forests	78748	79059	-0,4

Protected sites

[77] EEA

CBC regions of both countries entail outstanding sites and hotspots. In addition to the above-quoted Plitvice Lakes National Park, which belongs to natural heritage, Croatia counts six others properties inscribed on the World Heritage List: the Episcopal Complex of the Euphrasian Basilica in the Historic Centre of Poreč, the Historic City of Trogir, the Historical Complex of Split with the Palace of Diocletian, the Old City of Dubrovnik, the Stari Grad Plain, the Cathedral of St James in Šibenik and some of the sites of the Stećci Medieval Tombstone Graveyards. Finally, the Venetian Works of Defence between the 16th and 17th Centuries: Stato da Terra – Western Stato da Mar consists of 6 components of defence works in Italy, Croatia and Montenegro, spanning more than 1,000 km of the eastern Adriatic Coast. Cultural goods are also protected by the Croatian law since the Act on the protection and preservation of cultural goods a Register of Cultural Goods has been established[78]. Italy is well endowed with World Heritage Sites. Up to 2021, it has fifty-three sites inscribed on the list, making it the country with most sites. Seven of them are located in the CBC area, i.e. the Archaeological Area and the Patriarchal Basilica of Aquileia, the Botanical Garden in Padua, Castel del Monte in Andria, Ferrara, City of the Renaissance, and its Po Delta, the two longobards - places of the power (568-774 A.D.) – of Cividale del Friuli in the province of Udine and Monte Sant'Angelo in the province of Foggia, the Trulli of Alberobello in the province of Bari, Cathedral, Torre Civica and Piazza Grande, Modena, Verona City, City of Vicenza and the Palladian Villas of the Veneto, Early Christian Monuments of Ravenna, Historic Centre of Urbino, the Prosecco Hills of Conegliano and Valdobbiadene, Mantua and Sabbioneta, Padua's fourteenth-century fresco cycles, some sites of the Prehistoric Pile Dwellings around the Alps, the Porticoes of Bologna, and last but not least, Venice and its lagoon.

In Europe, in 2018, 1.0% of general government total expenditure was allocated to cultural services (not including broadcasting and publishing services). This share has remained relatively stable over time, accounting for 1.0% of general government total expenditure each year from 2013 to 2018. In Croatia the share of cultural services in the general government expenditure is equal to 1.5%, while in Italy is equal to 0.6%[79]. Even if the percentage is low, in Italy, the expenditure of the central Government on the protection and valorisation of heritage and landscape (including the funding of cultural activities) is consolidating a positive trend: in 2018, the payments of the central administrations on this item of the State balance reached 1.71 billion euros (1.66 net of financial liabilities, equal to 0.28% of the primary public expenditure). An encouraging sign is the growth in capital spending for the third consecutive year, which it brings investments back to 2009 levels, while there is a slight decline in spending current (-4.5%)[80].

The promotion of renewable energy production is of great importance, as this technology is among the key solutions for the mitigation of climate change and the promotion of sustainable development. The number of renewable energy installation projects (such as wind farms, biomass production, hydropower and photovoltaic power plants) in all the regions of the World Heritage Convention is currently rising. It however, results in considerable challenges for the conservation and management of World Heritage properties. Impacts can even be expected when such projects are planned in the wider setting of World Heritage properties and their buffer zones. The major issue is the presumed negative impact of the renewable energy infrastructure on the Outstanding Universal Value (OUV) of the properties[81].

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[78] Act on the protection and preservation of cultural goods (Official Gazette n. 69/99; 151/03; 87/09; 88/10; 61/11; 25/12; 136/12; 157/13; 152/14; 98/15).

[79] Government expenditure on cultural services, Eurostat

[80] Landscape and cultural heritage, ISTAT 2019.

[81] UNESCO

Situation, trend and threats for the CBC area

CBC regions of both countries entail outstanding heritage sites and hotspots, also under the UNESCO convention. Italy and Croatia both also have a high level of landscape fragmentation, due in many built-up coastal areas along the Adriatic coast. Landscape qualities often come off worse in regional decision-making. Cultural and natural heritage landscape values have to face several threats from urbanisation, infrastructure development, agricultural production, as well as habitat creation and restoration projects. The cooperation area's predominantly coastal character is a double-edged sword. On the one hand tourism development brings new resort development, which adds pressures on this already fragile environment. On the other hand, however, natural and cultural are irreplaceable resources feeding tourism flows.

Macro-indicators for the theme Natural and Cultural heritage

Indicator	State	Trends
Landscape	😐	⇨
Protected sites	☺	⇗

III.9 ENERGY

A significant proportion of energy is imported for domestic consumption and dependency on fossil fuel remains high. Reducing fossil fuel consumption is at the heart of the strategy to prevent climate change and to increase resource consumption efficiency. In addition, the development of renewable energy technologies is a key factor for increasing European companies' competitiveness in emerging markets.
To reduce dependency on fossil energy in Europe and to promote the development of alternative energy sources, European institutions elaborated the European green deal, legislative commitments addressing climate and energy issues in the EU[82]. The European strategy set ambitious objectives for EU territories: a 40% new renewable energy target for 2030 and 36-39% new 2030 energy efficiency targets for final and primary energy consumption. Targets have been broken down by MS, to account for national characteristics, costs and different potential for improvements in energy efficiency.

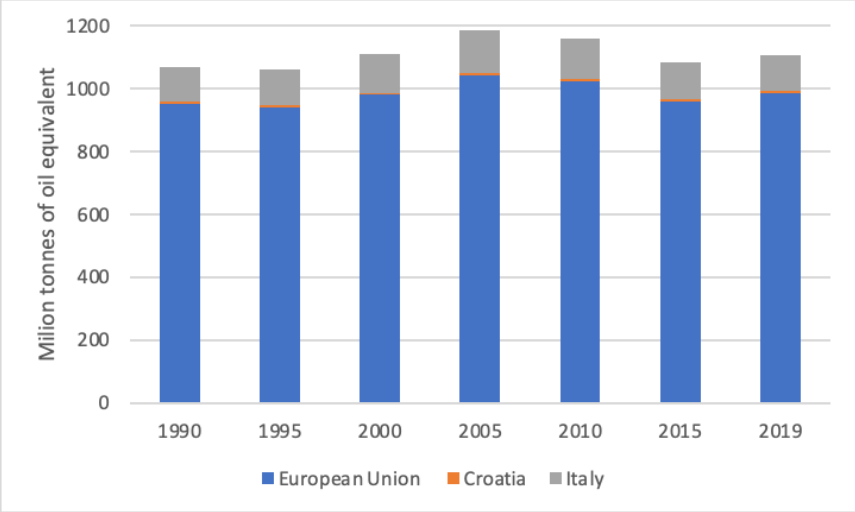
Energy efficiency

In 2008, Croatia adopted its National Energy Efficiency Action Plan (NEEAP) to comply with the requirements of EU Directive 2006/32/EC on energy end-use efficiency and energy services. Before this action plan for resource efficiency, the concept of an efficient and sustainable management of natural resources was included into the Croatian national environmental legislation e.g. the Strategy for Sustainable Development[83]. A specific purpose fund – the Environmental protection and Energy

[82] Communication from European institutions 'The European Green Deal' (COM/2019/640)
[83] Strategy for sustainable development of the Republic of Croatia (Official Gazette 30/2009)

Efficiency Fund – has been established to finance projects related to renewable energy and energy efficiency. Through the implementation of energy efficiency measures, Croatia has registered an increase in energy consumption of ~6.5% in 2019 relative to 1990.
In Italy, the energy consumption in 2019 is ~+7.1% higher than in 1990 but significantly lower if compared with the 2010 value (-10.1%). The increase is mainly due to the services sector and transport, while consumption in the residential sector and in industry is significantly reduced[84]. Energy consumption in Italy presents differences between regions.

Figure 24: Energy consumption from 1990 to 2019 in EU, Italy and Croatia in million tonnes of oil equivalent (Source: Eurostat)

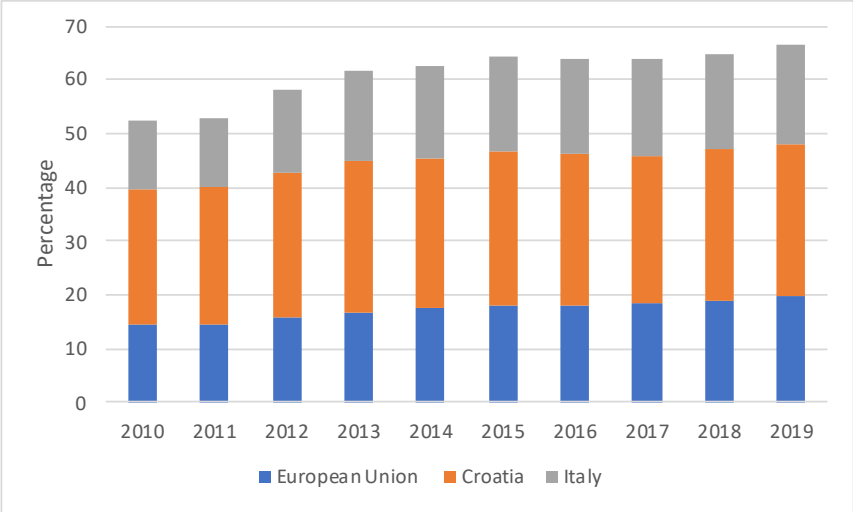


Renewable energy

The Croatian National Renewable Energy Action Plan (NREAP) sets the target of increasing the share of energy from renewable energy sources in gross final consumption from 12.8% in 2005 to 20.0% in 2020 (Croatian Ministry of Economy, 2014). Italy's National Renewable Energy Action Plan (NREAP) sets the target of increasing the share of energy from renewable energy sources in gross final consumption from 4.9% in 2005 to 17.0% in 2020[85].
The share of energy from renewable sources is significantly incremented from 2010 to 2019 in both Italy (+39.6%) and Croatia (+13.4%), while the European average is equivalent to +36.8%. In 2017, the main share of renewable energy is produced by solid biofuels, followed by wind power and hydropower. In Italy, the main share of renewable energy is produced by solid biofuels, followed by geothermal and hydropower production.

[84] Annual report on energy efficiency, April 2020. Agenzia Nazionale Efficienza Energetica
[85] http://www.odyssee-mure.eu/publications/national-reports/

Figure 25: Share of renewable energy (%) from 2010 to 2019 (Source: Eurostat)



Situation, trend and threats for the CBC area

Croatia has registered an increase in energy consumption in 2019 relative to 1990. In Italy, the energy consumption in 2019 is ~+7.1% higher than in 1990 but significantly lower if compared with the 2010 value. The increase is mainly due to the services sector and transport, while consumption in the residential sector and in industry is significantly. However, in a business as usual scenario, while energy efficiency should continue to improve in the near future, additional efforts are needed. The renewable energy production shows a remarkable increase from 2003 in Italy and Croatia, at rate even higher than the European average.

Macro-indicators for the theme Energy

Indicator	State	Trends
Energy consumption	☹	⇨
Renewable energy	☺	⇗

III.10 WASTE MANAGEMENT

Waste production is a major source of pressure on the environment. It contributes to the overconsumption of natural resources and is a source of pollution for soil and water, which increases the ecological footprint of economic activities. Better waste management, such as recycling, lowers the cost of waste disposal and helps reduce the impact of economic activity on ecosystems.

Three main documents guiding waste management have been adopted at EU level. The Waste Framework Directive[86] sets basic concepts and definitions related to waste management and lays down some basic waste management principles. The Commission Decision 94/3/EC[87] establishes a list of waste, while Council Directive 1999/31/EC[88] frames the landfill of waste.
In both Member States, the legislative framework has been completed e.g. the Italian National Law 152/2006 and in Croatia the Waste Framework Directive has been transposed into the national legislation by the Sustainable Waste Management Act[89]. The Waste Management Strategy for the Republic of Croatia[90], the Waste Management Plan[91] and the Waste Act[92] have also been adopted to build a truly integrated waste management system for the country.

In 2015, the European Commission adopted its first circular economy action plan. It included measures to help stimulate Europe's transition towards a circular economy, fostering sustainable economic growth and generate new jobs, and establishing concrete and ambitious actions: from production and consumption to waste management and the market for secondary raw materials and a revised legislative proposal on waste. As EU Member States Croatia and Italy must also adopt this circular economy package. There are a number of Croatian regulations managing the policy framework of Croatia with regards to circular transition aiming at streamlining the policy with that of the rest of the EU, such as for example the ordinance on by-products and end-of-waste status (OG No. 117/14). In Italy, in September 2020 the Italian Government published in the National Official Journal four National Laws that, as a whole, bring into force in Italy provisions of the 2018 European Directives 849 to 852 of the so-called European Circular Economy Package.

Waste production

The 2020 target of 95 % of population and municipalities covered by organised municipal waste collection set by the Waste Management Strategy of Croatia has already been reached. However, constantly increasing municipal waste volume is a lasting issue in both countries, even though it is tending to stabilise. The generation of municipal waste in Croatia has increased from 336 kg per capita in 2005 to 445 kg per capita in 2019. In Italy, municipal waste generation per capita was 546 kg in 2005 and 503 kg per capita in 2019, with however high disparities across regions e.g. in 2019, waste generation ranged from 368 kg/inhabitant per year in Molise to 662,8 kg/inhabitant per year in Emilia Romagna[93]. Waste generation is indeed known to be strictly correlated with socio-economic indicators such as GDP and household consumption[94]. In both countries only part of the municipal waste volume ends up being recovered while the rest is landfilled[95]. In Croatia, remediation has been carried out on a small number of landfills only e.g. Lemić brdo, Bakar, Sovjak, TP Plomin,

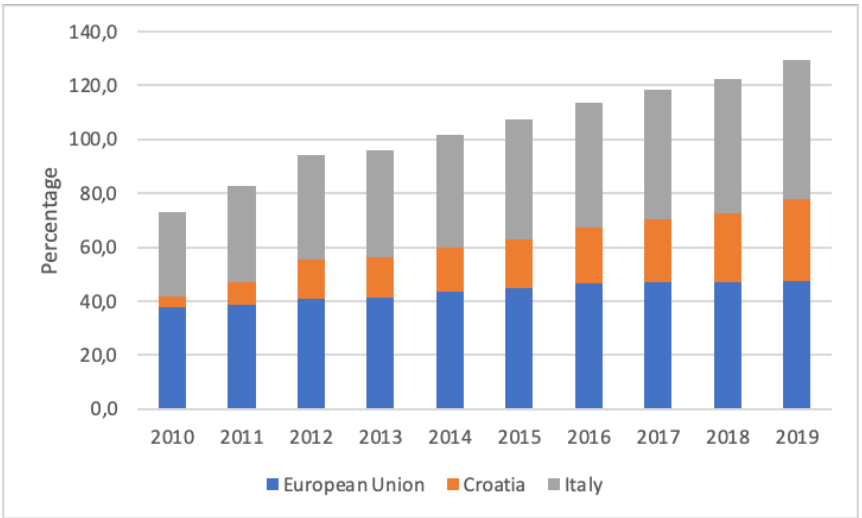
[86] Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives(OJ L 312, 22.11.2008, p. 3).
[87] Commission Decision 94/3/EC of 20 December 1993 establishing a list of waste pursuant to Article 1a of Council Directive 75/442/EEC on waste (OJ L 5, 7.1.1994, p. 15).
[88] Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste (OJ L 182, 16.7.1999, p. 1).
[89] Sustainable Waste Management Act (Official Gazette 94/13)
[90] Waste Management Strategy (Official Gazette 130/05)
[91] Waste Management Plan for the Republic of Croatia 2007 - 2015 (Official Gazette 85/07)
[92] Waste Act (Official Gazette 178/04, 111/06, 60/08, 87/09)
[93] ISPRA (2020) Rapporto Rifiuti Urbani, 618 p.
[94] EEA (2010) Croatia Country Assessment - Waste. SOER 2010 http//www.eea.europa.eu/soer/countries/hr/soertopic_view?topic=waste
[95] Eurostat, Municipal waste statistics

Obrovac, TEF Šibenik, Jugovinil, Mravinacka Kava. By 2020, official landfills i.e. legal disposal sites, sites in the process of being legalised, official sites and negotiated sites, should be reduced to 30 while the share of remediate landfills is planned to be 85% of the number established for 2000. The landfill rates for the two countries have constantly decreased. Landfill rate of waste is equal to 41% in Croatia, with a decrease of 35% in 2019 compared to year 2012, and in Italy is equal to 18%, with a decrease of –28% in 2019 compared to year 2012. Moreover, illegal landfill remains a problem, particularly in southern Italy. Furthermore, a national strategy for the reduction of biodegradable waste going to landfills has been adopted. This strategy identifies the waste types to be considered as bio-waste and defines specific targets[96].

Recycling

Updating national legislations and regulations, modernising old infrastructures including the creation of regional waste disposal systems, construction and exploitation of large-scale waste treatment plants. Both countries are moving towards a European recycling society.
By 2019, Italy recycled about 51.4% of its municipal waste. Recycling is strongly linked to separate collection. Yet, the higher separate collection rates have been achieved by the northern regions of the Italian side of the CBC areas. Croatia in 2019 recycled about 30.2% of its municipal waste[97].

Figure 26: Recycling rates (Source: Eurostat)



Significant improvements have been made in Croatia concerning the transition towards a circular economy in recent years. An increasing number of companies focus on eco production and sustainable development, as well as a growing number of projects and products based on eco-innovation and recycling. Moreover, a continued positive trend can also be seen in the collaboration between scientific institutions and business sector, in the companies who have obtained the EU Eco-label and in the increasing share of R&D expenditures in GDP in 2018 (EU, 2019). According to the

[96] Report from the Commission to the Council and the European Parliament on national strategies for the reduction of biodegradable waste to be landfilled pursuant to Article 5 (1) of Directive 1999/31/EC on the landfill of waste.
[97] Recycling rate of municipal waste. Eurostat

2nd National Report on the circular economy in Italy (ENEA and the CEN-Circular Economy Network), Italy ranks first among the five main European economies in terms of circularity index implementation (value attributed according to the degree of efficient use of resources in five categories: production, consumption, waste management, second raw materials market, investments and employment). More in detail, Italy makes the best use of the scarce resources destined for technological advancement and has a good efficiency index (for every kilo of resource consumed, 3.5 euro of GDP are generated, compared to a European average of 2.24), while it is penalised by the scarcity of investments.

Situation, trend and threats for the CBC area

In recent years waste collection and processing have generally been upgraded, both for the amount of waste collected by local public services and the share of waste recovery compared to landfill. However, there is still a large room for improvement for Croatian and Italian regions regarding the amount of waste produced and the share of recovered or recycled waste.
Significant improvements have been made in Croatia and Italy concerning the transition towards a circular economy in recent years. In particular, Italy is among the countries with the highest economic value generated per unit of material consumption.

Macro-indicators for the theme Waste

Indicator	State	Trends
Waste production	😐	
Landfill deposit	😐	
Recycling	😐	

PART II – VERTICAL AND HORIZONTAL INTEGRATION OF ENVIRONMENT AND SUSTAINABLE DEVELOPMENT

Part 11 includes an analysis of external coherence for environmental and sustainable development programming and planning documents in the cross-border context, as well as an analysis of internal coherence of the objectives.

IV. INTERNAL COHERENCE OF THE PROGRAMME

The internal coherence assessment reviews the potential synergies and complementarities between the SOs ('horizontal coherence').

The assessment considers various degrees of horizontal coherence:

- Contrast / conflict ('CO'), when the SO could clash with other Programme SOs;
- Complementary, if the SO is potentially complementary in achieving Programme objectives but there are no fields of interaction for objectives or actions (C);
- Overlap, when the SO shares similar strategic goals and actions overlap ('O').

SO coherence:

	SO 1.1	SO 1.4	SO 2.4	SO 2.7	SO 3.2	SO 4.6	ISO 1
SO 1.1		C/O	C	C	C	C	C
SO 1.4			C	C	C	C	C
SO 2.4				C	C	C	C
SO 2.7					C	C	C
SO 3.2						C	C
SO 4.6							C
ISO 1							

- The SOs do not have major conflicts, showing good complementary at a strategic level;
- All SOs have a specific logic of intervention which is embodied in the CP strategy;
- A strong focus on the improvement of environmental quality and climate change adaptation in the area, for the majority of SOs and is particularly evident for SOs 2.4 and 2.7, but is also true for SOs 1.1, 1.4 and 3.2, which address blue and circular economy issues,
- In some cases, there is the risk of overlapping, particularly for SOs 1.1 and 1.4 (both focused on innovation capacity). Challenge 02 in SO1.1 could overlap with SO1.4 objectives on developing skills for smart specialisation, industrial transition and entrepreneurship.

V. SYNERGY WITH OTHER PLANS AND PROGRAMMES RELEVANT FOR THE ITALY-CROATIA AREA

According to Annex I(e) of the SEA Directive[98], an external coherence analysis should compare the Italy - Croatia Programme with other key plans or strategies for the cooperation area and that deal with environmental issues covered by the Programme strategy. Coherence was analysed at the level of the Italy - Croatia Programme 'Specific Objectives' using a specific assessment matrix. External coherence analysis was built on the list of relevant documents drawn up by SEA experts and completed by the EAs, during the Scoping Report consultation.
The following coherence levels were established using a joint methodology developed with the ex-ante evaluators:

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

In this section, the framework of policy and strategy at European level is presented for all environmental issues, and the coherence with the Programme is described. A final table synthesises the coherence analysis for all the issues. Plan, Programme and Strategies included in the analysis are those relevant at cross-border level and concerning issues related with the IP. Nevertheless, a list of Plans, and Programme suggested in the scoping phase is reported in appendix 3. The list could be used in further phases of Programme implementation, such as in the selection phase of projects when checking consistency of the project designs with the regional normative packages.

[98] '*The environmental protection objectives, established at international, Community or Member State level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation.*'

V.1 COHERENCE WITH THE COMMUNITY-LEVEL POLICIES

V.1.a Biodiversity, Landscape and Cultural Heritage Policy Framework

The European framework on nature protection is stated by the EU Biodiversity strategy for 2030 (COM(2020) 380), whose main objective is 'to put Europe's biodiversity on a path to recovery by 2030 and reverse the degradation of ecosystems for the benefit of people, climate and the planet by building our societies' resilience to future threats such as climate change, forest fires, food security and disease outbreaks'. The Strategy set targets for different ecosystems:

1. Agricultural land ('Increasing organic farming and biodiversity-rich landscape features on agricultural land and reducing the use and risk of pesticides by 50% by 2030');
2. Forestry ('Increasing the quantity of forests, by planting 3 billion trees by 2030, and improving their health and resilience, with stricter protection of remaining EU primary and old-growth forests');
3. Freshwater ecosystems ('Restoring at least 25 000 km of EU rivers to a free-flowing state');
4. Sea ('Protecting a minimum of 30% of the EU's Sea and maintain or reduce fishing mortality of marine resources at or under Maximum Sustainable Yield levels').

Another basic document in nature protection is the Pan-European Biological and Landscape Diversity Strategy (PEBLDS), adopted at the 3rd Ministerial Conference 'An Environment for Europe' held in October 1995 in Sofia, Bulgaria, as a follow up of the Rio Earth Summit and of the 'Convention on Biological Diversity'. The principal aim of the Strategy is to find a consistent response to the decline of biological and landscape diversity in Europe and to ensure the sustainability of the natural environment. The strategy differs from previous attempts to conserve biodiversity in four important ways[99]:

- it has a vast geographical scope, covering virtually the entire continent of Europe and northern and central Asia;
- it aims to ensure that the ecosystems on which species depend continue to function, rather than protecting only threatened species or a limited number of valuable sites;
- it brings together the conservation of biodiversity and landscapes into an integrated framework;
- it provides for a systematic programme of concrete actions that are designed to ensure that long-term conservation objectives are achieved.

The long-term objectives set by the strategy consist in the establishment of a Pan-European Ecological Network to conserve ecosystems, habitats, species and landscapes that are of European importance, in the sustainable management and use of Europe's biodiversity and in integrating biodiversity conservation and sustainability into the activities of other sectors. In addition, the strategy aims to improve awareness and understanding on biodiversity issues.

The European Landscape Convention ('Florence Convention', Council of Europe Treaty Series no. 176) promotes the protection, management and planning of European landscapes The scope of the

[99] http://www.mainstreaminginnovation.org/content/landscapeandbiodiversity/256,253/

Convention is extensive as it applies to the entire territory of the Parties and relates to natural, urban and peri-urban areas, whether on land, water or sea.

The agenda for a sustainable and competitive European tourism [COM/2007/0621), adopted on 19 October 2007, promotes an holistic approach, addressing not only the economic prosperity of the tourism sector, but also social cohesion, environmental protection and promotion of the culture of European tourist destinations, creating the right balance between the welfare of tourists, the needs of the natural and cultural environment and the development and competitiveness of destination and businesses. The objectives of the agenda are delivered economic prosperity, social equity and cohesion and environmental and cultural protection.

Policy Objectives	Specific Objectives	Interaction with the policy	Coherence results
Policy Objective 1: A smarter Europe	**SO1.1:** Research and innovation	No interaction found	N
	SO1.4: Skills for smart specialisation, industrial transition and entrepreneurship	No interaction found	N
Policy Objective 2: A greener Europe	**SO2.4:** Climate change adaptation and disaster risk prevention	This SO act in the direction delineated by the EU Biodiversity strategy for 2030	S/O
	SO2.7: Protection of nature and biodiversity and reducing pollution	This SO act in the direction delineated by the EU Biodiversity strategy for 2030	S/O
Policy Objective 3: A more connected Europe	**SO3.2:** National, regional, local and cross-border mobility	No interaction found	N
Policy Objective 4: A more social Europe	**SO4.6**: Culture and sustainable tourism	This SO act in the direction delineated by the European Landscape Convention and by the Agenda for a sustainable and competitive European tourism	S/O
Interreg Specific Objective 1: A better cooperation governance	Legal and administrative cooperation and cooperation between citizens, civil society actors and institutions	No interaction found	N
	Institutional capacity to implement macro-regional, sea-basin and other territorial strategies	No interaction found	N

V.1.b Air quality and Climate change

In 2013, the Commission adopted an EU Adaptation Strategy (COM (2013) 216) with the aim to anticipating the adverse effects of climate change and taking appropriate action to prevent or

minimise the damage they can cause. It promotes adaptation in key vulnerable sectors such as agriculture, fisheries and cohesion policy.

The Convention on Long-range Trans-boundary Air Pollution (CLRTAP) of the United Nations Economic Commission for Europe (UNECE) is finalised to limit and, as far as possible, gradually reduce and prevent air pollution including long-range transboundary air pollution. Parties develop policies and strategies to combat the discharge of air pollutants through exchanges of information, consultation, research and monitoring. Currently, a special focus is given to the implementation of the Convention and its protocols across the Eastern Europe.

The Thematic Strategy on Air Pollution (COM 2005 446) aims to obtain 'levels of air quality that do not give rise to significant negative impacts on, and risks to human health and environment'. It establishes objectives for air pollution and proposes measures for achieving them by 2020: modernising the existing legislation, placing the emphasis on the most harmful pollutants, and involving to a greater extent the sectors and policies that may have an impact on air pollution.

The Ambient air quality and cleaner air for Europe Directive (2008/50/EC), or the Ambient Air Quality Directive, is an EU directive which limits sulphur dioxide, NO2 and other oxides of nitrogen, particulate matter (PM10, PM2,5), lead, benzene and carbon monoxide emissions from 2010. This Directive defines objectives for ambient air quality designed to avoid, prevent or reduce harmful effects on human health and the environment as a whole. To this end, it sets out measures for the assessment of ambient air quality in Member States as well as for obtaining information on ambient air quality in order to help combat air pollution and nuisance. The Directive aims at increasing cooperation between the Member States in reducing air pollution.
On 18 December 2013, the European Commission adopted the Clean Air Policy Package (COM(2013) 918), which proposes legislation to reduce harmful emissions in the longer term and at the same time promote measures which mitigate atmospheric warming and climate change. In particular, the package includes:

1. The new Clean Air Programme for Europe, which contains measures to ensure that existing targets are met in the short term, as well as new air quality objectives up to 2030. The package also includes support to reduce air pollution, improve air quality in cities, as well as research, innovation and international cooperation;

2. A revised National Emission Ceilings Directive with stricter national emission limits for six main pollutants;
3. A proposal for a new Directive to reduce pollution from medium-sized combustion installations, such as energy plants for street blocks or large buildings, and small industry installations.
Furthermore, the Commission on 9 December 2020 adopted the Sustainable and Smart Mobility Strategy (COM(2020) 789), which aims to reach the following targets:

1. Reach a sustainable and greening mobility, by developing efficient and interconnected multimodal transport for passengers and freight with infrastructure for zero-emission vehicles.

2. Improve digitalisation and automation to further increase safety, security, reliability and comfort, thereby maintaining the EU's leadership in transport equipment manufacturing and services.

3. Ensure that the mobility will be accessible for everyone and that the sector offers good social conditions, reskilling opportunities, and provides attractive jobs.

Policy Objectives	Specific Objectives	Interaction with the policy	Coherence results
Policy Objective 1: A smarter Europe	**SO1.1:** Research and innovation	No interaction found	N
	SO1.4: Skills for smart specialisation, industrial transition and entrepreneurship	No interaction found	N
Policy Objective 2: A greener Europe	**SO2.4:** Climate change adaptation and disaster risk prevention	This SO act in the direction delineated by the Clean Air Policy Package	S/O
	SO2.7: Protection of nature and biodiversity and reducing pollution	This SO act in the direction delineated by the Clean Air Policy Package	S/O
Policy Objective 3: A more connected Europe	**SO3.2:** National, regional, local and cross-border mobility	This SO act in the direction delineated by the Sustainable and Smart Mobility Strategy	S/O
Policy Objective 4: A more social Europe	**SO4.6**: Culture and sustainable tourism	No interaction found	N
Interreg Specific Objective 1: A better cooperation governance	Legal and administrative cooperation and cooperation between citizens, civil society actors and institutions	No interaction found	N
	Institutional capacity to implement macro-regional, sea-basin and other territorial strategies	The enhancement of environmental sustainability of marine and coastal transport services and nodes contributes to reduce emissions and to improve air quality (CLRTAP, Thematic Strategy on Air Pollution)	S/O

V.1.c Soil

The Soil Thematic Strategy was adopted by the European Commission on 2006 (COM(2006) 231), whit objective to protect the soil while using it sustainably, through the prevention of further degradation, the preservation of soil function and the restoration of degraded soils. The strategy is based on four main pillars, namely awareness raising, research, integration, and legislation. Recently the European Commission have prepared a report on the implementation of the strategy (COM(2012) 46) which provides an overview of the actions in Europe to implement the four pillars of the Strategy. It underlines that at the March 2010 Environment Council a minority of the strategy and also presents current soil degradation trends both in Europe and globally, as well as future challenges to ensure protection.

The UN Convention to Combat Desertification (UNCCD) was adopted on 17 June 1994 by the Intergovernmental Negotiating Committee and it aims to combat desertification and mitigate the effects of, through international cooperation and partnership with a view to achieving sustainable development; to implement long-term integrated strategies that focus simultaneously on improved productivity of land, and the rehabilitation, conservation and sustainable management of land and water resources, leading to improved living conditions; to encourage the use of existing financial mechanisms.

Policy Objectives	Specific Objectives	Interaction with the policy	Coherence results
Policy Objective 1: A smarter Europe	**SO1.1:** Research and innovation	No interaction found	N
	SO1.4: Skills for smart specialisation, industrial transition and entrepreneurship	No interaction found	N
Policy Objective 2: A greener Europe	**SO2.4:** Climate change adaptation and disaster risk prevention	No interaction found	N
	SO2.7: Protection of nature and biodiversity and reducing pollution	This SO acts in the direction delineated by the Soil Thematic Strategy	S/O
Policy Objective 3: A more connected Europe	**SO3.2:** National, regional, local and cross-border mobility	No interaction found	N
Policy Objective 4: A more social Europe	**SO4.6**: Culture and sustainable tourism	No interaction found	N
Interreg Specific Objective 1: A better cooperation governance	Legal and administrative cooperation and cooperation between citizens, civil society actors and institutions	No interaction found	N
	Institutional capacity to implement macro-regional, sea-basin and other territorial strategies	No interaction found	N

V.1.d Water

The EU Water Framework Directive (2000/60/EC) is the cornerstone of EU's water legislation. The purpose of this Directive is to establish a framework for the protection of surface waters and groundwater. It sets a number of objectives to meet 'good status' for all waters by 2015. The Directive also requires Member States to establish river basin management.

Developed in response to the requirements of Article 17 of the Water Framework Directive, the Groundwater Directive (2006/118/EC) is designed to specifically prevent and combat groundwater pollution.

The 'new' Bathing Water Directive 2006/7/EC replaced the former Directive 76/160/EC. It applies to surface waters that can be used for bathing except for swimming pools and spa pools, confined waters subject to treatment or used for therapeutic purposes and confined waters artificially separated from surface water and groundwater.
The new Directive is intended to:

- Be based on scientific knowledge on protecting health and the environment, as well as environmental management experience;
- Provide better and earlier information of citizens about quality of their bathing waters, including logos;
- Move from simple sampling and monitoring of bathing waters to bathing quality management;
- Be integrated into all other EU measures protecting the quality of all our waters (rivers, lakes, ground waters and coastal waters) through the Water Framework Directive.

Other European regulations have an indirect impact on water bodies such as the Nitrates Directive (91/676/EEC), which aims at reducing nitrate and organic matter pollution from agricultural land, but also the Urban Waste Water Treatment Directive (91/271/EEC) aimed at reducing pollution from sewage treatment works and certain industries, the Integrated Pollution Prevention and Control Directive IPPC (96/61/EEC) aimed at controlling and preventing the pollution of water by industry and the Drinking Water Directive (98/83/EC).

Policy Objectives	Specific Objectives	Interaction with the policy	Coherence results
Policy Objective 1: A smarter Europe	**SO1.1:** Research and innovation	No interaction found	N
	SO1.4: Skills for smart specialisation, industrial transition and entrepreneurship	No interaction found	N
Policy Objective 2: A greener Europe	**SO2.4:** Climate change adaptation and disaster risk prevention	No interaction found	N
	SO2.7: Protection of nature and biodiversity and reducing pollution	This SO act in the direction delineated by the EU Water Framework Directive	S/O
Policy Objective 3: A more connected Europe	**SO3.2:** National, regional, local and cross-border mobility	No interaction found	N
Policy Objective 4: A more social Europe	**SO4.6**: Culture and sustainable tourism	No interaction found	N
Interreg Specific Objective 1: A better cooperation governance	Legal and administrative cooperation and cooperation between citizens, civil society actors and institutions	No interaction found	N
	Institutional capacity to implement macro-regional, sea-basin and other territorial strategies	No interaction found	N

V.1.e Marine ecosystem

The United Nations Decade of Ocean Science for Sustainable Development (2021-2030), declared on 5 December 2017, aims to support efforts to reverse the cycle of decline in ocean health and gather ocean stakeholders worldwide behind a common framework that will ensure ocean science

can fully support countries in creating improved conditions for sustainable development of the Ocean.

The Marine Strategy Framework Directive (2008/56/EC) applies to marine waters. It provides a common framework for joined up governance of the marine environment and set the overarching goal of achieving 'Good Environmental Status' (GES) by 2020 across Europe's marine environment. Also here Member States must establish monitoring programmes in order to evaluate on a regular basis the status of their marine waters. Linked to this Directive, the 'New Bathing Water Directive' (2006/7/EC) concerning the management of bathing water quality provides a more proactive approach to informing the public about water quality using quality categories for bathing waters from 'poor', to 'excellent'. On 1 September 2010, EU regulation on the criteria and methodological standards on good environmental status of marine waters (2010/477/EC) also recalled the Marine Strategy Framework Directive and presented the criteria to be used by the Member States to assess the extent to which good environmental status is being achieved.

The European Union maritime security strategy (EUMSS) addresses maritime security challenges and aims to foster mutual support between Member States and enable joint security contingency planning, risk management, conflict prevention and crisis response and management. The Framework set strategic objectives to enhance capacity for conflict prevention and crisis response, prevent conflicts and incidents, mitigate risk and protect the EU´s marine environmental status, security at the Union's external borders, as well as critical maritime infrastructure.

The Maritime Spatial Planning (MSP) Directive (2014/89/EC) establishes a framework for maritime spatial planning aimed at promoting the sustainable growth of maritime economies, as well as the sustainable use of marine resources. Within the Integrated Maritime Policy of the European Union, this framework provides for the establishment and implementation of maritime spatial planning, with the aim of contributing to the sustainable development of energy sectors at sea, as well as of maritime transports, fisheries and aquaculture, and at the same time the conservation and protection of the environment, including resilience to climate change. The Directive requires states to develop management plans which identify the spatial and temporal distribution of relevant activities and the relevant uses of their marine waters.

The EU Blue Growth Strategy (COM/2021/240) is the long-term strategy to support sustainable growth in the marine and maritime sectors as a whole. Seas and oceans are drivers for the European economy and have great potential for innovation and growth. It is the maritime contribution to achieving the goals of the Europe 2020 strategy for smart, sustainable and inclusive growth.

The EU regulation on the Common Fisheries Policy (1380/2013/EC) lays down provisions concerning the Common Fisheries Policy (CFP), which covers the following: (a) the conservation of marine biological resources and the management of fisheries and fleets exploiting such resources; (b) in relation to measures on markets and financial measures in support of the implementation of the CFP, fresh water biological resources, aquaculture, and the processing and marketing of fisheries and aquaculture products. The aim of the CFP is to ensure that fishing and aquaculture activities are environmentally sustainable in the long-term and are managed in a way that is consistent with the objectives of achieving economic, social and employment benefits, and of contributing to the availability of food supplies. The Regulations also promotes the fight against IUU fishing activities.

Policy Objectives	Specific Objectives	Interaction with the policy	Coherence results
Policy Objective 1: A smarter Europe	**SO1.1:** Research and innovation	This SO acts in the direction delineated by the EU Blue Growth Strategy	S/O
	SO1.4: Skills for smart specialisation, industrial transition and entrepreneurship	This SO acts in the direction delineated by the EU Blue Growth Strategy	S/O
Policy Objective 2: A greener Europe	**SO2.4:** Climate change adaptation and disaster risk prevention	This SO acts in the direction delineated by the Maritime Spatial Planning Directive	S/O
	SO2.7: Protection of nature and biodiversity and reducing pollution	This SO acts in the direction delineated by the Marine Strategy Framework Directive	S/O
Policy Objective 3: A more connected Europe	**SO3.2:** National, regional, local and cross-border mobility	This SO acts in the direction delineated by the Maritime Spatial Planning Directive	S/O
Policy Objective 4: A more social Europe	**SO4.6**: Culture and sustainable tourism	No interaction found	N
Interreg Specific Objective 1: A better cooperation governance	Legal and administrative cooperation and cooperation between citizens, civil society actors and institutions	No interaction found	N
	Institutional capacity to implement macro-regional, sea-basin and other territorial strategies	In line with the direction delineated by the Marine Strategy Framework Directive	S/O

V.1.f Technological risks

The EU security Union Strategy (COM/2020/605) focuses on build capabilities and capacities to secure a future-proof security environment. It sets out a whole-of-society approach to security that can effectively respond to a rapidly changing threat landscape in a coordinated manner. It defines strategic priorities and the corresponding actions to address digital and physical risks in an integrated manner across the whole Security Union ecosystem, concentrating on where the EU can bring further value.

This strategy lays out 4 strategic priorities for action at EU level:

- A future-proof security environment (including critical infrastructure);
- Tackling evolving threats (including capacity in digital investigation and hybrid threats);
- Protecting Europeans from terrorism and organised crime;
- A strong European security ecosystem (including innovation and information exchange).

Policy Objectives	Specific Objectives	Interaction with the policy	Coherence results
Policy Objective 1: A smarter Europe	**SO1.1:** Research and innovation	This SO act in the direction delineated by the EU security Union Strategy	S/O
	SO1.4: Skills for smart specialisation, industrial transition and entrepreneurship	This SO act in the direction delineated by the EU security Union Strategy	S/O
Policy Objective 2: A greener Europe	**SO2.4:** Climate change adaptation and disaster risk prevention	No interaction found	N
	SO2.7: Protection of nature and biodiversity and reducing pollution	No interaction found	N
Policy Objective 3: A more connected Europe	**SO3.2:** National, regional, local and cross-border mobility	No interaction found	N
Policy Objective 4: A more social Europe	**SO4.6**: Culture and sustainable tourism	No interaction found	N
Interreg Specific Objective 1: A better cooperation governance	Legal and administrative cooperation and cooperation between citizens, civil society actors and institutions	No interaction found	N
	Institutional capacity to implement macro-regional, sea-basin and other territorial strategies	No interaction found	N

V.1.g Energy

On 11 December 2018, the Commission adopted Regulation (EU) 2018/1999 on the governance of the energy union and climate action, as part of the Clean energy for all Europeans package. The Regulation set targets involving:

1. Energy efficiency, a revised target of energy use for 2030 of 32.5%, and a roadmap for renovation of the national stock of residential and non-residential buildings, both public and private;

2. Renewable energy, an ambitious new target of at least 32% in renewable energy by 2030, with specific provisions to foster public and private investment;

3. National Energy and Climate Plans (NECPs), a new energy rulebook and country-specific recommendations to achieve the 2030 targets on energy efficiency and renewable energy. The national plans should also include objectives and funding targets for public and, where available, private research and innovation relating to the Energy Union;

4. Consumers, strengthened consumer rights and new rules for individuals to produce, store or sell their own energy easily;

5. Internal Energy Market, new laws that will increase electricity interconnectivity. On energy security, the regulation aims to guarantee the security of supply by helping integrate renewables into the grid.

The Clean energy for all Europeans (COM/2016/860) is composed of eight proposals to facilitate the transition to a 'clean energy economy' and to reform the design and operation of the European Union's electricity market. This bumper package of proposals can be grouped into three categories: proposals amending existing energy market legislation; proposals amending existing climate change legislation; and proposals for new measures.

Policy Objectives	Specific Objectives	Interaction with the policy	Coherence results
Policy Objective 1: A smarter Europe	**SO1.1:** Research and innovation	No interaction found	N
	SO1.4: Skills for smart specialisation, industrial transition and entrepreneurship	This SO act in the direction delineated by the Clean energy for all Europeans	S/O
Policy Objective 2: A greener Europe	**SO2.4:** Climate change adaptation and disaster risk prevention	This SO act in the direction delineated by the Clean energy for all Europeans	S/O
	SO2.7: Protection of nature and biodiversity and reducing pollution	No interaction found	N
Policy Objective 3: A more connected Europe	**SO3.2:** National, regional, local and cross-border mobility	No interaction found	N
Policy Objective 4: A more social Europe	**SO4.6**: Culture and sustainable tourism	No interaction found	N
Interreg Specific Objective 1: A better cooperation governance	Legal and administrative cooperation and cooperation between citizens, civil society actors and institutions	In line with the direction delineated by the regulation on the governance of the energy union and climate action	S/O
	Institutional capacity to implement macro-regional, sea-basin and other territorial strategies	No interaction found	N

V.1.h Human health

One of the basic documents at EU level for Human Health is the Health Strategy 'Together for Health' adopted in 2007. While this health strategy was initially developed for the period 2008 –

2013, the principles and objectives as defined in the strategy remain valid up to now and are aligned with the overall Europe 2020 Strategy. The objectives of the strategy are:

- Objective 1 – Fostering good health in an ageing Europe;
- Objective 2 – Protecting citizens from health threats;
- Objective 3 – Supporting dynamic health systems and new technologies.

The White Paper also sets out a number of cross-cutting principles such as solidarity, citizen participation in policy making and the need to reduce inequities in health, to promote investment in health, to mainstream health in all policies, and to strengthen the EU's voice in Global Health.

Policy Objectives	Specific Objectives	Interaction with the policy	Coherence results
Policy Objective 1: A smarter Europe	**SO1.1:** Research and innovation	This SO act in the direction delineated by the Health Strategy 'Together for Health'	S/O
	SO1.4: Skills for smart specialisation, industrial transition and entrepreneurship	No interaction found	N
Policy Objective 2: A greener Europe	**SO2.4:** Climate change adaptation and disaster risk prevention	No interaction found	N
	SO2.7: Protection of nature and biodiversity and reducing pollution	No interaction found	N
Policy Objective 3: A more connected Europe	**SO3.2:** National, regional, local and cross-border mobility	No interaction found	N
Policy Objective 4: A more social Europe	**SO4.6**: Culture and sustainable tourism	No interaction found	N
Interreg Specific Objective 1: A better cooperation governance	Legal and administrative cooperation and cooperation between citizens, civil society actors and institutions	No interaction found	N
	Institutional capacity to implement macro-regional, sea-basin and other territorial strategies	No interaction found	N

V.1.i Waste

Waste Framework Directive (2008/98/EC) lays down some basic waste management principles. It requires that waste be managed:

- without endangering human health and harming the environment;
- without risk to water, air, soil, plants or animals;

- without causing a nuisance through noise or odours;
- without adversely affecting the countryside or places of special interest.

To comply with the objectives of this Directive, EU countries shall take the necessary measures to achieve the following targets:

- by 2020, the preparing for re-use and the recycling of waste materials (such as paper, metal, plastic and glass) from households shall be increased to a minimum of overall 50 % by weight
- by 2020, the preparing for re-use, recycling and other material recovery, including backfilling operations using waste to substitute other materials, of non-hazardous construction and demolition waste shall be increased to a minimum of 70 % by weight
- by 2025, the preparing for re-use and the recycling of municipal waste shall be increased to a minimum of 55 %, 60% and 65% by weight by 2025, 2030 and 2035 respectively

The new Circular Economy Action Plan (COM (2020) 98) contributes to restore biodiversity and natural capital in Europe, by promoting circular economy. The Action Plan aims to ensure the sustainability of renewable bio-based materials and develop an Integrated Nutrient Management Plan, with a view to stimulating the markets for recovered nutrients. The main priorities of the Plan concern:

1. Designing sustainable products, addressing the presence of hazardous chemicals in products, and increasing their energy and resource efficiency, and reducing (over)packaging and packaging waste, including by setting targets and other waste prevention measures;

2. Combatting environmental crime notably in the areas of illegal exports and illicit trafficking, strengthen controls of shipments of waste, and improve the sustainable management of waste in third countries;

3. Reducing carbon and environmental footprints, by developing modelling tools to capture the benefits of the circular economy on greenhouse gas emission reduction at EU and national levels;

4. Empowering consumers and public buyers, incentivising product-as-a-service or other models where producers keep ownership of the product or responsibility for its performance throughout its lifecycle;

5. Mobilising the potential of digitalisation of product information, including solutions such as digital passports, tagging and watermarks.

Policy Objectives	Specific Objectives	Interaction with the policy	Coherence results
Policy Objective 1: A smarter Europe	**SO1.1:** Research and innovation	This SO act in the direction delineated by the Waste Framework Directive	S/O
	SO1.4: Skills for smart specialisation, industrial transition and entrepreneurship	This SO act in the direction delineated by the Waste Framework Directive and the new Circular Economy Action Plan	S/O
Policy Objective 2: A greener Europe	**SO2.4:** Climate change adaptation and disaster risk prevention	No interaction found	N
	SO2.7: Protection of nature and biodiversity and reducing pollution	This SO act in the direction delineated by the new Circular Economy Action Plan	S/O
Policy Objective 3: A more connected Europe	**SO3.2:** National, regional, local and cross-border mobility	No interaction found	N
Policy Objective 4: A more social Europe	**SO4.6**: Culture and sustainable tourism	No interaction found	N
Interreg Specific Objective 1: A better cooperation governance	Legal and administrative cooperation and cooperation between citizens, civil society actors and institutions	No interaction found	N
	Institutional capacity to implement macro-regional, sea-basin and other territorial strategies	No interaction found	N

V.1.1 Climate change

At European level a comprehensive package of policy measures to reduce greenhouse gas emissions has been initiated through the European Climate Change Programme (ECCP) launched in 2000. The goal of the ECCP is to identify and develop all the necessary elements of an EU strategy to implement the Kyoto Protocol.

In 2013, the Commission adopted an EU Adaptation Strategy (COM (2013) 216) with the aim to anticipating the adverse effects of climate change and taking appropriate action to prevent or minimise the damage they can cause. It promotes adaptation in key vulnerable sectors such as agriculture, fisheries and cohesion policy.

The European Green Deal (COM(2019) 640) has the following objectives:

- Increasing the EU's climate ambition, in order to achieve climate neutrality by 2050
- Promoting digital technologies, boosting the efficient use of resources by moving to a clean, circular economy and decarbonizing the energy sector.

The EU decision on a General Union Environment Action Programme to 2030 (the 8th Environment Action Programme, COM 2020/652/EC), with its long-term vision and environmental priority objectives it shares with the Green Deal, will support the EU's common commitment to a green recovery. In particular, the overarching aim of the 8th Environment Action Programme is to accelerate the Union's transition to a climate-neutral, resource-efficient clean and circular economy in a just and inclusive way and achieve the environmental objectives of the United Nations' Agenda 2030 and its Sustainable Development Goals, fully endorsing the environmental and climate objectives of the European Green Deal.

The European climate law (COM/2020/80 and Regulation (EU) 2021/1119) aims to establish the framework for achieving EU climate neutrality. The main objectives are:

- Set the long-term direction of travel for meeting the 2050 climate-neutrality objective through all policies, in a socially fair and cost-efficient manner
- Create a system for monitoring progress and take further action if needed
- Provide predictability for investors and other economic actors
- Ensure that the transition to climate neutrality is irreversible

The Commission proposes a legally binding target of net zero greenhouse gas emissions by 2050, through the 2030 Climate Target Plan. With the 2030 Climate Target Plan, the Commission proposes to raise the EU's ambition on reducing greenhouse gas emissions to at least 55% below 1990 levels by 2030.

The Directive on the assessment and management of flood risks (2007/60/EC) entered into force on 26 November 2007 and requires Member States to assess if all water courses and coast lines are at risk from flooding by 2011, to map the flood extent and assets and humans at risk in these areas and to take adequate and coordinated measures. In particular, Member States would need to draw

up flood risk maps by 2013, by establishing flood risk management plans focused on prevention, protection and preparedness by 2015. The Directive applies to inland waters as well as all coastal waters across the whole territory of the EU. The Directive shall be carried out in coordination with the Water Framework Directive, notably by flood risk management plans and river basin management plans being coordinated, and through coordination of the public participation procedures in the preparation of these plans. Member States shall furthermore coordinate their flood risk management practices in shared river basins, including with third counties, and shall in solidarity not undertake measures that would increase the flood risk in neighbouring countries. Member States shall in take into consideration long term developments, including climate change, as well as sustainable land use practices in the flood risk management cycle addressed in this Directive.

Policy Objectives	Specific Objectives	Interaction with the policy	Coherence results
Policy Objective 1: A smarter Europe	**SO1.1:** Research and innovation	No interaction found	N
	SO1.4: Skills for smart specialisation, industrial transition and entrepreneurship	This SO acts in the direction delineated by the European Green Deal	S/O
Policy Objective 2: A greener Europe	**SO2.4:** Climate change adaptation and disaster risk prevention	This SO acts in the direction delineated by the EU Adaptation Strategy and the European Climate Law and Green Deal	S/O
	SO2.7: Protection of nature and biodiversity and reducing pollution	No interaction found	N
Policy Objective 3: A more connected Europe	**SO3.2:** National, regional, local and cross-border mobility	No interaction found	N
Policy Objective 4: A more social Europe	**SO4.6**: Culture and sustainable tourism	No interaction found	N
Interreg Specific Objective 1: A better cooperation governance	Legal and administrative cooperation and cooperation between citizens, civil society actors and institutions	In line with the direction delineated by the Directive on the assessment and management of flood risks	S/O
	Institutional capacity to implement macro-regional, sea-basin and other territorial strategies	No interaction found	N

4.1.m Synthesis of the coherence of the Programme with policies at European level

Analysis of the draft CBC Programme revealed that Priority Axis (PAs), Specific Objectives (SOs) and associated actions address a high number of environmental issues. These include climate change monitoring and adaptation, safeguard from natural and manmade disasters, environment and culture heritage protection and valorisation, biodiversity protection, marine water quality, air quality and

eco-innovation related to European legislation and strategies adopted during the last ten years in the European Union (see sections above).
Furthermore, some proposed actions have more than one environmental thematic reference. The proposal covers a large number of key economic sectors in the cooperation area with significant environmental impact including transport systems, maritime infrastructure and shipping, and SMEs.
The strategy delineated by the CP well match with the policies and strategies drafted at European and international level on environmental and sustainability issues.

V.2 COHERENCE WITH STRATEGIC POLICIES FOR THE COOPERATION AREA

V.2.a Cross-border level relevant strategies on environmental issues

EU Strategy for the Adriatic and Ionian Region (EUSAIR)

The EUSAIR is a strategy focalised on the Region of Adriatic and Ionian SEAs and it covers eight countries: four EU Member States (Croatia, Greece, Italy, Slovenia) and four non-EU countries (Albania, Bosnia and Herzegovina, Montenegro, Serbia). The Communication and Action Plan have been transmitted to the other EU institutions and bodies and will be discussed in the Council during the second semester of 2014 with a view of its endorsement by the European Council before the end of the year. The Strategy incorporates the Maritime Strategy for the Adriatic and Ionian Seas[100], adopted by the Commission on 30 November 2012. The general objective of the new Strategy is to promote economic and social prosperity and growth in the region by improving its attractiveness, competitiveness and connectivity. It should also play an important role in promoting the EU integration of Western Balkans. The Action Plan indicates the four pillars of the strategy, each with its own specific objectives:

- Blue Growth:

- Promotion of research, innovation and business opportunities in blue economy sectors;

- Adaptation to sustainable seafood production and consumption;

- Improvement of sea basin governance;

- Connecting the Region
- Strengthening of maritime safety and security and development of a competitive regional intermodal port system;

- Development of reliable transport networks and intermodal connections with the hinterland, both for freight and passengers;

- Achievement of a well-interconnected and well-functioning internal energy market.

[100] It will use the existing resources, legislation and structures to foster cross-border partnerships and prioritise objectives around which local, regional and national actors can be mobilised to turn the priorities of the Europe 2020 Strategy into targeted actions.

- Environmental Quality

- Ensuring a good environmental and ecological status of the marine and coastal environment by 2020;

- Contribution to the goal of the EU Biodiversity Strategy to halt the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, and restore them in so far as feasible;

- Improvement of waste management by reducing waste flows to the sea and, to reduce nutrient flows and other pollutants to the rivers and the sea.

- Sustainable Tourism

- Diversification of tourism offer (products and services);

- Sustainable and responsible tourism management (innovation and quality).

Strategic Programme for Mediterranean forests (SPMF)

This Programme was approved in 2013 and includes nine Strategic Lines:

- Improve sustainable production of goods and services by Mediterranean forests

- Enhance the role of Mediterranean forests in rural development

- Promote forest governance and land tenure reforms at landscape level

- Promote wildfire prevention in the context of global changes

- Manage forest genetic resources and biodiversity to enhance adaptation of Mediterranean forest to climate change

- Restore degraded Mediterranean forest landscapes

- Develop knowledge, training and communication on Mediterranean forests

- Reinforce international cooperation
- Adapt existing financial schemes and develop innovative mechanisms to support implementation of forest policies and programmes[101].

The Mediterranean Action Plan (MAP) — Barcelona Convention System works with Contracting Parties and partners to fulfil the vision of a healthy Mediterranean Sea and Coast that underpin sustainable development in the region. MAP was established in 1975 as a multilateral environmental

[101] http://iii-med.forestweek.org/content/strategic-framework-mediterranean-forests-sfmf

agreement in the context of the Regional Seas Programme of the United Nations Environment Programme (UNEP). Mediterranean countries and the European Community approved MAP as the institutional framework for cooperation in addressing common challenges of marine environmental degradation. Under the auspices of UNEP/MAP, a framework convention dedicated to the Protection of the Mediterranean Sea against Pollution was adopted in 1976 and amended two decades later to encompass the key concepts adopted at the landmark 1992 Rio Conference and to include coasts in its scope. The Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention) was adopted in 1995.

The Mediterranean Strategy for Sustainable Development (MSSD) 2016-2025, adopted by all Mediterranean countries at the 19th Meeting of the Contracting Parties to the Barcelona Convention (COP 19) in Athens, from 9-12 February 2016 (Decision IG.22/2), provides a policy framework to translate the 2030 Agenda for Sustainable Development and the SDGs at regional, sub-regional, national and local levels in the Mediterranean region. The strategic objectives are:

- Ensure sustainable development in marine and coastal areas by protecting them from the exploitation of un-sustainable open ocean resource;

- Promote resource management, food production and food security through sustainable rural development and the sustainable use, management and conservation of natural resources and ecosystems;

- Plan and manage sustainable Mediterranean cities by enhancing urban resilience to reduce vulnerability to risks from natural and human-induced hazards including climate change;

- Face climate change as a priority by increasing scientific knowledge, raising awareness, and developing technical capacities;

- Foster the transition towards a green and blue economy by encouraging environmentally friendly and social innovation;

- Improve governance in support of sustainable development, by enhancing regional, sub-regional and cross-border dialogue and cooperation and promoting the engagement of stakeholders (civil society, scientists, local communities) in the governance process at all levels.

Policy Objectives	Specific Objectives	Interaction with the policy	Coherence results
Policy Objective 1: A smarter Europe	**SO1.1:** Research and innovation	This SO act in the direction delineated by EUSAIR – Pillar 1.	S/O
	SO1.4: Skills for smart specialisation, industrial transition and entrepreneurship	This SO act in the direction delineated by EUSAIR – Pillar 1 and by the Mediterranean Strategy for Sustainable Development	S/O
Policy Objective 2: A greener Europe	**SO2.4:** Climate change adaptation and disaster risk prevention	This SO acts in the direction delineated by the SPMF	S/O
	SO2.7: Protection of nature and biodiversity and reducing pollution	This SO act in the direction delineated by EUSAIR – Pillar 3	S/O
Policy Objective 3: A more connected Europe	**SO3.2:** National, regional, local and cross-border mobility	This SO act in the direction delineated by EUSAIR – Pillar 2.	S/O
Policy Objective 4: A more social Europe	**SO4.6**: Culture and sustainable tourism	This SO act in the direction delineated by EUSAIR – Pillar 4.	S/O
Interreg Specific Objective 1: A better cooperation governance	Legal and administrative cooperation and cooperation between citizens, civil society actors and institutions	No interaction found	N
	Institutional capacity to implement macro-regional, sea-basin and other territorial strategies	In line with the direction delineated by EUSAIR – Pillar 1.	S/O

Table 22: Programme coherence with the sustainable development goals under Agenda 2030 (Legend: S/O = Coherent, N = Neutral)

UN Sustainable Development Goals	SO(i) Research/innovation	SO (iii) Cross-border mobility	SO(ii) Climate change	SO(vi) Sustainable tourism	SO(ii) Biodiversity	ISO(vi) Governance	Comment on intersection
GOAL 1: No Poverty	N	N	N	N	N	N	Even if no interaction was found, better governance could help address priorities such as poverty.
GOAL 2: Zero Hunger	N	N	N	N	N	N	Even if no interaction was found, a better waste management system plays a crucial role in the circular economy model, as it is strictly interconnected with production and consumption patterns.
GOAL 3: Good Health and Well-being	S/O	N	N	N	N	N	Accelerating innovation and technology transfer may help to increase good health and promoting prevention means better risk management and ensuring good health and quality of life for people.
GOAL 4: Quality Education	N	N	N	N	N	N	Even if no interaction was found, better governance could help address priorities such as quality education.
GOAL 5: Gender Equality	N	N	N	N	N	N	Even if no interaction was found, better governance could help to address priorities such as gender equality
GOAL 6: Clean Water and Sanitation	N	N	S/O	N	S/O	N	Promoting the restoration of water polluted environments may help to conserve natural functions of

UN Sustainable Development Goals	SO(i) Research/innovation	SO (iii) Cross-border mobility	SO(ii) Climate change	SO(vi) Sustainable tourism	SO(ii) Biodiversity	ISO(vi) Governance	Comment on intersection
							ground and surface water and protect drinking water supplies
GOAL 7: Affordable and Clean Energy	S/O	N	S/O	N	N	N	Promoting innovation and development potential may help to increase key intervention fields related to blue and green economies, such as clean energy. Moreover, the importance of energy transition may help to face climate change.
GOAL 8: Decent Work and Economic Growth	N	N	N	N	N	N	Even if no interaction was found, research and innovation may help to promote economic growth.
GOAL 9: Industry, Innovation and Infrastructure	S/O	S/O	S/O	N	N	N	Promote social Innovation and creative industries and at the same time finance energy transition, particularly climate-resilient and energy efficient infrastructures and buildings.
GOAL 10: Reduced Inequality	N	N	N	N	N	N	Even if no interaction was found, better governance could help address priorities such as the reduction of inequality.
GOAL 11: Sustainable Cities and Communities	S/O	S/O	N	S/O	N	N	Promoting the transition to a circular, greener and resilient economy may help to create sustainable societies and communities.

UN Sustainable Development Goals	SO(i) Research/innovation	SO (iii) Cross-border mobility	SO(ii) Climate change	SO(vi) Sustainable tourism	SO(ii) Biodiversity	ISO(vi) Governance	Comment on intersection
GOAL 12: Responsible Consumption and Production	S/O	S/O	N	N	N	N	Boost the competitive innovation ecosystem in multiple economy sectors for sustainable consumption and production activities.
GOAL 13: Climate Action	S/O	N	S/O	N	N	N	Promoting climate friendly innovations, social entrepreneurship and entrepreneurship in new sectors and those in transition and answering the central issue of climate change for the future of Mediterranean regions (accelerated warming)
GOAL 14: Life Below Water	N	N	N	N	S/O	N	Promoting the preservation of marine biodiversity and restoration of degraded marine environments
GOAL 15: Life on Land	N	N	S/O	N	S/O	N	Promoting the restoration of freshwater and degraded land, sustainable land use and soil protection and actions that support ecological connectivity of blue and green infrastructures, together with the support to connections between protected areas, including Natura 2000 sites

UN Sustainable Development Goals	SO(i) Research/innovation	SO (iii) Cross-border mobility	SO(ii) Climate change	SO(vi) Sustainable tourism	SO(ii) Biodiversity	ISO(vi) Governance	Comment on intersection
GOAL 16: Peace and Justice Strong Institutions	N	N	N	N	N	N	Even if no interaction was found, better governance could help to address priorities such as peace and justice and strong institutions
GOAL 17: Partnerships to achieve the Goal	N	N	N	N	N	S/O	Implementing mainstreaming strategies in local, regional, national and European policies in partnership with institutional coordination projects to improve coordination of specific policies at transnational level

V.2.b Croatian principal strategies on environmental issues

The Strategy and Action Plan for the Protection of Biological and Landscape Diversity (SAPPBLD)

Adopted on 28 November 2008, the Strategy and Action Plan for the Protection of Biological and Landscape Diversity is Croatia's main document for nature protection. It lays down general strategic objectives and guidelines for preserving biological and landscape diversity. This text was prepared pursuant to Article 151 of the Nature Protection Act[102]. The Strategic Objectives of the Strategy are:

- Conserve overall biological, landscape and geological diversity as an underlying value and potential for further development of the Republic of Croatia;
- Meet all obligations arising from the process of integration into the European Union and alignment of the national legislation with the relevant EU directives and regulations (Habitats Directive, Birds Directive, CITES Regulations);
- Fulfil the obligations arising from international treaties in the field of nature protection, biosafety, access to information, etc.;
- Ensure integral nature protection through co-operation with other sectors;
- Establish and evaluate the state of the biological, landscape and geological diversity, set up a nature protection information system with a database connected to the state's information system;
- Encourage promotion of institutional and non-institutional ways to educate the public about biodiversity, and improve public participation in decision-making processes;
- Develop legislation implementation mechanisms by strengthening legislative and institutional capacities, education, development of scientific resources, information, and the development of funding mechanisms.

Emphasising the lack of sufficient information on biodiversity, the Strategy name the most urgent issues face by Croatia i.e. the excessive exploitation of natural resources, the introduction of alien species into ecological systems, the construction of infrastructures leading to habitat loss and fragmentation, agricultural activities, environmental pollution, urbanisation and global climate change.

Strategy for Sustainable Development (SSD)

Adopted on 20 February 2009, the Strategy for Sustainable Development is Croatia's main document for long term economic and social development as well as environmental protection. It lays down guidelines for long term actions, sets basic objectives and measures and identifies key challenges. Strategy's aims include:

[102] Nature Protection Act, (OG 70/05)

- Reducing the loss of marine and coastal biodiversity and expanding protected areas;
- Increasing protection of sensitive aquatic and water-dependent ecosystems as well as marine and coastal ecosystems;
- Regulating transboundary water system pollution that leads to the pollution of marine ecosystems;
- Ensuring 12% of the average energy consumption and 21% of the electrical energy consumption from renewable sources;
- Redirecting transport from roads to more environmentally acceptable systems - sea, inland waterways, railway and short sea shipping;
- Increasing investments in the modernisation and development of the port infrastructure and standards for maritime safety and protection against pollution.

Achievement of the Strategy' objectives are linked to some preconditions, to which research and development as well as mitigation to climate change.

The Regional Development Act (Official Gazette 153/09) lays down the obligation for regional self-government units to draft County Development Strategies. The development strategy is a planning document of regional development policy, which defines the development priorities and strategic goals within the County, which are of interest for its sustainable socioeconomic development, in line with the national strategy on regional development. Furthermore, the counties draft strategies for sustainable energy use, which give a detailed analysis of the current energy situation in the county concerning the use of renewable energy and energy efficiency, and conceives the future of the county energy sector based on the principles of sustainability, environmental production, energy efficiency and the use of Renewable Energy Sources.

National Energy Strategy (NES)

The Energy Strategy is Croatia's main document on energy and climate change related issues. Adopted in 2002 pursuant to Article 80 of the Constitution of the Republic of Croatia and Article 5(3) of the Energy Act[103], the Strategy has been updated in 2009 to define the development of the Croatian Energy sector until 2020. This document set the path for a security of energy supply, for a competitive energy system and for a sustainable energy sector development in Croatia.

National energy and climate plan

The Integrated National Energy and Climate Plan for the period 2021-2030 builds on existing national strategies and plans. It provides an overview of the current energy system and the energy and climate policy. It also provides an overview of the national targets for each of the five key

[103] Constitution of the Republic of Croatia and Energy Act (OG 68/01, 177/04, 76/07, 152/08)

dimensions of the Energy Union and the appropriate policies and measures to achieve those targets, for which an analytical basis should be established. In the Integrated Energy and Climate Plan, particular attention should be paid to the targets to be achieved by 2030, which include the reduction in greenhouse gas emissions. energy from renewable sources, energy efficiency and electricity interconnection.

- The national contribution for renewable energy proposed in the draft plan is set at an ambitious share of 36.4% of energy from renewable sources in gross final consumption of energy in 2030;

- Croatia's 2030 target for greenhouse gas (GHG) emissions not covered by the EU Emissions Trading System (non-ETS), is -7% compared to 2005, as set in the Effort Sharing Regulation (ESR) and is at least 43% for the Emissions Trading System (ETS) sector;

- The interconnection level of Croatia exceeds the 15% EU level aimed for 2030 and further interconnectors with neighbouring states are considered as part of Croatia's role as an important link between electricity systems of Central and South East Europe in the development of the internal energy market.

National Strategy of Maritime Development and Integrated Maritime Policy 2014-2020 (SMDIMP)

The Strategy was approved by the Croatian government on July 2014, and defines the development goals through 2020, including positioning Croatia as one of the most important nautical destinations in Europe and the Mediterranean. The strategy's objectives are to increase Croatia's sustainable development and competitiveness in maritime affairs, in the areas of shipping and boating services, port infrastructure and services, and maritime and merchant marine education, and to achieve a secure and ecologically sustainable maritime area. The strategy is divided into five distinct areas: Shipping/Nautical Services, Security and Ecological Maritime Transport, Improving Administrative and Public Services Capacity, Improve Maritime Knowledge, Education and Culture, Implementation & Financing.

Climate Change Adaptation Strategy

The Adaptation Strategy is a fundamental, crucial document which establishes a framework for implementing all climate change adaptation measures at the level of the Republic of Croatia and provides vision and guidelines for the development of climate change adaptation up to 2040 with a view of 2070. The Strategy aims at:

- reducing the vulnerability of social and natural systems to negative effects of climate change, i.e. strengthening their resilience to change and ability to recover from the effects of these changes;

- gathering all relevant institutional, political, economic and social stakeholders in order to create strong support for joint actions when implementing adaptation measures;

- integrating the adaptation process, including the implementation of measures, into existing and new policies, programmes, plans and other strategic activities carried out at national and local levels of governing;

- implementing and promoting scientific research in all vulnerable sectors in order to reduce the degree of uncertainty associated with the effects of climate change significantly;

- raising the level of awareness of the importance of climate change and the inevitability of the adaptation process in decision-makers, in the public and in the wider circle of citizens, who are also the main beneficiaries of the positive effects of the process of adaptation to climate change.

Draft Action Plan for Implementing the Strategy on Adaptation to Climate Change

The Action Plan was drafted following the guidelines of the Strategy on Adaptation to Climate Change. The Action Plan contains priority measures derived from Strategy on Adaptation to Climate Change for the next five years period, i.e. from 2019 to 2023. This document contains defined measures by key (vulnerable) sectors. A total of 83 climate change adaptation measures are defined for all the sectors. The measures are divided into five groups, and each group is provided with the cost estimation and sources of funding.

Waste management plan of the Republic of Croatia for the period 2017-2022

The Croatian Government adopted the Waste Management Plan for the 2017-2022 period. The Plan regulates the collection and recycling of municipal waste and introduces measures for separate waste collection at its source and incentives for composting of waste at the household and local level. Some of the most important measures are the incentives for separating paper, cardboard, metal, glass, plastic and biodegradable waste. The Plan also envisages incentives for home and municipal composting and support waste streams monitoring and a series of educational and informative measures.

Policy Objectives	Specific Objectives	Interaction with the policy	Coherence results
Policy Objective 1: A smarter Europe	**SO1.1:** Research and innovation	The SO act in the direction delineated by the SSD	S/O
	SO1.4: Skills for smart specialisation, industrial transition and entrepreneurship	The SO act in the direction delineated by the SSD	S/O
Policy Objective 2: A greener Europe	**SO2.4:** Climate change adaptation and disaster risk prevention	The SO act in the direction delineated by the NES	S/O
	SO2.7: Protection of nature and biodiversity and reducing pollution	This SO contributes to SAPPBLD and SSD objectives	S/O
Policy Objective 3: A more connected Europe	**SO3.2:** National, regional, local and cross-border mobility	The SO act in the direction delineated by the SSD	S/O
Policy Objective 4: A more social Europe	**SO4.6**: Culture and sustainable tourism	No interaction found	N
Interreg Specific Objective 1: A better cooperation governance	Legal and administrative cooperation and cooperation between citizens, civil society actors and institutions	No interaction found	N
	Institutional capacity to implement macro-regional, sea-basin and other territorial strategies	In line with the direction delineated by the SSD, by the NES and by SMDIMP	S/O

V.2.c Italian principal strategies on environmental issues

National Recovery and Resilience Plan

The Plan is part of the Next Generation EU programme, namely the € 750 billion package that the European Union negotiated in response to the pandemic crisis. The Plan is developed around three strategic axes shared at a European level: digitisation and innovation, ecological transition, and social

inclusion. It is an intervention that aims at repairing the economic and social damage caused by the pandemic crisis, contributing to addressing the structural weaknesses of the Italian economy, and leading the country along a path of ecological and environmental transition. The Plan will substantially contribute to reducing territorial, generational and gender gaps. The Green Revolution and Ecological Transition' allocates a total of € 68.6 billion with the main goals of improving the sustainability and resilience of the economic system and ensuring a fair and inclusive environmental transition.

National Strategy for Biodiversity (NSB)

The development of a National Strategy for Biodiversity is part of the commitment undertaken by Italy after the ratification of the Convention for Biological Diversity (CBD, Rio de Janeiro 1992) by means of law No. 124 of February 1994. The Strategy will be implemented from 2011 to 2020. The Strategic Objectives of the Strategy are:

1-By 2020 ensure the conservation of biodiversity or the variety of living organisms, their genetic diversity and the ecological complexes of which they are part, and ensure the protection and restoration of ecosystem services in order to guarantee their key role for life on Earth and human well-being

2-By 2020 substantially reduce the nationwide impact of climate change on biodiversity by defining the appropriate measures to adapt to climate change and mitigate their effects and increasing the resilience of natural and semi-natural ecosystems and habitats

3-By 2020 integrate biodiversity conservation into economic and sectorial policies, also as potential for new employment opportunities and social development while improving the understanding of the benefits from ecosystem services derived from biodiversity and the awareness of the costs of losing them.

The working areas of the Strategy are: species habitats and landscape, protected areas, genetic resources, agriculture, forests, inland waters, marine environment, infrastructures and transportation, urban areas, health, energy, tourism, research and innovation, education information communication and participation, Italy and global biodiversity.

National Sustainable Development Strategy 2017/2030 (NSDS)

Italy's 2017 National Sustainable Development Strategy (NSDS) provides a long-term vision for SDG implementation and balances long- and short-term objectives. The NSDS provides for concrete activities on the five dimensions of the 2030 Agenda: 'People, Planet, Prosperity, Peace and Partnership' as well as a set of 'sustainability vectors' – crosscutting, transversal areas of action that are essential to guiding, managing and monitoring the integration of the SDGs into national policies, plans and projects. It also identifies a knowledge-based approach, improved data collection and management, as well as data analysis as crucial for identifying cross-sectoral policy interactions, addressing trade-offs and harnessing synergies.

National energy and climate plan

The plan is intended to contribute to a wide-ranging transformation of the economy. In this, the combination of decarbonisation, the circular economy, efficiency and the rational and fair use of natural resources represent objectives and instruments for an economy that is more respectful of people and the environment. The general objectives of the National energy and climate plan sought by Italy are essentially the following.

a) Accelerate the decarbonisation process by setting 2030 as an interim milestone for achieving full decarbonisation of the energy sector by 2050;

b) Place a central emphasis on citizens and businesses (in particular SMEs);

c) Adopt measures to improve the capacity of renewables;

d) Promote energy efficiency across all sectors;

e) Promote electrification of consumption, in particular in the civil and transport sectors;

f) Guide the evolution of the energy system through research and innovation activities;

g) Reduce the potential negative impacts of energy transition on other equally relevant objectives, such as the quality of air and bodies of water, the limitation of soil consumption and landscape protection;

h) Continue the process for integrating the national energy system with the energy union.

Italian National Air Pollution Control Programme

To improve air quality and reduce health impacts, the National Emission Ceilings (NEC) Directive requires Member States of to provide National Air Pollution Control Programmes, including emission reduction measures aimed to achieve binding commitments for the years 2020 and 2030. The Directive was transposed into Italian national law by National Law No 81 of 30 May 2018. On March 2019 Italy developed the National Air Pollution Control Programme, which provide an overview of the international, EU and national context in which the programmes under the NEC Directive are developed, describes the emission reduction measures identified to achieve the objectives of the NEC Directive and identify the responsibilities for drafting and implementing the programme.

River basin district management plans

Italy has 8 river basin districts (RBDs) (Eastern Alps, Po, Northern Apennines, Central Apennines, Southern Apennines, Sardinia, Sicily, Serchio), out of which 2 are international sharing water courses with France to the west, Switzerland and Austria to the north and Slovenia to the east. River Basin Management Plans include the risk assessment from natural damage due to floods (DHE). This assessment estimates the probability of occurrence of natural and social damages related to DHE. In order to assess the levels of risk related to floods, riparian corridors that are defined and

protected by the basin management plans usually have a prominent role. Local, regional or global actions can be put in practice in order to mitigate the existing impacts after the river basin has been studied from a holistic point of view. With this approach, the River Basin Authorities coordinate multidisciplinary projects aimed at understanding of the ecological functioning of the river, evaluation of the ecological impacts of human activities on instream and riverine habitats and establishing guidelines and suggestions for river restoration and rehabilitation. Under the Floods Directive, Italy's Flood Risk Management Plans were prepared at RBD level and, with greater detail, at the level of individual UoMs within the RBDs.

National strategy of adaptation to climate change (NSACC)

It is being drafted recently in Italy. On 12 December 2013 a document for public consultation was published. On 16 Jun 2015, the Strategy was approved (DD n. 86). The objective of this document is to provide a framework for adaptation to the impacts of climate change and lay the foundations for a collective process in order to:

- Improve knowledge on climate change and its impacts;

- Describe the opportunities that may be associated, the vulnerability of the area, the adaptation options for all natural systems and the socio-economic risks;

- Promote participation and support awareness and education activities on adaptation through extensive communication activities on the possible risks and opportunities posed by climate change;

- Identify the best options for adaptation actions, coordinate and define the responsibilities for implementation, develop and implement the measures[104].

The Marine Strategy (MaS)

The Framework Directive 2008/56 / EC on the strategy for the marine environment was transposed in Italy through National Law n. 190 of 13 October 2010. The Directive aims to achieve by 2020 the GES (GES 'Good Environmental Status') for its marine waters. The Good Environmental Status implies:

- Conservation of the ecosystems and healthy, clean and productive marine waters

- Sustainable use of the Marine Resources

- Integrated approach and cooperation between States

Code of the cultural and landscape heritage

The code of the cultural and landscape heritage, approved by National Law no. 42 of 22 January

[104] Elementi per una Strategia Nazionale di Adattamento ai Cambiamenti Climatici- Documento per la Consultazione Pubblica, p. 3 , 12 September 2013

2004, said that the cultural heritage should be protected in accordance with the powers set out in article 117 of the Constitution. The protection and enhancement of the cultural heritage may help to preserve the memory of the national community and its territory and to promote the development of culture. The State, the Regions, the Metropolitan Areas, the Provinces and Municipalities shall ensure and sustain the conservation of the cultural heritage and foster its public enjoyment and enhancement. Other public bodies shall, in carrying out their activities, ensure the conservation and the public enjoyment of their cultural heritage. Private owners, possessors or holders of property belonging to the cultural heritage must ensure its conservation.

Policy Objectives	Specific Objectives	Interaction with the policy	Coherence results
Policy Objective 1: A smarter Europe	**SO1.1:** Research and innovation	The SO act in the direction delineated by the NSB (Strategic Objectives 3)	S/O
	SO1.4: Skills for smart specialisation, industrial transition and entrepreneurship	The SO act in the direction delineated by the SSD	S/O
Policy Objective 2: A greener Europe	**SO2.4:** Climate change adaptation and disaster risk prevention	The SO act in the direction delineated by the NSB (Strategic Objectives 2) and by NSACC	S/O
	SO2.7: Protection of nature and biodiversity and reducing pollution	The SO act in the direction delineated by the NSB (Strategic Objectives 1)	S/O
Policy Objective 3: A more connected Europe	**SO3.2:** National, regional, local and cross-border mobility	The SO act in the direction delineated by the SSD	S/O
Policy Objective 4: A more social Europe	**SO4.6**: Culture and sustainable tourism	The SO act in the direction of the Code of the cultural and landscape heritage	S/O
Interreg Specific Objective 1: A better cooperation governance	Legal and administrative cooperation and cooperation between citizens, civil society actors and institutions	In line with the direction delineated by the SSD	S/O
	Institutional capacity to implement macro-regional, sea-basin and other territorial strategies	In line with the direction delineated by the MaS	S/O

V.2.d Result of the coherence analysis at cooperation level

The following table presents a synthesis of the previous individual analysis at a CBC and MS level. It describes the relation between the specific strategies or plans addressing the main environmental issues at different levels and the Priority Axes of the CBC Programme. Therefore, these

Strategies/Plans might be in synergy with the priority axes or there might be a neutral relation since they do not address explicitly any objectives of the Priority Axes of the Programme.

The external coherence analysis demonstrated that the Italy-Croatia Programme is very coherent with other strategies implemented at European, national and cross-border levels in both MS. More in detail, the strategies are coherent at 44% and neutral at 56% with the policy objectives of the programme.

Legend:
S/O: Coherent
N: Neutral

Environmental topic	LEVEL	DOCUMENT	P0 1 – A smarter Europe	Po 2 – A greener Europe	P0 3 –A more connected Europe	P0 4 –A more social Europe	Interreg Specific Objective 1: A better cooperation governance	Strategic environmental priorities for CBC area
Inland Ecosystem	CBC	Strategic Framework on Mediterranean Forest	N	S/O	N	N	N	-Restore degraded ecosystems and their associated services -Protect and preserve the diversity of species -Integrate biodiversity conservation into economic and other sectorial policies -Halt the loss of Biodiversity by 2030
		EUSAIR	N	S/O	S/O	S/O	S/O	
	HR	The Strategy and Action Plan for the Protection of Biological and Landscape Diversity	N	S/O	N	S/O	N	
	IT	National Strategy for Biodiversity	S/O	S/O	S/O	S/O	S/O	
		National Recovery and Resilience Plan	S/O	S/O	N	S/O	N	
Energy	CBC	EUSAIR	S/O	N	N	N	N	-Achievement of a well-interconnected and well-functioning internal energy market -Sustainable energy sector -Adopt measures to improve the capacity of renewables -Promote energy efficiency, in particular in the civil and transport sectors
	HR	National Energy Strategy (NES)	S/O	S/O	S/O	N	S/O	
	IT	National energy and climate plan	S/O	S/O	S/O	N	S/O	

								-Guide the evolution of the energy system through research and innovation activities
Climate change	CBC	EUSAIR	N	S/O	N	N	N	-Mitigation and adaptation to expected climate changes -Coordinate and define the responsibilities for implementation of adaptation actions -Promote nature-based solution for climate change challenges -Promote adaptation in key vulnerable sectors -Reduce GHG emissions
	HR	Climate Change Adaptation Strategy	S/O	N	S/O	N	S/O	
	IT	A National Strategy to Climate Change	N	S/O	S/O	S/O	N	
Air quality	CBC	EUSAIR	S/O	N	N	S/O	N	- Reduce emissions into the atmosphere - Ensure ongoing improvements in air quality to avoid damage to heritage, natural ecosystems and agricultural crops - Obtain levels of air quality that do not give rise to significant negative impacts on, and risks to human health and to environment
	HR	Strategy for Sustainable Development	S/O	N	N	N	N	
	IT	National Strategy for Sustainable Development	S/O	N	N	N	N	
		Italian National Air Pollution Control Programme	S/O	N	N	N	N	
Water quality and supply	CBC	EUSAIR	N	N	N	S/O	N	- Monitoring of water resources - Reduce nitrate and organic matter pollution from agricultural land - Awareness raising
	HR	Strategy for Sustainable Development	N	N	N	N	N	

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	IT	Water Management Plans	N	S/O	N	N	N	- Minimise the pollution and hazards in the water - Reduce the rate of water related diseases
Marine Ecosystems	CBC	EUSAIR	N	S/O	N	S/O	S/O	Prevent further deterioration, protect and improve the state of the coasts and terrestrial and wetland ecosystems that depend directly on aquatic ecosystems.
	HR	Strategy for Sustainable Development	N	S/O	N	S/O	S/O	- Promote a sustainable use of Marine Resources - obtain a good environmental and ecological status of the marine and coastal environment by 2020
	IT	Strategy for Marine Environment	N	S/O	N	S/O	S/O	
Landscape and natural and cultural heritage	CBC	Pan-European Biological and Landscape Diversity Strategy (PEBLDS)	N	N	N	S/O	N	- Raise awareness on the protection of the natural and cultural environment - Preservation and restoration of cultural and aesthetic values of the natural landscape
		The European Landscape Convention	N	N	N	S/O	N	- protection, management and planning of European landscapes
	HR	National Strategy and Action Plan for the Protection of Biological and Landscape Diversity	N	S/O	N	S/O	N	- Protection and promotion of the cultural heritage - Enhancement of cultural heritage

	IT	Code of Cultural Heritage and Landscape	N	N	N	S/O	N	

VI. ENVIRONMENTAL PROTECTION OBJECTIVES

According to the SEA directive, the Environment Report takes account of '*the environmental protection objectives, established at international, Community or Member State level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation*'.

The selection of environmental objectives for the CBC Programme has been based on the Coherence Analysis in Chapter 4. This analysis highlighted environmental priorities for the cooperation area, in accordance with international, European and national levels. A preliminary list of environmental objectives was presented in the scoping report for consultation with the EAs. Suggestions received during the consultation have been integrated in the final lists. The objectives have been aggregated by environmental theme and are presented in table 23. The environmental objectives are the basis for the assessment of possible effect (see Chapter 7). According to the Context Analysis (Chapter 3) and the Coherence Analysis (Chapters 4 and 5), some environmental objectives are a priority for the cooperation area (second column table 23). This will be considered in attributing the significance of environmental effects in the further assessment phase.

The environmental objectives are cross-sectoral and included in the issues related to agriculture, tourism, industry, energy and transport.

Table 23: Environmental issues and general environmental objectives

Environmental issues	Priority	Topic	General environmental objectives
Climate change and associate risks	X	Mitigation	Reduce GHG emissions at least by 55% below 1990 levels by 2030
	X	Adaptation	Reduce heat wave risks
			Reduce hydrogeological risk
			Reduce fires risk
	X		Reduce risks linked to coastal erosion
Air quality		Air pollution	Improve air quality
Water quality and supply		Water quality	Improve or maintain underground, surface and bathing water quality
		Water use	Reduce pressures on fresh water
Inland biodiversity and terrestrial ecosystem		Biodiversity	Protect and preserve the diversity of species

Environmental issues	Priority	Topic	General environmental objectives
		Ecosystem	Restore degraded ecosystems and their associated services
Biodiversity and marine Ecosystem	X	Marine biodiversity	Protect and preserve the diversity of species and marine habitat
	X	Marine ecosystems	Improve or maintain costal water quality
			Restore degraded ecosystems and their associated ecosystems services
			Reduce the pressures on natural resources
Soil quality and management		Soil quality	Remediate contaminated soils and lands
		Soil management	Improve efficiency in soil and land management
			Reduce land use, fragmentation and artificialisation
Technological risks		Risks prevention	Prevent technological risks from industries and shipping
Health and Sanitary risks and nuisances		Human health protection	Reduce exposure to pollutants in urban areas and its effect on health
			Reduce exposure of the population to noise levels
Natural and cultural heritage and Landscape		Landscape and cultural heritage	Preserve, conserve and valorise landscape and natural and cultural heritage
Energy		Renewable	Promote renewable energies
		Efficiency	Improve energy efficiency
Waste management		Production	Reduce waste production
		Recycling	Promote recycling and reuse

PART III – ENVIRONMENTAL EFFECTS ANALYSIS

VII. LIKELY SIGNIFICANT EFFECTS ON THE ENVIRONMENT

VII.1 METHODOLOGY FOR ASSESSMENT

The SEA Directive requires the evaluation of likely significant effects on the environment of interventions implemented by the Programme. The evaluation must consider direct and indirect impacts, their probability and scale, frequency, duration and reversibility, the cumulative nature of their effects and their cross-border dimension[105].

Evidence from the past programming period (see chapter 1, section 1.2) and experience from other Programmes with an ETC objective show that many expected effects (direct or indirect) of the Programme should be 'intangible' (i.e. without significant energy or material associated flows), and contingent to other events not under the control of the Programme (see chapter 1, section 1.2)[106]. In addition, their size, frequency and locality are often unknown, while their duration may be long-term (beyond the programming period) or short term (within the two-year project timeline).

The analysis has three main steps:

- Firstly, the environmental objectives in Table 23 are matched with the planned Interreg Programme specific objectives and eligible activities. Based on Table 23, specific objectives with a potential effect are recognised by an 'X', while unknown effects are marked by '?' and 'no effects' ('n.e.') indicates the absence of likely environmental effects[107].
- Secondly, the SEA experts combine the previous table with an estimate of intensity using the scale in Table 24. 'Very significant effects' is assigned only to interventions such as infrastructure or investments with a significant financial allocation.

[105] Directive 2001/42/EC Annex II (2)
[106] For example: the environmental effects of planning or networking depend on future investments, changes in behaviour or in the policy background.
[107] '?': some planned actions could have indirect impacts that are difficult to estimate including innovation or R&D projects that could have environmental effects depending on many factors, such as technology, market conditions or implementation, unknown at the beginning of the program. 'n.e' is used when actions are deemed to have no environmental effects, such as communication to the public or capacity building.

Table 24: Scale for effects

Positive effects	***Scale to measure the intensity of the effects***	**Negative effects**
++	Very significant effects	--
+	Significant effects	-
n.s.	No significant effects	n.s.
?	Unknown effect	?
n.e.	No interaction with the environmental component/objective	n.e.

Legend:

++ = very significant positive effects; -- = very significant negative effects
+ = significant positive effects; - = significant negative effects
ne = no effects; n.s. = no significant effects; ? = unknown effect

- Thirdly, the information is organised to assess the cumulative and cross-border effects of each specific objective. The cumulative impacts are ordered by environmental theme and evaluated considering the relationships leading to an impact on that theme. Cumulative impacts are also analysed, on a qualitative basis, considering the other plans and programmes in the cooperation area and affecting the same environmental component. The single effects will be weighted by their contribution to the environmental theme, to obtain an overall significance of the cumulative effect.

VII.2 ENVIRONMENTAL EFFECTS

Policy objective 1 – A smarter Europe

SO1.1 'Developing and enhancing research and innovation capacities and the uptake of advanced technologies', as well as SO1.4 'Developing skills for smart specialisation, industrial transition and entrepreneurship', aim to enhance the conditions for innovation in the cooperation area by supporting cooperation between research and business players in the blue economy, the circular economy, the ITC sectors. Sos include also actions planned in the regional Smart Specialisation Strategies (S3) dealing with cross-border cooperation.

Actions in SO 1.1 include feasibility studies, applied research, ITC services and research mobility. Action 3 (challenge 01) covering the circular economy and the blue economy has a clear environmental contribution, with expected direct and indirect positive effects on natural resource management, through the improvement of energy efficiency, GHG emissions, waste reduction, less water consumption and reduction of soil pollution. Positive effects are also expected on human health and management of technological risks.

Actions 1 and 3 (challenge 01) should contribute to the maritime environmental objectives, in terms of coastal water quality and pressure on marine resources. However, considering the nature of the actions, most of the expected impacts should be reversible, local and non-certain (because to be effective they need other investments or interventions). These impacts would be not significant. Action 2 (challenge 01), encouraging synergies with the LIFE programme, also has a potential positive contribution to environmental objectives, nevertheless the content of the intervention is unclear at this stage.

Other actions, such as 4 and 5 (challenge 01) and 1 and 2 (challenges 02), have no defined environmental content, making them difficult to assess at this stage. There may be negative effects from these actions on the use of natural resources (energy, waste, water and soil) and environmental quality (air and water quality).

		Impacts		
Actions	**Nature of intervention**	**Direct and indirect**	**Targeted environmental sector**	**Environmental objective**
Challenge 01 action 1: Supporting joint industrial (pre-) feasibility studies for new products applications and territorial/marine monitoring systems	Soft	X	Terrestrial/maritime	Marine resources and ecosystems
Challenge 01 action 2: Promoting synergies with other ETC Programmes, Horizon Europe and LIFE to facilitate the engagement of relevant innovation players	Soft	X	Life projects	?
Challenge 01 action 3: Promoting applied research and technological transfer through stronger cross-border collaboration among quadruple helix actors, especially in blue economy sectors,	Soft	X	Blue economy and circular economy	Energy, water, waste, air quality, marine resources, human heath, and risk management

circular economy practices and digitalisation				
Challenge 01 action 4: Providing ICT services and web/cloud facilities for private companies to jointly improve access to research and advanced technology	Soft	?	No contribution	-
Challenge 01 action 5: Promoting a cross-border innovation ecosystem through long-term cooperation agreements among quadruple helix stakeholders	Soft	?	No contribution	-
Challenge 02 action 1: Facilitating cross-border mobility of researchers through cooperation agreements among Italian and Croatian institutions for shared research scholarships	Soft	?	No contribution	-
Challenge 02 action 2: Implementing joint research on emerging market needs and new business opportunities, mainly in blue economy sectors, fostering the attraction of public/private investments and increasing the number of private sector researchers	Soft	?	Blue economy	Marine resources, human heath, and risk management

Actions under SO 1.4 promote experience sharing, networking between key stakeholders, training, competence, skills and dissemination activities in the cooperation area. The sectors targeted, including circular economy and blue economy, and the potential impacts are similar to SO 1.1; many actions have no clear environmental effect. It worth noting the support for collaboration with creative/cultural industries in action 1 (challenge 06), suggesting potential positive effects for cultural heritage preservation and valorisation.

		Impacts		
Actions	**Nature of intervention**	**Direct and indirect**	**Targeted environmental sector**	**Environmental objective**
Challenge 06 action 1 (result 2): Enhancing entrepreneurial capacities to foster innovation in products and processes, also through collaboration with cultural/ creative industries and new sustainable technologies/ circular economy approach	Soft	X	Cultural/creative industry	Natural and cultural heritage
Challenge 06 action 2 (result 2): Building or reinforcing transformation and digitalisation skills of SMEs and their networks, to boost innovation mainly in blue economy sectors and adopting circular economy practices	Soft	X	Circular, blue economy	Energy, water, waste, air quality, marine resources, human heath, and risk management
Challenge 06 action 1 (result 3): Developing and consolidating entrepreneurial skills for internationalisation and the capacity to attract foreign investments and/or jointly promote products and services in international markets	Soft	n.e	No contribution	-
Challenge 06 action 2 (result 3):	Soft	n.e	No contribution	-

Supporting SMEs to develop skills to access market intelligence services exploring emerging opportunities and to develop innovative business concepts to comply with international market needs				
Challenge 07 action 1 (result 1): Fostering new cross-border knowledge hubs to stimulate dialogue and increase cooperation in common areas of expertise of smart specialisation strategies	Soft	n.e	No contribution	-
Challenge 07 action 2 (result 1): Fostering the diffusion of new approaches to use technology and applied research for transformative change in SMEs	Soft	n.e	No contribution	-
Challenge 07 action 1 (result 2): Supporting cross-border initiatives, training programmes and mutual learning (know-how and best practices) to qualify human capital and to improve entrepreneurial skills in common smart specialisation domains, with special focus on blue and green skills, ICT skills and digital transition	Soft	X	Blue and green skills	Transversal
Challenge 07 action 1 (result 2): Boost entrepreneurial skills of graduates to facilitate their entry into the labour market and the added value in innovation and smart specialisation capacities for the private companies they join	Soft	n.e	No contribution	-

Both the Sos do not directly cover adaptation to climate change, inland biodiversity, or air pollution and industrial risks. Considering the broad definition of these interventions, indirect effects are not excluded (for example increased competences, skills or awareness in these sectors) but are largely unknown and unlikely at this stage.

Policy Objective 2 – A greener Europe

SO2.4 'Promoting climate change adaptation and disaster risk prevention, and resilience, taking into account the eco-system-based approach' supports actions to improve adaptation to climate change in the cooperation area. The SO includes sharing experience and good practices, applied research, development of monitoring and early warning systems, training, planning and decision support tools, capacity building and awareness activities. These actions are expected to bring direct positive effects on climate change adaptation capacity (in terms of flood control and coastal erosion management), as well as on the cultural and natural heritage protection objective, in maritime and terrestrial areas. Most of the actions are 'soft' and knowledge based, contingent, and not local, limiting impacts. Few interventions are planned for small scale infrastructures, with potentially significant impacts at local level. At this stage the type of infrastructure is not known and the nature of the impact uncertain. Considering the priority of addressing climate change in all its dimensions in the cooperation area, the impacts under this SO are considered to be significant.

		Impact		
Actions	**Nature of intervention**	**Direct and indirect**	**Targeted environmental sector**	**Environmental objective**
Challenge 12 action 1 (result 1):	Soft	X	UN 2030 Agenda for	Transversal

Promoting cooperation between public authorities, research institutions and private companies to take advantage of new scientific results and multidisciplinary research to improve observation of climate change effects and plan and define related adaptation strategies in line with the 2030 Agenda for Sustainable Development and the European Green Deal			Sustainable development and European Green Deal	
Challenge 12 action 2 (result 1): Studying and testing integrated climate-adaptation solutions for different domains/target groups of population and enhancing the definition of common datasets on atmospheric parameters for climate analysis and impact assessment or improving the usability of existing ones	Soft	X	Climate-adaptation solutions for domains/target groups	Climate change and associate risks
Challenge 12 action 3 (result 1): Exchanging good practices to monitor, manage, mitigate and support adaptation to climate change effects on the most relevant economic sectors	Soft	X	Adaptation to climate change effects	Climate change and associate risks
Challenge 12 action 1 (result 2): Encouraging the development or capitalisation of data gathering tools (i.e. sensors, web-based platforms) and small-scale infrastructure for observing climate change effects, especially where cross-border monitoring systems are absent	Small infrastructure	X	Sensors, web-based platforms and small-scale infrastructure	Climate change and associate risks
Challenge 12 action 2 (result 2): Promoting networking and exchanges to define common indicators and increase the usability of existing databases	Soft	X	Common indicators	Climate change and associate risks
Challenge 12 action 1 (result 3): Developing training courses for policy makers and general service providers on topics linked to climate change and its consequences in order to better design new policies and promoting workshops/seminars on new sustainable and adaptive climate smart models	Soft	X	Climate smart models	Climate change and associate risks
Challenge 12 action 2 (result 3): Integrated cross-border community-based initiatives fostering active awareness about anthropogenic changes on local ecosystems and related adaptation measures	Soft	X	Local ecosystems and related adaptation measures	Climate change and associate risks; terrestrial and marine ecosystems
Challenge 12 action 3 (result 3): Student and teacher exchanges aimed at developing common projects on climate change adaptation	Soft	X	Projects on climate change adaptation	Climate change and associate risks
Challenge 13 action 1 (result 1): Improving digital competences, fostering the use of new monitoring technologies and tools and reinforcing data exchange to increase safety and risk forecasting capacities	Soft	X	Digital competences	Climate change and associate risks
Challenge 13 action 2 (result 1): Increasing climate resilience of cultural/natural heritage sites developing and implementing disaster risk reduction policies and actions in local and regional development plans	Soft	X	Cultural/natural heritage sites	Transversal
Challenge 13 action 3 (result 1): Promoting joint tools and standardised procedures to prevent disasters related to economic activities	Soft	n.e	No contribution	-
Challenge 13 action 1 (result 2): Reinforcing cooperation between local authorities and non-governmental organisations to define and apply integrated emergency/rescue plans	Soft	X	Emergency/rescue plans	Climate change and associate risks
Challenge 13 action 2 (result 2): Developing standardised early warning systems, contingency planning and decision support tools (also for uncertainty management processes), especially through new technology and robotics, and financing small scale infrastructure to face natural disasters and other hazards	Small infrastructure	X	Early warning systems	Climate change and associate risks

Challenge 13 action 3 (result 2): Developing cross-border agreements to accelerate mutual supply of goods/equipment to manage the first phases of an emergency/recovery	Soft	n.e	No contribution	-
Challenge 13 action 4 (result 2): Exchange of good practices to increase post disaster management capacity	Soft	X	Post disaster management capacities	Climate change and associate risks

SO2.7 – 'Enhancing protection and preservation of nature, biodiversity and green infrastructure, including in urban areas, and reducing all forms of pollution' is devoted to protecting biodiversity in the cooperation area, increasing environmental awareness and reducing pollution in critical areas. Two thirds of the actions focus on maritime ecosystems, including green ports, aquaculture and fisheries, monitoring, integrated coastal planning and management. Other sectors covered by the SO are the bioeconomy, eco-innovation, tourism and pollution caused by human activities. The SO includes 'soft' actions and small infrastructure. No direct action is planned in Natura 2000 sites.

Positive effects are expected mainly on marine ecosystems, impacts on terrestrial ecosystems are not excluded but would be limited. Actions would have positive direct effects on maritime biodiversity and maritime resources, including water quality, as well as positive indirect effects on natural and cultural heritage and landscapes. The expected impacts on biodiversity are mainly long term and contingent, depending on changes of behaviour, future investments or changes in public policies. The impacts on ecosystems and biodiversity objectives are considered to be significant, considering the priority of addressing biodiversity objectives and pollution in the cooperation areas, and given the connection with climate change adaptation policies.

		Impact		
Actions	**Nature of intervention**	**Direct and indirect**	**Targeted environmental sector**	**Environmental objective**
Challenge 16 action 1 (result 1): Developing homogenous indicators through the exchange and comparison of existing good practices to harmonise data collection and monitoring systems	Soft	X	Data collection and monitoring	Climate change and associate risks
Challenge 16 action 2 (result 1): Setting-up cross-border monitoring systems and shared platforms to assess the status of marine habitats and species (also alien ones) and predict the effects of biodiversity policies on marine ecosystems, as a basis for pollution prevention, mitigation and reduction policies	Soft	X	Biodiversity's policies on marine ecosystem	Marine resources and ecosystems; marine pollution
Challenge 16 action 3 (result 1): Extending the use of digital solutions to evaluate ecosystem services especially in sea basins	Soft	X	Digital solution for ecosystem services	Marine resources and ecosystems
Challenge 16 action 4 (result 1): Providing new tools for the integrated management of sea, coast and river environments and cross-border natural resources (i.e., coordinated MSP and ICM)	Soft	X	Cross-border natural resources	Marine resources and coastal ecosystems
Challenge 16 action 5 (result 1): Developing integrated strategies and instruments and financing small scale infrastructure for biodiversity protection as well as habitat and coastal landscape preservation	Small infrastructure	X	Biodiversity/ habitat and coastal landscape preservation	Marine resources and coastal ecosystems
Challenge 16 action 6 (result 1):	Soft	X	Cross-border protected marine areas	Marine resources and ecosystems

Supporting feasibility studies for cross-border protected marine areas and other area-based conservation measures (OECMs)				
Challenge 16 action 1 (result 2): Implementing training and educational activities to raise awareness among policy makers and general service providers to design strategies more focused on the economic value of a healthy marine environment	Soft	X	Economic value of a healthy environment	Transversal
Challenge 16 action 2 (result 2): Promoting community-based initiatives that combine the regeneration of marine resources with the preservation of local livelihoods	Soft	X	Community-based initiatives	Marine resources and ecosystems
Challenge 16 action 3 (result 2): Promoting information campaigns for responsible tourism to safeguard ecosystems and reduce pollution	Soft	X	Responsible tourism activities	Marine resources and ecosystems; marine pollution
Challenge 16 action 4 (result 2): Developing joint strategies to spread good practices on nature protection, biodiversity and bioeconomy	Soft	X	Good practices on nature protection	Transversal
Challenge 16 action 1 (result 3): Developing and testing innovative and ecological technical solutions to reduce pollution caused by human activities	Soft	X	Ecological technical solutions	Marine resources and ecosystems; marine pollution
Challenge 16 action 2 (result 3): Designing integrated policies aimed at limiting anthropogenic pressure on coastal and inner regions with a specific focus on the promotion of green ports and sustainable fisheries and aquaculture models	Soft	X	Promotion of green ports	Transversal

Policy Objective 3 – A more connected Europe

SO3.2 'Developing and enhancing sustainable, climate resilient, intelligent and intermodal national, regional and local mobility, including improved access to TEN- T and cross-border mobility'. Actions in the SO include sharing experience and good practices, pilot innovative actions, applied research, developing monitoring, planning and actions plans, training and capacity building and awareness activities. The sectors covered are broad, including maritime transport, tourism, logistics and ITC, energy and the circular economy. Small scale infrastructure in ports is also planned but restricted to improving the environmental performance of boarding and disembarking procedures.

Most of the actions directly contribute to environmental objectives. Improving multimodality, developing a circular economy, as well as the use of alternative fuel in shipping, will imply a better use of energy, less waste production, better air quality and improved human health. Most of the actions are 'soft' with limited, contingent and vey local impacts. However, the infrastructure in ports could also lead to negative effects on energy consumption, soil artificialisation and waste production, as well as coastal ecosystems and could add additional pressure on marine resources. However, at this stage large investments in infrastructure are excluded, and actions are eligible only if contributing to sustainable Programme objectives.

		Impact		
Actions	**Nature of intervention**	**Direct and indirect**	**Targeted environmental sector**	**Environmental objective**
Challenge 18 action 1:	Soft	X	Transport networks	Transversal

Setting up common analysis and data exchange on existing connections to define new sustainable solutions for access to ports and the integration of transport networks in port towns				
Challenge 18 action 2: Improving the environmental performance of ports by supporting suitable small-scale infrastructure and innovative equipment/ICT tools, also to improve boarding /disembarking procedures	Small infrastructure	X	Equipment/ICT tools	Transversal
Challenge 18 action 3: Promoting innovative solutions for implementing the circular economy approach in port management	Soft	X	Circular economy	Energy, water, waste, marine resources and risk management
Challenge 18 action 4: Fostering the use of alternative fuels and the diffusion of new ecological transport modes	Soft	X	New ecological transport modes	Energy, transport
Challenge 18 action 5: Developing innovative cross-border strategies, for logistics and mobility solutions interconnecting ports with railways, airports, inland terminals, industrial areas to enhance the processing of passengers and freight	Soft	X	Interconnecting ports	Transport
Challenge 18 action 6: Establishing action plans and common standards to manage physical and cybersecurity for freight and passenger transports also in real time through the use of ICT and web-based tools	Soft	n.e	No contribution	-
Challenge 20 action 1: Exploiting ICT technologies to pilot sustainable, seamless passenger and freight transport solutions and develop new joint models of the multi-modal approach	Pilot	n.e	No contribution	-
Challenge 20 action 2: Designing cross-border strategies for maritime transport (including new maritime lines and interchange nodes) to reduce seasonal road traffic and bottlenecks in coastal and inner areas especially due to tourism	Soft	X	Maritime transport	Energy, transport, tourism
Challenge 20 action 3: Sharing expertise, developing common strategies and 128rganizing training courses for traffic management in coastal and inner areas	Soft	n.e	No contribution	-
Challenge 20 action 4: Promoting joint monitoring and data analysis helping define cross border policies on greener maritime routes and less sea pollution	Soft	X	Greener maritime routes	Marine resources and ecosystems; marine pollution
Challenge 20 action 5: Designing macro-regional cycle routes and testing new services to encourage intermodality (bike and train/ ferry/ tram/ bus/ plane) also considering tourism needs	Soft	X	Inter-modality	Energy, transport, tourism

Policy Objective 4 – A more social Europe

SO 4.6 'Enhancing the role of culture and sustainable tourism in economic development, social inclusion and social innovation'. The SO covers sustainable tourism, as well promoting and conserving material and immaterial cultural heritage in the cooperation area. The supported actions vary widely and include 'soft' interventions and small infrastructure. Actions focus on the supply-

side, and target tourism and culture operators, promoting integrated strategies, sharing experience and know-how, training, networking, ITC support, as well as information campaigns.

For tourism the main objectives are to control and monitor of tourism flows, develop slow mobility and experiential tourism as an alternative mass tourism model. In general, positive effects from sustainable tourism are expected with less pressure on natural resources – water, waste, energy and soil consumption- as well as on natural ecosystems, indirectly, on water and air quality. Positive effects are relevant when there is a clear reduction in the number and concentration of tourists (during the peak season). Increased numbers of tourists could negatively affect the environment, specifically in vulnerable areas (urban and densely populated, protected or classified areas). At this stage, such risk is not totally excluded, though mitigated by actions which promote sustainability.

Actions directly targeting the cultural sector have no relevant environmental effects in general but contribute directly to the preservation and development of natural and cultural heritage, as well as indirectly, along with sustainable tourism, to preservation of the landscape.

		Impact		
Actions	**Nature of intervention**	**Direct and indirect**	**Targeted environmental sector**	**Environmental objective**
Challenge 29 action 1 (result 1): Implementing the results of joint studies, projects and comparative research assessing trends, flows and impacts of tourism on the area, and developing smart and sustainable destination management strategies through the exchange of data, planning tools and digital solutions	Soft	X	Smart and sustainable destination management strategies	Transport, tourism
Challenge 29 action 2 (result 1): Drafting and implementing sustainable development and promotion strategies of tourist destinations and territorial marketing campaigns engaging local stakeholders to diversify the tourism offer also to enhance the potential of peripheral areas	Soft	X	Sustainable development	Transport, tourism
Challenge 29 action 1 (result 2): Encouraging the use of existing sustainable tourism management systems and labels, and financing new cross-border brands and sustainable heritage interpretation	Soft	X	New cross-border brands	Tourism
Challenge 29 action 2 (result 2): Planning cross-border information campaigns and training for administrators and operators on sustainable tourism	Soft	n.e	No contribution	-
Challenge 29 action 3 (result 2): Promote sustainable tourism in peripheral areas through the enhancement of experiential tourism, the diffusion of slow mobility, new routes linked to local specificities and new services provided by cultural and creative industries	Soft	X	Slow mobility and cultural and creative industries	Natural and cultural heritage
Challenge 30 action 1: Designing and testing innovative digital solutions and new technological equipment to interpret and promote coastal and inner area tourism resources also involving the cultural and creative industries	Soft	X	Cultural and creative industries	Natural and cultural heritage
Challenge 30 action 2: Promoting the development of thematic networks such as nautical/ cultural routes, windsurfing/	Soft	X	Thematic networks	Natural and cultural heritage

kitesurfing, fishery traditions, diving and fishing-related tourism				
Challenge 30 action 3: Fostering agreements between tourist operators in coastal and inner areas to set up coordinated and innovative offers and itineraries	Soft	X	Coastal and inner areas	Natural and cultural heritage
Challenge 30 action 4: Designing and creating interpretation centres (e.g. visitors centres, ecomuseum etc.) for joint promotion of transnational routes and products	Soft	X	Transnational routes	Natural and cultural heritage
Challenge 31 action 1 (result 1): Supporting the cross-border exchange of know-how and experience concerning the digitalisation of natural and cultural heritage and implementing joint solutions to innovate cultural fruition (i.e. through artificial intelligence) also to overcome post-COVID constraints	Soft	X	Cultural fruition	Natural and cultural heritage
Challenge 31 action 2 (result 1): Developing integrated strategies (including the provision of small-scale infrastructure and new ICT tools and services) aimed at better monitoring, interpreting and preserving landscapes and cultural resources	Small infrastructure	X	ICT tools and services	Natural and cultural heritage and landscape
Challenge 31 action 3 (result 1): Supporting the joint valorisation of cultural immaterial heritage from the two countries contributing to the sector recovery after the pandemic	Soft	X	Cultural immaterial heritage	Natural and cultural heritage
Challenge 31 action 4 (result 1): Enhance places of culture as multidisciplinary hubs by reinforcing their economic and tourism spill-over effects	Soft	X	Spill-over effects in economic and tourism sectors	Transversal
Challenge 31 action 1 (result 2): Promoting cross-border education and training, also through knowledge exchange, raising skills in the tourism sector, with a focus on landscapes and cultural heritage preservation, sustainable tourism, digitalisation, destination management and heritage interpretation	Soft	X	Skills in the tourism sector	Natural and cultural heritage

Possible environmental effects from IP at Specific Objective level

The generally low IP impacts on the environment are due to the actions mainly being 'soft', related to networking, planning, training and information sharing. Direct investment in infrastructures with significant negative and irreversible effects on the environment are not supported. The table below is designed at SO level based on the analysis at action level. **In some cases, the nature and sign of the 'effect' assigned to the environmental objective can differ from the analysis of single actions**.

Findings:

- Positive and significant effects from Programme actions related to climate change adaptation and ecosystem management;
- Positive and diffuse effects also on energy efficiency, waste and water management as well as air quality;
- Objectives related to soil consumption and human health are addressed less;

- Fire risks, inland water quality, remediation of contaminated soils and renewable energy are not directly addressed by the Programme strategy;
- Unknown effects are mainly concentrated in Sos related to innovation in production, sustainable transport and tourism, where some local and limited negative effects are not excluded; but these do not always emerge at SO level due to aggregation.

Table 25: Synthesis of effects at SO level

Environmental issues	Environmental objectives	SO1.1	SO1.4	SO2.4	SO2.7	SO3.2	SO4.6
Climate change and associate risks	Reduce GHG emissions	n.s	n.s	n.e	n.e	n.s	n.e
	Reduce hydrogeological risk	n.e	n.e	+	n.s	n.e	n.e
	Reduce risks linked to heat waves	n.e	n.e	+	n.s		
	Reduce risks linked to coastal erosion	n.e	n.e	+	n.s	n.e	n.e
	Reduce fire risk	n.e	n.e	?	?	n.e	n.e
Air quality	Improve air quality	n.s.	n.s.	n.e	n.e	n.s.	n.e
Water quality and supply	Improve or maintain underground, surface and bathing water quality	n.e	n.e	n.e	?	n.e	n.e
	Reduce pressures on fresh water	n.s.	n.s.	n.e	n.e	n.e	?
Biodiversity and ecosystem	Restore degraded ecosystems and their associated services	n.e	n.e	n.e	+	n.e	n.e
	Protect and preserve the diversity of species	n.e	n.e	n.s	+	n.e	n.e
Biodiversity and marine Ecosystem	Improve or maintain costal water quality	n.s.	n.s.	n.s	+	?	?
	Protect and preserve the diversity of species and marine habitat	n.e	n.e	n.s	+	?	?
	Restore degraded ecosystems and their associated ecosystems services	n.e	n.e	n.s	+	?	?
	Reduce pressures on natural resources	n.s.	n.s.	n.s	+	?	?
Soil quality and use	Remediate contaminated soils and lands	n.e.	n.e.	n.e	n.e	n.e	n.e
	Reduce soil consumption	?	?	n.e	n.s.	n.e	n.e
	Improve efficiency in soil and land management	n.e	n.e	?	n.s.	?	n.e
Technological risks	Prevent technological risks from industries and shipping	n.s.	n.s.	n.e	n.e	n.s	n.e
Health and Sanitary risks and nuisances	Reduce exposure to pollutants in urban areas and the effect on health	n.s.	n.s.	n.e	?	n.s	n.e
	Reduce exposure of people to noise	n.e	n.e	n.e	n.e	n.s	n.e
Natural and cultural heritage – Landscape	Preserve landscape and cultural heritage	n.e	n.e	n.s.	n.s.	n.e	?
Energy	Promote renewable energy	n.e	n.e	n.e	n.e	n.e	n.e

Environmental issues	Environmental objectives	SO1.1	SO1.4	SO2.4	SO2.7	SO3.2	SO4.6
	Improve energy efficiency	n.s.	n.s.	n.e	n.e	n.s.	?
Waste management	Reduce waste production	n.s.	n.s.	n.e	n.e	n.s.	?
	Promote recycling and reuse	n.s.	n.s.	n.e	n.e	n.s.	?

The overall contribution of the Programme to environmental objectives is positive and significant. The actions aimed at sustainability in the cooperation area manifest their effects also on environmental issues not directly addressed by their scope (cumulative effect). The contribution from national and regional plans and programmes to the environmental issue is reported at national and regional levels; a complete list of regional plans and programmes found during the scoping phase, is in annex 3.

Climate change and related risks	***Cumulative effect***
	+
Relevance to the cooperation area	
Climate change is of primary importance for the cooperation area, especially adaptation to floods, coastal erosion and sea level rise. All the territories in the Programme are affected by climate change and should adapt their polices to address the issue.	
Cumulative effects	
The effects of the IP on climate change consider first order effects on environmental objectives for climate adaptation and GHG reduction. Effects on energy efficiency and renewable energy are second order as energy consumption is a major cause of GHG emission. Biodiversity and natural resources (both inland and marine), through ecological services, are important for climate change adaptation (second order). Since water quality and management and waste management can contribute to biodiversity defence and ecosystem conservation they are included in the cumulative effect (third order). The resulting cumulative effect is very positive. In addition to the effects directly related to the climate change objective (mainly from SO2.4), a relevant contribution comes from positive effects on natural ecosystems under SO 2.7 but also Sos 1.1 and 1.4.	
Cross-border effects	
Climate change is a classic example of a cross-border issue. Wherever the issue originates its consequences are widely distributed. GHG reduction will have global effects. Climate change impacts common environmental components or areas, with no consideration for man-made boundaries; it is inherently cross-border. So, it is crucial to contemplate objectives to adapt using cooperation instruments.	
Other plans and programmes addressing climate change at national and regional levels	
Other plans and programmes contributing to climate change mitigation and risk management in the cooperation area and in synergy with the IP are: EUSAIR, Italian National Plan of Adaptation to Climate Change, Italian National Integrated Plan for Energy and Climate 2030, Croatian Climate Change Adaptation Strategy, Italian regional flood risk management plans and regional mitigation and adaptation strategies for climate change.	

Inland and Marine ecosystems	*Cumulative effect*
	+
Relevance to the cooperation area	
The CBC area has a shared marine ecosystem, the Adriatic Sea, on which international and national environmental policies are concentrated. In spite of the peculiarity of its natural resources, the scenario shows several environmental criticalities that endanger the entire ecosystem. The cooperation area has very diverse landscapes and ecosystems, with a high percentage of European habitat and species biodiversity. Nevertheless, tools for cross-border management of natural resources need to be enforced.	
Cumulative effects	
The very significant positive effect on natural resources is mainly on inland biodiversity (SO 2.7). Second order effects are from climate change adaptation (SO2.4) and landscapes that contribute to the maintenance or recovery of natural inland and marine ecosystems.	
Cross-border effects	
This marine ecosystem is cross-border as the Adriatic Sea is physically shared by the two countries. The cross-border nature of inland ecosystems is related to the ecological services they provide. In addition, several sectors, such as tourism, which could affect biodiversity and natural resources, are cross-border. IP promotes coordination in activities and sectors such as innovation and tourism, which strongly influence biodiversity.	
Other plans and programmes addressing ecosystems and biodiversity at national and regional levels	
Other plans and programmes contributing to inland and marine ecosystem protection in the cooperation area and in synergy with the IP are: EUSAIR, Barcelona Convention of United Nations for Mediterranean protection and protocols (UNEP/MAP), Italian Marine Strategy (MaS), Croatian National Strategy of Maritime Development and Integrated Maritime Policy, Italian National Sustainable Development Strategy 2017/2030, Italian National Biodiversity Strategy, Croatian Regional Development Strategy, Croatian Regional Coastal plans, Italian Regional Integrated management plan of coastal areas, Italian Regional Coastal Plans, Italian Regional marine protected areas management and conservation plans (MPA and Natura2000 marine sites), Italian environmental plan of regional/national parks, Italian Regional surveillance plan for the management of the health risk associated with algal blooms.	

Waste and energy	*Cumulative effect*
	+
Relevance to the cooperation area	

Controlling and reducing waste and fossil energy consumption are at the heart of EU strategies for a circular economy, energy packages and the Green Deal. Even if waste collection and processing have generally been upgraded, there is still significant room for improvement. Renewable energy production shows a remarkable increase in CBC countries, but the dependence on fossil energy sources remains high, mainly from the service sector and transport.
Cumulative effects
The contribution of the Programme to the circular and low carbon economy is positive and significant (mainly SO1.1). The circular economy makes a clear environmental contribution, with expected positive effects on natural resource management, through waste reduction. Unknown effects from tourism (SO4.6) are also expected, because even if sustainable tourism reduces waste, more tourists can negatively affect the environment, specifically in vulnerable areas.
Cross-border effects
Waste management and the development of renewable energy is transnational by nature and supported by EU and international policies. Plastic litter is a common issue for the CBC countries.
Other plans and programmes addressing waste and energy at national and regional levels
Other plans and programmes contributing to waste and energy in the cooperation area and in synergy with the IP are: EUSAIR, Croatian Waste management plan of the Republic of Croatia for the period 2017-2022, Italian Regional Urban and Special Waste Management Plan, Italian National energy and climate plan, Croatian National Energy Strategy, Croatian Regional Plans for the use of renewable energy resources, Croatian Regional Energy Efficiency Action Plans, Croatian Regional Action Plan for the development of the circular economy, Italian Regional Energy Plans, Italian Regional Waste Management Plans.

Water	***Cumulative effect***
	n.s
Relevance to the cooperation area	
Water is a strategic resource in the cooperation area. Quality and availability of water differ across CBC area regions.	
Cumulative effects	
Cumulative effects on water are positive but not significant, as they mainly derive from second and third order effects on environmental issues. As underlined in previous sections, the IP does not produce direct significant effects on inland water and the possible reduction of pressure on fresh water from SO 1.1 is counterbalanced by a possible negative effect from tourism increment under SO4.6.	
Cross-border effects	
The geographical distribution of regions and counties in the Programme means physically shared inland water resources (such as joint management of a river basin) are limited. Nevertheless,	

effects on water resources could have large-scale consequences, confirming the transboundary nature of this issue.
Other plans and programmes addressing water management at national and regional levels
Other plans and programmes contributing to water in the cooperation area and in synergy with the IP are: EUSAIR, Italian river basin district management plans, Italian Regional water protection plans, Italian Regional hydrogeological structure plans.

Air	***Cumulative effect***
	n.s.
Relevance to the cooperation area	
Air quality differs though all the CBC area has high emissions, especially of particulates. The critical situations are where the cooperation area is densely populated and has major international communication axes.	
Cumulative effects	
The cumulative effect on air quality is mainly from SO 2.4 as well as Sos 1.1 and 1.4 which contribute to less atmospheric pollutants (first order effect). They also promote GHG reduction, energy efficiency and renewable energy (second order effects). The environmental sustainability of marine and coastal transport pursued by SO 3.2 could contribute positively as well as the reduction of waste production (second order). Inland and marine ecosystems are considered for their mitigation of pollution (second and third order); while there could be some insignificant negative effect from implementation of SO 4.2.	
Cross-border effects	
Obviously, actions focused on a small administrative scale will have local effects, whereas cooperation and networking on, for example, the environmental sustainability of marine and coastal transport, will have real cross-border effects.	
Other plans and programmes addressing air quality at national and regional levels	
Other plans and programmes contributing to air in the cooperation and in synergy with the IP are: European Clean Air Policy Packages, Italian National air pollution control programme, Italian National Strategic Plan for sustainable mobility, Italian Regional Air Quality Plans, Italian Regional transport plans.	

Landscape and Cultural Heritage	*Cumulative effect*
	n.s
Relevance to the cooperation area	
The cooperation area hosts natural and cultural hotspots recognised by UNESCO. The area has landscape fragmentation, due to many built-up areas along the Adriatic coast, and this problem has increased in recent years. Nevertheless, landscape and cultural heritage are a key element for development of the area.	
Cumulative effects	
To preserve landscape and cultural heritage, adaptation measures and actions to tackle natural risks play an important role (second order effects, mainly from SO2.4), which can minimise adverse impacts on heritage assets. Direct effects of IP on preserving landscape and cultural heritage are also considered. Landscape is the exterior form of natural and human systems, so actions to conserve natural ecosystems (SO2.7) will contribute to the quality of the landscape. SO4.6 directly covers sustainable tourism, as well promotion and conservation of material and immaterial cultural heritage in the CBC area. The cumulative effect is positive and significant.	
Cross-border effects	
Landscape and cultural heritage are by definition in particular locations. Nevertheless, they can be affected, also positively, by cross-border activities, primarily tourism. The IP is not focused on cultural heritage, but some recommendations can improve the performance of the Programme during implementation.	
Other plans and programmes addressing landscape and cultural heritage at national and regional levels	
Other plans and programmes contributing to landscape and cultural heritage in the cooperation area and in synergy with the IP are: Agenda for sustainable and competitive European tourism, UNESCO Convention on the Protection of the Underwater Cultural Heritage and for the Safeguarding of the Intangible, UNESCO Recommendation on Historic Urban Landscape, Croatian Strategy and Action Plan for the Protection of Biological and Landscape Diversity, Italian Code of cultural and landscape heritage, Italian Regional landscape plans, Italian Municipal territories regulatory plans.	

Soil	*Cumulative effect*
	n.s.
Relevance to the cooperation area	
The cooperation area has criticality concerning soil, especially soil sealing for urban development, and contamination from industry and agriculture.	

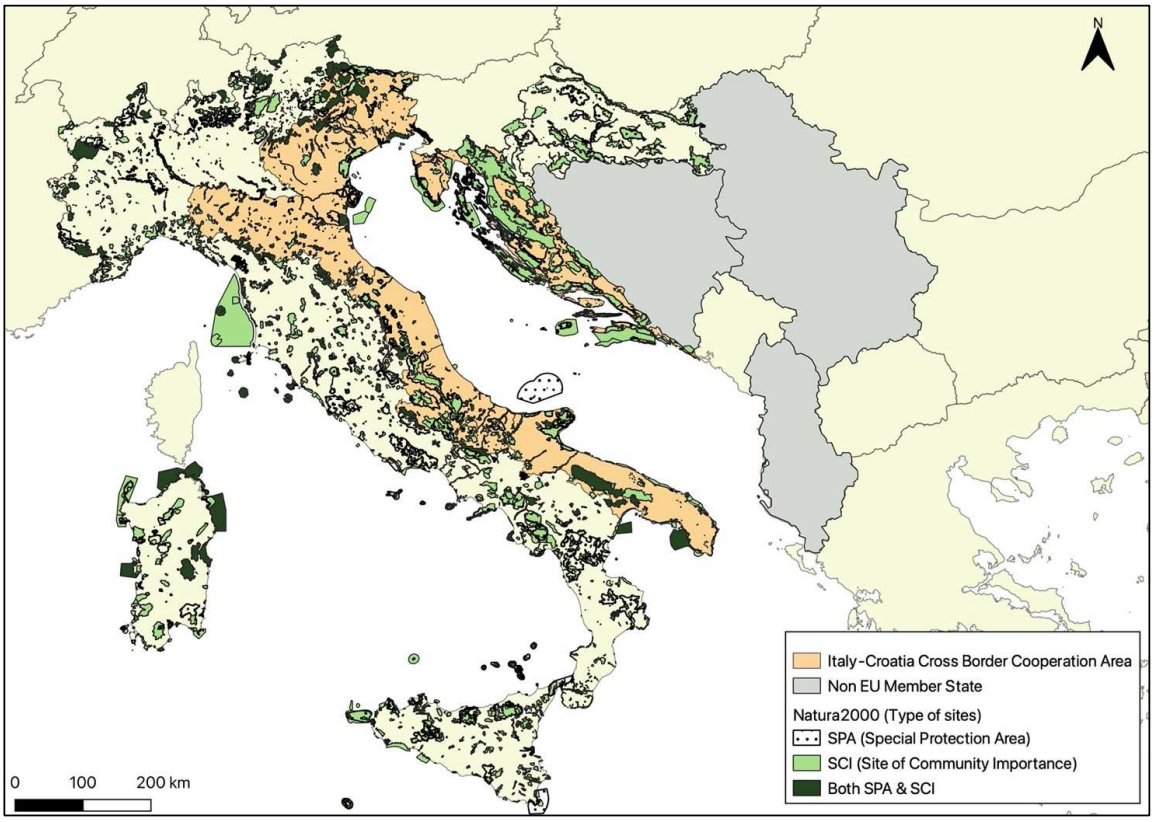
Cumulative effects
The major contributions to a significant positive effect come from SO2.4 and SO2.7 addressing climate change risks and ecosystem restoration (second order). However, no direct effects on soil quality are expected from the IP.
Cross-border effects
Some aspects of soil quality, such as the release of nutrients, are cross-border. In addition, soil is strongly influenced by human cross-border activities, such as agriculture. The IP does not emphasise soil among the objectives. This could be an opportunity, for example by using soil management as an instrument for climate change adaptation.
Other plans and programmes addressing soil and national and regional levels
Other plans and programmes contributing to soil in the cooperation area and in synergy with the IP are: EU Soil Thematic strategy, Strategic Programme for Mediterranean forests, Italian and Croatian Strategy for Sustainable Development, Italian Regional plans for the remediation of contaminated sites.

Health	***Cumulative effect***
	n.s.
Relevance to the cooperation area	
Environmental pollutants significantly affect health in the Programme regions. Even though pollutant emissions have decreased in recent years in each country, hotspots still remain. Population exposed to noise pollution is increasing, especially from vehicle traffic.	
Cumulative effects	
The overall contribution to health issues is positive but not significant, as it is mainly from second and third order effects on related environmental issues. The cumulative effect on health is mainly from SOs 1.1 and 1.4 which contribute to less atmospheric pollutants (first order effect) and SO 3.2 which contributes to sustainable transport.	
Cross-border effects	
Health could be a cross-border issue because it is strongly influenced by environmental quality.	
Other plans and programmes addressing health at national and regional levels	
Other plans and programmes contributing to health in the cooperation area and in synergy with the IP are: European Health Strategy 'Together for Health', Croatian and Italian National Sustainable Development Strategy.	

VII.3 ELEMENTS FOR THE APPROPRIATE ANALYSIS

According to Annex I(d) of the SEA Directive, the assessment should consider '*any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Directives 147/2009/CE and 92/43/EEC*'.
In the environmental report, there is a full description of the cooperation area's environmental resources, highlighting interactions between the environment and the Programme. Section 3.3 also describes natural resources protected by the Natura 2000 network. An overview of the Natura 2000 Network is presented in Figure 27.

Figure 27: Overview of the Natura 2000 Network in the CBC area year 2020 (Source: European Environment Agency. Elaboration: t33)



According to national legislation in the Member States involved in the Programme (such as Italian National Law 152/2006), this section underlines the absence of significant effects the Programme could have on Natura 2000 sites and on habitats and species protected under the Birds Directive and the Habitats Directive.
At this stage of programming, an in-depth assessment is not possible as the Programme covers a broad area and the localisation of its actions is not yet certain as this will be completed after financing of the projects. However, the Programme could present some interactions with Natura 2000 areas, in particular protected habitats.

As a consequence, the analysis has been carried out according to the national guidelines for impact assessment (VIncA)[108]:

1. Analysis of threats and pressures:
   - analysis of priority habitat in the cooperation area;
   - identification of the main threats, pressure and activities which can impact Natura 2000 network sites in the cooperation area;
   - check 'elements of influence' for the Continental and Mediterranean Regions;
   - analysis of species in the cooperation area that need more attention and identification of the main threats;
2. identification of Programme elements that could interact with Natura 2000 Network;
3. analysis of the interaction between habitat aggregations and animal groups and Programme SOs;
4. analysis of possible habitat deterioration and disturbance of species.

Analysis of threats and pressures

As a first step, we identified the protected habitat in the CBC area that could be considered more critical. In the seven Italian regions involved in the CP, there are 29 habitats of interest listed in Directive 93/42/CE[109]. A priority is habitat types in danger of disappearance in the territory and the Community has particular responsibility for their conservation in view of their natural range which is within the territory. In the CBC area there are nine types of priority habitats.

Table 26: Priority habitat types in the CBC territory of Croatia and the seven Italian Regions in the Programme

Priority habitat types (Annex II habitat directive)	Friuli Venezia Giulia	Veneto	Emilia Romagna	Marche	Abruzzo	Molise	Puglia	Croatia
COASTAL AND HALOPHYTIC HABITATS								
11: Open sea and tidal areas								
1120*: Posidonia beds (Posidonion oceanicae)	x	.	.	.	.	.	x	x
1150*: Coastal lagoons	x	x	x	x	.	.	x	x
13 Atlantic and continental salt marshes and salt meadows								
1340*: Inland salt meadows	.	.	x	.	.	.	.	x
15: Salt and gypsum inland steppes								
1510*: Mediterranean salt steppes (Limonietalia)	.	.	.	.	x	x	x	x
COASTAL SAND DUNES AND INLAND DUNES								
21: Sea dunes of the Atlantic, North Sea and Baltic coasts								
2130*: Fixed coastal dunes with herbaceous vegetation ('grey dunes')	x	x	x	.	.	.	.	.
22: Sea dunes of the Mediterranean coast								
2250*: Coastal dunes with Juniperus spp.	x	x	x	.	.	x	x	.
2270*: Wooded dunes with Pinus pinea and/or Pinus pinaster	x	x	x	x	x	x	x	.

108 Understanding, pursuant to article 8 (6), of Law 131, between the Government, the Regions and the Autonomous Provinces of Trento and Bolzano on the National Guidelines for the assessment of impact (VIncA) - Directive 92/43 / EEC 'HABITAT' article 6, paragraphs 3 and 4 (Rep. Acts 195 / CSR). (19A07968) (GU General Series n.303 of 28 December 2019).

109 Manuale Italiano di interpretazione degli habitat della Direttiva 92/43/CEE (http://vnr.unipg.it/habitat/index.jsp).

FRESHWATER HABITATS								
31: Standing water								
3170*: Mediterranean temporary ponds	.	.	x	.	x	x	x	x
TEMPERATE HEATH AND SCRUB								
40: Temperate heath and scrub								
4070*: Bushes with Pinus mugo and Rhododendron hirsutum (Mugo-Rhododendretum hirsuti)	x	x	.	.	x	.	.	x
SCLEROPHYLLOUS SCRUB (MATORRAL)								
52: Mediterranean arborescent matorral								
5230*: Arborescent matorral with Laurus nobilis	.	.	.	x	x	.	x	.
NATURAL AND SEMI-NATURAL GRASSLAND FORMATIONS								
61: Natural grasslands								
6110*: Rupicolous calcareous or basophilic grasslands of the Alysso-Sedionalbi	x	x	x	x	x	x	.	x
62: Semi-natural dry grasslands and scrubland facies								
6210(*): Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	.	x	x	x	x	x	x	x
6220*: Pseudo-steppe with grasses and annuals of the Thero-Brachypodietea	.	.	x	x	x	x	x	x
6230*: Species-rich Nardus grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe)	x	x	x	x	x	.	.	x
RAISED BOGS AND MIRES AND FENS								
71: Sphagnum acid bogs								
7110*: Active raised bogs	x	x	x	.	.	.	.	.
72: Calcareous fens								
7210*: Calcareous fens with Cladium mariscus and species of the Caricion davallianae	x	x	x	x	x	.	x	x
7220*: Petrifying springs with tufa formation (Cratoneurion)	x	x	x	x	x	.	.	.
7240*: Alpine pioneer formations of the Caricion bicoloris-atrofuscae	.	x	.	.	.	.	.	.
ROCKY HABITATS AND CAVES								
8240*: Limestone pavements	x	x	x	.	x	.	.	.
FORESTS								
91: Forests of Temperate Europe								
9180*: Tilio-Acerion forests of slopes, screes and ravines	x	x	x	x	x	x	x	x
91AA*: Eastern white oak woods	.	x	x	x	x	x	x	.
91D0*: Bog woodland	P	x	.	.	.	.	.	.
91E0* : Alluvial forests with Alnus glutinosa and Fraxinus excelsior (AlnoPadion, Alnion incanae, Salicion albae)	x	x	x	x	x	x	.	.
91H0*: Pannonian woods with Quercus pubescens	.	x	.	.	.	.	.	.
92: Mediterranean deciduous forests								
9210*: Apennine beech forests with Taxus and Ilex	.	.	x	x	x	x	x	.

9220*: Apennine beech forests with Abies alba and beech forests with Abiesnebrodensis	.	.	x	x	x	x	x	.
94: Temperate mountainous coniferous forest								
9430(*):Subalpine and montane Pinus uncinata forests (* if on gypsum orlimestone)	.	.	x	.	.	.	.	.
95: Mediterranean and Macaronesian mountainous coniferous forests								
9510*: Southern Apennine Abies alba forests	.	.	.	.	x	x	.	.
9530*: (Sub-) Mediterranean pine forests with endemic black pines	x	x	.	.	x	.	.	x
Total priority habitats	**15 (+ 1)**	**19**	**20**	**14**	**19**	**13**	**14**	**13**

Legend: 'x' habitats present; 'P' habitats probably present.

According to information supplied for Decision 2011/484/EU of the Commission, the main threats, pressure and activities which impact on the nine habitat types in the CBC region are[110]:

- Anthropic disturbance;
- Ecosystem modification;
- Urbanisation;
- Agriculture;
- Mining;
- Renewable energy.

In addition to these threats, literature[111] details major influences on biodiversity for both Continental and Mediterranean Regions. The results are presented in Table 27, which also details the relevance of the element for the CBC area according to the following scale:

- Priority for the whole area: the context or coherence analysis have signalled the issues as relevant or critical for the whole CBC area;
- Priority for hotspots: even if previous analysis has not identified a broad criticality for the issues, there are hotspots in the CBC area where the influence is relevant;
- Not critical: influence is not a priority for the CBC area.

Table 27: Elements of influence for Continental and Mediterranean Regions

Element	Continental Region	Mediterranean Region	Existence for the CBC area
Main influences			
Climate change	X	X	Priority for the whole area
Urbanisation and tourism		X	Priority for hotspots
Economic use of species	X	X	Not critical
Agriculture, including vineyards	X		Priority for hotspots

[110] Genovesi P., Angelini P., Bianchi E., Duprè E., Ercole S., Giacanelli V., Ronchi F., Stoch F., (2014). Specie e habitat di interesse comunitario in Italia: distribuzione, stato di conservazione e trend. ISPRA, Serie Rapporti, 194/2014

[111] Condé, Sophie, et al. (2002). The Continental biogeographical region. European Environment Agency, Copenhagen

Agriculture, with irrigation, grazing and abandonment		X	Priority for hotspots
Forestry	X		Priority for hotspots
Freshwater fishing	X		Not critical
Hunting	X	X	Priority for hotspots
Other important influences			
Infrastructure	X		Priority for hotspots
Intensive use of river	X		Not critical
Contaminants	X	X	Priority for hotspots
Alien Species	X	X	Priority for hotspots
Deforestation, afforestation, forest fire		X	Priority for hotspots
Exploitation of wetlands		X	Not critical

Climate change, as previously underlined, is a key element for the cooperation area, especially in terms of adaptation to its effects. The CP invests resources to contrast climate change effects. Land uses (urbanisation, infrastructure, agriculture, forestry) are distributed differently in the various CBC regions, so they are relevant only for hotspots. Tourism is currently not relevant in the same way for the entire CBC area however the CP includes tourism promotion actions. The same is for the intensive use of rivers (for example in the Po basin), contaminants (see Section **Errore. L'origine riferimento non è stata trovata.** relative to the marine environment) and other elements. The economic use of species, exploitation of wetlands and freshwater fishing do not seem as relevant for the area.

For the analysis of possible interference between the CP and protected fauna, we first identified the most vulnerable species in the CBC area. Between the species listed in the habitat directive and the birds directive, some are also in the IUCN red list (http://www.iucnredlist.org/) that assesses the conservation status of species and identifies the main threats. Species are also protected by legal instruments, such as international conventions. The international conventions and IUCN red lists for species are reported in annex 5. From the conservation status in the table in annex 5, even if 56% of the species are in the least concern (LC) IUCN category, and only 17% vulnerable (VU), the majority of the species (65%) shows an alarming decline in population, while only 9% are increasing and for 12% of the trend is unknown.

Programme elements that could interact with Natura 2000 Network

As described in section 1, actions under the CBC Programme are mainly 'soft'. The following table summarises for each SO, actions and their characteristics (tangible or intangible). Potential negative interactions are in orange, while positive or neutral are in green.

Table 28: Programme interaction with Natura2000 network

Specific Objective	Characteristic*	Type of actions
1.1 - Developing and enhancing research and innovation capacities and the uptake of advanced technologies	I	Networking and knowledge transfer
1.4 - Developing skills for smart specialisation, industrial transition and entrepreneurship	I	Intangible (marked clustering, digitalisation); Networking and knowledge transfer, training
2.4 – Promoting climate change adaptation and disaster risk prevention and resilience, taking into account eco-system based approaches	I/T	Monitoring, networking and knowledge transfer; Planning with early warning and decision-making support systems, financing small scale infrastructure to face natural disasters and other hazards
2.7 – Enhancing protection and preservation of nature, biodiversity and green infrastructure, including in urban areas and reducing all forms of pollution	I/T	Improving monitoring systems, awareness raising and reduction of environmental pollution, financing small scale infrastructure for biodiversity protection and habitats and coastal landscape preservation
3.2 – Developing and enhancing sustainable, climate resilient, intelligent and intermodal national, regional and local mobility, including improved access to TEN-T and cross-border mobility	I/T	Mainly action on sustainable ports and sustainable transport. Tangible actions possible as pilot action are local
4.6 – Enhancing the role of culture and sustainable tourism in economic development, social inclusion and social innovation	I/T	Mainly intangible. Transfer of knowledge, exchanges of experience. Tangible actions for sustainable tourism possible at local level

*Characteristic: T=Tangible; I=Intangible (with no expected material and energy flows)

Interaction between habitats, animal species and Programme SOs

A second step involved an analysis of the interaction between habitat aggregations and Programme SOs, with the results presented in Table 29.

Table 29: Programme interactions with habitats possibly involved in Natura 2000 networks

Habitat aggregation	Priority habitat types in the aggregation	Vulnerability/Threats	Programme interactions
COASTAL AND HALOPHYTIC HABITATS	1120*: Posidonia beds (Posidonion oceanicae) 1150*: Coastal lagoons 1340*: Inland salt meadows 1510*: Mediterranean salt steppes (Limonietalia)	Tourism, yachting, water pollution, water harvesting	SO1.1, SO2.7, SO3.2, S04.6
COASTAL SAND DUNES AND INLAND DUNES	2130*: Fixed coastal dunes with herbaceous vegetation (‘grey dunes’)	Tourism, beach replenishment, anthropic disturbance, urbanisation	SO2.7, SO3.2, SO4.6

	2250*: Coastal dunes with Juniperus spp. 2270*: Wooded dunes with Pinus pinea and/or Pinus pinaster		
FRESHWATER HABITATS	3170*: Mediterranean temporary ponds	Water harvesting, nitrate pollution, intervention on riverbeds, dams	SO1.1, SO2.7
TEMPERATE HEATH AND SCRUB	4070*: Bushes with Pinus mugo and Rhododendron hirsutum (Mugo-Rhododendretum hirsuti)	Only edaphic- climatic factors	SO2.4
SCLEROPHYLLOUS SCRUB (MATORRAL)	5230*: Arborescent matorral with Laurus nobilis	Lacking appropriate management	SO2.4
NATURAL AND SEMI-NATURAL GRASSLAND FORMATIONS	6110*: Rupicolous calcareous or basophilic grasslands of the Alysso-Sedionalbi 6210(*):Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) 6220*: Pseudo-steppe with grasses and annuals of the Thero-Brachypodietea 6230*: Species-rich Nardus grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe)	Lacking traditional use, alien species	SO2.4, SO2.7
RAISED BOGS AND MIRES AND FENS	7110*: Active raised bogs 7210*: Calcareous fens with Cladium mariscus and species of the Caricion davallianae 7220*: Petrifying springs with tufa formation (Cratoneurion) 7240*: Alpine pioneer formations of the Caricion bicoloris-atrofuscae	Water harvesting, nitrate pollution, climate change	SO1.1, SO2.4, SO2.7
ROCKY HABITATS AND CAVES	8240*: Limestone pavements	Low vulnerability. Possible threats from tourism in caves	SO4.6
FORESTS	9180*: Tilio-Acerion forests of slopes, screes and ravine 91AA*: Eastern white oak woods 91D0*: Bog woodland 91E0*: Alluvial forests with Alnus glutinosa and Fraxinus excelsior (AlnoPadion, Alnion incanae, Salicion albae) 91H0*: Pannonian woods with Quercus pubescens 9210*: Apeninne beech forests with Taxus and Ilex 9220*: Apennine beech forests with Abies alba and beech forests with Abiesnebrodensis 9430(*): Subalpine and montane Pinus uncinata	Different threats for the different forest habitat, mainly tourism, water harvesting, new roads construction	SO1.1, SO4.6

	forests (* if on gypsum orlimestone) 9510*: Southern Apennine Abies alba forests 9530*: (Sub-) Mediterranean pine forests with endemic black pines		

The factors that most threaten animal species in the CBC area are the loss or degradation of habitat, mainly due to human disturbance (as direct or induced impacts from inappropriate agricultural and forestry, urbanisation, tourism, etc.).

Threats for group	**Possible interaction with CP**
Insects Insects are threatened by habitat loss (for example floating vegetation loss or deterioration in the riparian vegetation) and human disturbance (tourism, burying wetlands, farming and grazing and coastal urbanisation). To a lesser extent they are also threatened by pollution and invasive alien species.	SO1.1, SO2.7, SO4.6, SO3.2
Fishes Lampetra zanandreai (lone species pertaining to jawless fishes) are threatened by: habitat alteration (hydro morphological alterations caused by pipes, dams and work in the river bed), water withdrawal, water pollution, illegal fishing, competition and predation by introduced species. Cartilaginous fishes are definitely endangered by direct or incidental capture (from both industrial and artisanal fishing) and by the human disturbance (including tourism). To a lesser extent they are affected by loss of habitat and pollution. Bony fishes are threatened by many adversities often anthropogenic, with disturbance and loss of habitat (infrastructure that changes hydro morphology, barriers which fragment species distribution, deterioration of water quality, water catchments, etc.). They are also subject to direct, illegal or accidental exploitation and strongly threatened by invasive alien species (competition or genetic pollution).	SO1.1, SO2.4, SO2.7, SO3.2
Amphibia Amphibia are mainly threatened by habitat loss (e.g., due to water abstraction for agriculture, climate change, forestry practices not taking into account the species), human disturbance and man-made obstacles (e.g. barriers restricting movement); another important threat is mortality due to road traffic but also to intrinsic factors (such as low genetic variability, disease, isolation of populations). To a lesser extent they are also endangered by introduced species, illegal taking for collectors, pollution and natural disasters such as floods.	SO1.1, SO2.4, SO2.7
Birds Bird are endangered by deterioration and loss of nesting, feeding and overwintering habitats, generally due to human activities (mechanised agriculture in nesting areas, changes in agricultural practices, land use changes, forestry practices not taking into account the species, coastal urbanisation, coastal erosion, reduction of sites for nesting in urban areas). Other important threats are exploitation (even illegal or incidental), hunting, pollution by heavy metals and pesticides / herbicides, tourist-recreational activities, predation or competition with other species, and, in some cases, genetic pollution from species introduced for hunting.	SO2.7, SO3.2, SO4.6
Mammals Mammals are primarily threatened by habitat loss or fragmentation (for example less food availability or new infrastructure) and by human disturbance. Other serious threats are poaching and illegal killing, hybridisation and loss of genetic identity (e.g. Wolves), incidental mortality (e.g. road traffic, fishing, collisions with boats), chemical pollution of water (e.g. otters, dolphins) and acoustic pollution (e.g. whales), intrinsic factors (e.g. isolation of	SO2.7, SO3.2, SO4.6

populations, disease, demographic and genetic problems), predation and competition with other species, natural disaster, tourism and forestry do not taking into account the species.	
Reptiles Threats for reptiles are habitat loss or fragmentation (due to agricultural activities, water catchment, infrastructure, etc.), mortality, also accidental (e.g. road traffic), exploitation for collection or commercialisation, tourism, some natural disasters (e.g. fire), forestry practices that do not take into account the species, pollution and competition or hybridisation with other species, also alien.	SO2.7, SO3.2, SO4.6
Corals Corals are subject to exploitation for commercial purposes and disturbed by illegal or legal fishing practices (such as trawling). Other threats are climate change, competition with alien species and water acidification.	SO1.1, SO2.7

The main characteristics of interactions are as follows:

- SO1.1, as well as SO1.4, aim to enhance the conditions for innovation in the CBC area by supporting cooperation between research and business players in the blue economy and the circular economy, potentially contributing to reducing impacts on coastal and halophytic habitats, by improving coastal water quality, and reducing pressures on marine resources.
- SO2.4 concerns adaptation to climate change through improved resilience. Even if the actions do not directly address biodiversity management, they could contribute to less climate change impact on natural resources, including habitats and species of European interest.
- SO2.7 is devoted to biodiversity protection. It does not contain actions for the physical management of habitat or species, but through monitoring, knowledge and prevention, it should have positive consequences on habitat and species conservation by reducing pollution and increasing water quality in critical areas. Thus, a contribution to habitat conservation is expected for coastal and halophytic habitats, coastal sand dunes, inland dunes and fresh water habitats.
- SO3.2 covers intermodal mobility. There may be negative impacts on habitat or species. The SO aims to improve connections in the CBC area also in terms of sustainability, by improving multimodality, developing the circular economy, as well as promoting the use of alternative fuel in shipping.
- SO4.6 aims to implement sustainable tourism. Even if the actions develop slow mobility and experiential tourism as an alternative to mass tourism, there could be negative effects from tourist flows on protected habitats.

Conclusion

An accurate estimate of the Programme incidence on the Natura 2000 network is not straightforward without precise information on action implementation and project locations. The IP has mainly soft actions that do not interact directly with habitats or species. However, indirect interference cannot be excluded. Increased tourism in areas protected under the Natura 2000 network could be a disturbance for species. Moreover, there may be interference on habitats from the efficiency and quality of maritime transport. Thus, mitigation measures are needed to avoid negative impacts and reduce the use of resources. For small-scale infrastructure and investment, even for SOs in favour of the environment, the interventions must comply with the management plans of the sites potentially affected (according to regulations). Actions on monitoring and knowledge of natural resources could contribute to habitat and species conservation. Promotion of transport connections for ports and maritime transport services must avoid Natura 2000 sites or

should be accompanied by an appropriate and preventive assessment at project level. In addition, introducing specific criteria for sustainable tourism could help to avoid disturbance to protected species. This will require not promoting tourism in protected habitats for example, with particular attention to coastal habitats or habitats with high endemism. In general, any physical interventions (including renewable energy facilities) and small-scale infrastructure in Natura 2000 sites must be avoided, when not in line with the site management plans.

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

PART IV RECOMMENDATION FOR BETTER ENVIRONMENTAL INTEGRATION

VIII. MITIGATION AND ORIENTATION MEASURES

The Programme is devoted to cooperation on sustainable objectives and has mainly positive effects on the environment. Some negative effects could emerge from the implementation of operations not well identified at this stage of programming. The few negative effects pointed out in the assessment can be easily avoided if adequate measures are taken during implementation, including relevant eligible and selection criteria for operations.

The SEA assessment has shown that the Programme has the tools to strengthen opportunities in the CBC area and can contribute to sustainable development objectives on both sides the border. In addition to the few measures aimed at mitigating potential negative effects, we propose measures to enhance the environmental performance of the Programme and to reinforce the Programme capacity to achieve sustainable goals in the cooperation area.

The measures can be divided into:

1. Mitigation, including activities or actions to avoid, remove, or offset the adverse effects;
2. Orientation of SOs or actions; through alternative instruments or tools to be promoted by the Programme during implementation;
3. Green selection criteria, to improve the sustainability of projects[112];
4. Provisions for the implementation phases, including guidelines for applicants during preparation and management of projects (e.g. guidance on compensation measures to reduce the carbon footprint of projects) or specific environmental monitoring measures.

In this section we describe measures to reduce possible negative effects as well as recommendations and suggestions to improve the integration of environmental topics in the Programme.

VIII.1 MEASURES TO PREVENT REDUCE AND OFFSET ADVERSE EFFECTS

The Programme has mainly positive effects. At this stage of programming, negative effects are based either on an unclear definition of the action in the SO or a lack of detail on the project selection process. Consequently, these mitigation measures aim to clarify the realisation of SO 1.1, SO 3.2 and SO4.6. The *mitigation measures* are directly linked to environmental negative effects assessed in previous sections:

[112] Sustainable criteria can be selected from the studies 'Integration of environmental considerations on the selection of projects supported by the European Structural and Investment Funds and 'Methodology for Establishing Environmental Proofing of Investments funded under the InvestEU Programme', both published by DG ENV in 2020: https://ec.europa.eu/environment/enveco/studies.htm

- SO1.1 aims to enhance research and innovation capacities and the uptake of advanced technologies. Even if direct negative effects from increased atmospheric emissions, waste production and energy consumption are not expected, a specific approach is required to clarify which 'sustainable innovative solutions' can be promoted.

- SO3.2 aims to make transport more efficient in the CBC area, negative effects from atmospheric emissions are not expected but cannot be excluded at this stage, as well as possible negative effects on the use of resources from new infrastructure. In addition, possible interference between 'piloting' new routes and 'Natura 2000 sites' have been pointed out in the Incidence Analysis.

- SO4.6 on tourism could have negative effects on the use of natural resources, even if unknown at this stage of analysis. In addition, the Appropriate Analysis (Section 7.3) highlighted possible negative effects from tourism on protected habitats. Mitigation measures are needed to avoid negative impacts on protected habitats or reduce the use of resources.

Policy objective	Specific objective	Effect	Mitigation Measure	Type of action
PO1	SO 1.1	Possible negative effect on use of resources (energy and water) and increase of emissions (GHG, waste) from innovations	Make explicit in the IP guidance the type of 'advanced technologies' or 'innovation ecosystems' addressed by the programme (e.g: innovation contributing to reduction, reuse and recovery of waste, less water and material consumption, more energy efficiency and promoting renewable energy)	(4) Guidance for applications
PO3	SO3.2	Possible interference with protected habitats from transport systems	Promotion of transport connections for ports and maritime transport services must avoid Natura 2000 sites or should be accompanied by an appropriate and preventive assessment at project level	(1) Specific measures; (4) Guidance for applications
		Possible negative effect on use of resources (GHG emissions, air quality and waste production, soil artificialisation) from transport	In project selection, specify criteria for transport sustainability, especially for soil artificialisation, waste production and air emissions.	(3) green selection criteria
PO4	SO4.6	Possible negative effect on use of resources (GHG emissions, water and waste production) from tourist flows	Specify the instruments to increase tourism sustainability.	(1) Specific measures; (4) Guidance for applications
			In project selection, specify criteria for sustainable tourism, especially in natural areas (including project design specifications for: management and monitoring plan for sustainability, waste management system, soil consumption, renewable energy and energy efficiency)	(3) Green selection criteria
		Possible interference of tourism with protected habitats	Do not promote tourism in protected areas and habitats, especially in vulnerable maritime and coastal habitats	(1) Specific measures; (4) Guidance for applications

In addition to the mitigation measures, the following table offers ways to improve the environmental performance of the six SOs:

- SO1.1, as well as SO1.4, promote innovation, mainly in the blue economy. Nevertheless, further criteria for project selection could help to enhance the positive effects, especially promoting eco-efficiency by reducing the use of primary resources and promoting circular economy approaches;
- SO 2.4 addresses climate change adaptation policies. A preference should be given to ecosystem-based approaches, covering green infrastructure and ecological corridors;
- SO 2.7 is on biodiversity conservation. Measures should also address marine litter, ecological corridors and artificialisation of coastal ecosystems;

- SO 3.2 deals with transport connections. Priority should be given to projects with a low carbon footprint, by improving the environmental performance of ports and promoting innovative solutions for the circular economy approach in managing cross-border connections;
- The SO 4.6 is on culture heritage and sustainable tourism. An integrated approach should be promoted, with projects addressing more than one SDG. Applying article 25 ('preventive verification of the archaeological interest') of the Code of Public Contracts (National Law 50/2016 and amendments), as best practice to guarantee the conservation of sites and assets of archaeological interest should also be considered.

Policy objective	Specific objective	Orientation Measure	Expected contribution to environmental sustainability
PO1	SO 1.1 and SO 1.4	Select more eco-efficient projects and projects with a low carbon footprint	Insignificant positive effects on the use of resources and carbon emissions
		Select projects which promote the circular economy and good management of natural resources	Positive effects on natural resources
PO2	SO 2.4	In climate change adaptation measures, promote resilience also through actions to protect habitats and green infrastructure	Positive effects on inland ecosystems
		Select projects favouring sites/ areas where cultural/ natural heritage is very affected by climate change, adverse extreme natural events, mass tourism, or environmental degradation.	Focus on the most vulnerable areas
	SO 2.7	In selection of projects, give priority to projects/sites/areas addressing more than one environmental objective, e.g. habitat conservation, climate change and cultural heritage.	Promote integrated approaches
PO3	SO 3.2	Select projects with a low carbon and emissions footprint	GHG emission reductions
		Select projects that reduce pollution and anthropogenic pressure on coastal areas	Promote coastal sustainable development
PO4	SO 4.6	Select integrated projects which address more than one sustainable goal	Sustainable development of tourism in the cooperation area.

PART V – FOLLOW-UP ON IMPLEMENTATION

IX. PROVISIONS FOR ENVIRONMENTAL MONITORING

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

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

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

Article 10 of the SEA Directive says that monitoring can be split into:

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

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

The monitoring system for the past programming period[113] identified the following indicators:

Table 30: Indicators from the past programming period monitoring system

SO	Context indicator	Environmental output indicator	Environmental performance indicator
SO 1.1	Use of primary resources (water, energy, waste)	Number of innovative services, products and tools on eco-efficiency transferred to enterprises	Contribution of the Programme to reduce the use of primary resources
SO 2.1	Cooperation area disposing of regular monitoring of climate change or planning of adaptation measures	Public institutions participating in monitoring projects on climate change	Contribution of the Programme to increasing Cooperation area regular monitoring of climate change or planning of adaptation measures
SO 2.2	Inhabitants exposed to high level of risks	Inhabitants benefiting from risk management coordinated measures	Contribution of the Programme to the increase in disaster response capability
SO 3.1	Use of primary resources (water, energy, waste) from tourism sector	Number of projects on sustainable tourism	Contribution of the Programme to reduced tourism pressure on natural resources

[113] Intermediate Monitoring Report 2014-2020

SO	Context indicator	Environmental output indicator	Environmental performance indicator
SO 3.2	Conservation status of habitat types and species of Natura 2000 sites in Programme area	Number of projects with positive effects on the conservation status for Natura2000	Contribution of the CP to protect and restore biodiversity in the Adriatic Basin
SO 3.3	Quality of bathing water	Number of projects on innovative technical environmental solutions or the collection of microplastics at sea	Contribution of the Programme to preserve high-quality coastal bathing water
SO 4.1	CO2 emissions by transport	Number of projects for the transition to a low-carbon emission economy	Contribution of the Programme to a reduction in CO2 emissions from transport

IX.1 ENVIRONMENTAL INDICATORS

A conceptual model often used to classify environmental indicators is the DPSIR model, which identifies the 'Driving forces' and 'Pressures' and measures the 'Impact' (the change in respect to the current state) for a situation defined by *State* indicators. Feedback mechanisms then reduce or remove the impact (*Response).* Driving forces are usually considered in the SWOT analysis to define the Programme strategy. The Response is the mitigation measure described in Chapter 8.

Cooperation Programme monitoring systems usually use 'descriptive', 'output' and 'result' indicators[114]. These three categories can be associated with *Pressure*, *State*, *Impact* (PSI) in the DPSIR model as follows:

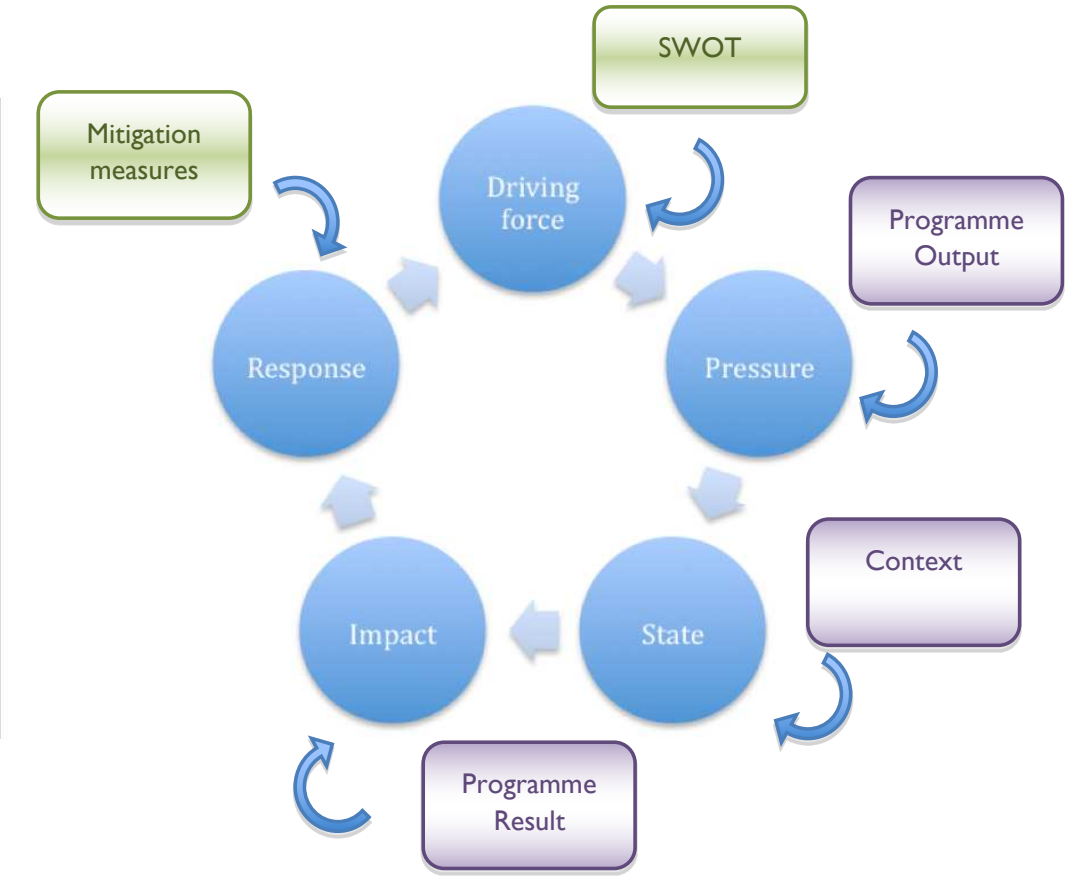
- Descriptive indicators are collected in the Territorial and Programme needs analysis. These describe the initial state and, through monitoring, could show variations in the environment. Information to quantify descriptive indicators are obtained directly from national environmental agencies, or public and private organisations producing and communicating environmental information to the public. These are the *State* indicators in the DPSIR model.

- 'Output' indicators measure the contribution of the Programme to environmental objectives and correspond mainly to *Pressure* indicators.

- 'Result' measures the Programme contribution to the change in environmental state for the CBC area (*Impact* indicators in the DPSIR model) and highlight the environmental implementation of the Programme. They can contribute to understanding the Programme's environmental performance.

[114] The terminology used in EFSI (a Programme based approach) is not the same as the terminology in the DPSIR model (based on a 'physical' approach). For more information see 'Development of a system of common indicators for ERDF and CF Funds interventions after 2020' – DG Regio 2018

Figure 28: Relationship between Programme indicators and DPSIR model (in blue)



Proposed environmental monitoring system indicators are listed in Table 31. The context indicators are used in the context analysis but could be substituted by other indicators, depending on the availability of data. Environmental indicators can be derived from Programme results, common and specific output indicators and are addressed by the Programme monitoring system. In addition to Programme monitoring indicators, further environmental indicators have been proposed to account for specific environmental effects assessed in Section VI. The indicators used in the past programming period 2014-2020 are marked by green cells in table 31.

Table 31: Results and performance indicators

SO	Expected environmental effect	Context indicator (*State*)	Environmental output indicator (*Pressure*)	Assessment of the performance (*Result*)
SO 1.1	Eco-efficiency (reduction in the use of primary resource)	Use of primary resources (water, energy, waste)	Number of enterprises and institutions participating in cross-border research/ innovation projects aimed at eco-efficiency	Description of contribution of SO to reduce the use of primary resources
SO 1.4	Increase entrepreneurial skills mainly in the green and circular economy	SMEs involvement in the field of green and circular economy	Number of SMEs participating in cross-border research/ innovation projects in the field of green and circular economy	Description of contribution of SO to promote the green and circular economy approach among entrepreneurs
SO 2.4	Improvement of knowledge and planning adaptation measures on climate change	Cooperation area planning set of adaptation measures on climate change	Public institutions participating in monitoring climate change or planning adaptation measures projects	Description of contribution of SO to increase regular monitoring of climate change or planning adaptation measures
SO 2.7	Conservation and restoration of inland and marine ecosystems	Conservation status of habitat types and species of Natura 2000 sites in Programme area	Number of projects involving Natura 2000 sites with positive effects in terms of conservation status	Description of contribution of the Programme to protect and restore biodiversity in the Adriatic Basin
SO 3.2	Pollution prevention	Sea water quality	Number of projects with innovative technical solutions tested and implemented to reduce pollution in port	Description of contribution of the Programme to improve sea water quality
SO 4.6	Pressure of tourism on natural resources	Pressure of tourism in Programme area	Number of projects on sustainable tourism	Description of contribution of the Programme to promote the role of culture and sustainable tourism

IX.2 PROVISIONS FOR AN ENVIRONMENTAL MONITORING SYSTEM

The procedure involves collecting and processing data from across the Programme area, its evaluation and interpretation and consideration of the consequences at Programme and project levels. The main tasks of defining the monitoring system are to attribute responsibility to the different phases and then to design the framework for collecting and reporting indictor data. The following table proposes responsibility for each task with a person in the monitoring team from the Managing Authority and Joint Technical Secretariat (JTS). National and Regional Environmental Authorities, the JTS and the Programme Managing Authority will support the environmental monitoring manager. Environmental monitoring will be also carried out by the evaluation team (for some tasks), in coordination with the environmental monitoring manager.

Table 32: Monitoring responsibilities

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

Even though Directive 2001/42/EC does not stipulate how to report on monitoring and its results, reporting is important:

- When defining objectives;
- When evaluating the first results;
- Post implementation.

The first two allow readjustment of the Programme while the third details the performance and environmental impact of the Programme. Environmental impact information lacking at Programme level, including some output and results indicators, will be collected at project level during the *ongoing* evaluation of the Programme. This should only occur at a defined stage of implementation, with particular regard to project preparation and conclusion. Monitoring environmental effects at project level should consider:

- Embedding information collection in routine monitoring to address only crucial information not available at any other level;
- Collecting information using predefined forms (see Table 33) with guidelines for project partners on homogenous information collection, to enable aggregation at Programme level;
- The project must obviously comply with European and national environmental legislation and obligations. So, project leaders should draft their final report to illustrate how they took legal aspects and sustainable goals into consideration.

Table 33: Template for project level environmental impact evaluation

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

All information collected at different levels will be included and analysed in an environmental report, periodically drafted by the monitoring team and made available for decision makers in the Joint Technical Secretariat and Managing Authorities. The report should be discussed in monitoring committees, especially during the mid-term review resulting in decisions regarding reprogramming or adjustment of the Strategy for better sustainable development of the area.
The environmental monitoring and evaluation system will be fine-tuned in the Interreg Programme evaluation plan, with details of evaluation questions and environmental issues to be addressed, methodology, target groups and stakeholders, products and dissemination of results.

PART VI – CONCLUSION

Part VI includes a presentation on the potential alternatives and justification of the Programme choices and a presentation of the quality of information and rationale for analysis.

X. POTENTIAL ALTERNATIVES AND JUSTIFICATION OF PROGRAMME CHOICES

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

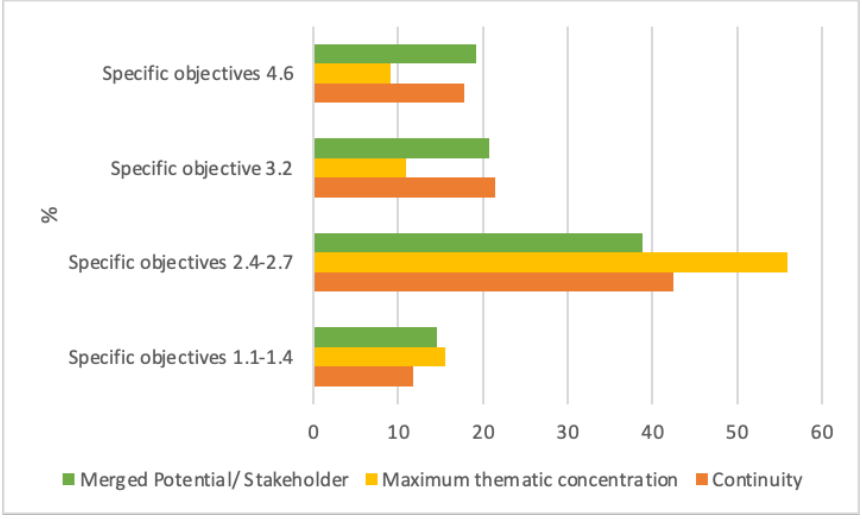
The following subsection presents the analysis of alternatives.

X.1 ALTERNATIVE SCENARIOS

Three scenarios changing the allocation of resources are described in the table below:

- A 'Continuity', assumes continuity with the 2014-2020 Programme strategy;
- B 'Maximum concentration', applies 80% of the resources on Priorities 1 and 2, penalising transport and tourism;
- C 'Merged (Potential/Stakeholder)', is a middle way between the two previous scenarios with a more balanced financial allocation among the priorities.

2021-2027 Scenarios	Priority 1	Priority 2	Priority 3	Priority 4	Priority 5
	Specific objectives 1.1-1.4	Specific objectives 2.4-2.7	Specific objective 3.2	Specific objectives 4.6	Interreg Specific Objective ISO 1
Continuity	EUR 19 063 001	EUR 68 595 376	EUR 34 713 918	EUR 28 788 601	EUR 10 508 512
	11.79%	42.43%	21.47%	17.81%	6.50%
Maximum thematic concentration	EUR 25 115 .630	EUR 90 374 863	EUR 17 675 452	EUR 14 658 430	EUR 13 845 034
	15.54%	55.90%	10.93%	9.07%	8.56%
Merged Potential/ Stakeholder	EUR 23 629 702	EUR 62 863 431	EUR 33 561 161	EUR 31 106 602	EUR 10 508 512
	14.62%	38.88%	20.76%	19.24%	6.50%



As highlighted in the figure above, under all scenarios the financial resources are concentrated on specific objectives 2.4 and 2.7 on environmental and climate issues. However, there are differences:

- 'Maximum thematic concentration' is the only scenario which allocates more than half of the financial resources (~56%) to SO 2.4 and SO 2.7. Around 16% of the financial allocation, benefits priority 1. There may be some adverse effects on natural resource consumption and air emissions.

- In the 'continuity' scenario, around one fifth of resources are allocated to SO 3.2 (~20%) on cross-border mobility and SO 4.6 addressing sustainable tourism and cultural heritage (~18%). This scenario is less-environmentally friendly than the thematic concentration scenario with potential impacts from both the SOs on ecosystems and natural resources. These impacts are unknown at this stage, but additional efforts should be made to use sustainable criteria in project selection for transport and tourism, as well as specific monitoring measures.

- The 'Merged Potential/ Stakeholder' scenario allocates most Programme financial resources (~39%) on SOs 2.4 and 2.7, followed by SO 3.2 (~20%) and SO 4.6 (~19%); while the rest of the resources are allocated to SOs 1.1 and 1.4 (~15%). This scenario is similar to the first scenario ('continuity'). However, it combines the potential negative effects of all the SOs in a more significant way.

X.2 JUSTIFICATION OF THE PROGRAMME CHOICES

The TF has approved the scenario C 'Merged (Potential/Stakeholder)', which allows a more balanced financial allocation among the priorities. Moreover, it is also environmentally friendly concentrating most Programme financial resources on environmental and climate issues.

Compared to the base scenario, the Programme effects are broadly positive (see Section VII). The proposed Strategy clearly contributes to improving environmental conditions in the CBC area. So, the current strategy must be considered as a good alternative from an environmental point of view, compared to other options discussed during the preparation phase.

XI. QUALITY OF INFORMATION AND RATIONALE FOR ANALYSIS

The information in this report comes from official statistics and documents identified during the scoping consultation with the EAs. Data from European statistics institutions (European Environmental Agency and Eurostat) and available at NUTS3 level were often lacking. The analysis was also limited by differences in quality, time period and scale of information provided by the four national statistical systems.

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

An element of difficulty was the different implementation of the European directive in the two countries, so data for some environmental issues is not uniform.

Cross-border information was considered first. Other national statistics were used, illustrating specific aspects or giving a clear picture on some issues. Because data from different statistical sources were aggregated, the cross-border environmental indicators are an approximation. The national and regional data suggested during the scoping phase is detailed in appendix 2.

APPENDIX I – NON-TECHNICAL SUMMARY

APPENDIX 2 – DATA SOURCES SUGGESTED DURING THE CONSULTATION

Cooperation area IT-HR		
Topic	***Typology of indicators***	***Existing data***
Climate change	*GHG emission*	*UNFCCC*
	Coastal erosion	*European environmental Agency*
	Temperature/Variation of rainfall regimes	*Eurostat*
	Fires	*European Forest Fire Information System*
	Hydrogeological risks	*World Bank/Hanze database*
Air quality and human health	*Particulate matter emissions*	*European environmental Agency*
	Exposure to pollutants in urban areas	*European Environment Agency*
	Noise pollution	*European Environment Agency*
Water	*Population connected to public water supply system*	*Eurostat*
	Population connected to public sewage system	*Eurostat*
	Water quality	*European Environment Agency*
Inland biodiversity and terrestrial ecosystem	*Nationally designated protected areas*	*European Environment Agency/ Common Database on Designated Areas (CDDA)*
	Natura 2000 network	*European Environment Agency (https://natura2000.eea.europa.eu https://ec.europa.eu/environment/nature/natura2000/data/index_en.htm)*
	Species conservation	*IUCN European Red List*
	Natural and semi natural ecosystem	*European environmental Agency*
Biodiversity and marine ecosystems (for spatial planning see: https://www.portodimare.eu/) for other marine data see: European Marine Observation and Data Network (EMODnet) (https://emodnet.ec.europa.eu/en)	*Marine protected areas*	*European Environment Agency*
	Natura2000 marine sites	*Eurostat*
	Coastal pollution	*European environmental Agency*
	Bathing water quality	*European environmental Agency*
	Marine resources	*FAO*
Soil	*Artificial soils*	*European environmental Agency*
	Soil consumption	*European environmental Agency*
	Contaminated sites	*ESDAC*
Technological risks	*Industry, trade and services*	*Eurostat*
	Maritime transport	*Eurostat*
Natural and cultural heritage	*Landscape*	*European environmental Agency*
	Protected sites	*World Heritage List UNESCO*
Energy	*Energy consumption*	*Eurostat*
	Renewable energy	*Eurostat*
	Energy efficiency	*Eurostat*
Waste	*Waste production*	*Eurostat*
	Recycling	*Eurostat*

Croatia (National level)			
Topic	**Typology of indicators**	**Existing data**	**Comments**
Climate change	GHG emission	Ministry of Economy and Sustainable Development	https://mingor.gov.hr/o-ministarstvu-1065/djelokrug/uprava-za-klimatske-aktivnosti-1879/emisije-staklenickih-plinova/inventar-staklenickih-plinova/1909
	Coastal erosion	Croatian Waters	https://www.voda.hr/
	Temperature/Variation of rainfall regimes	Croatian Meteorological and Hydrological Service	https://meteo.hr/index_en.php
	Hydrogeological risks	Croatian Waters	https://www.voda.hr/hr/registar-poplavnih-dogadaja
Air quality and human health	Particulate matter emissions	Ministry of economy and sustainable development	http://www.haop.hr/hr/emisije-oneciscujucih-tvari-u-zrak-na-podrucju-republike-hrvatske/emisije-oneciscujucih-tvari-u
	Exposure to pollutants in urban areas	Ministry of economy and sustainable development	http://www.haop.hr/hr/novosti/provjerite-razinu-dugorocnog-oneciscenja-zraka-pomocu-novog-preglednika
Water	Population connected to public water supply system	Croatian Waters	https://www.voda.hr/
	Population connected to public sewage system	Croatian Waters	https://www.voda.hr/
	Water quality	Croatian Institute of Public Health	https://www.hzjz.hr/sluzba-zdravstvena-ekologija/izvjestaj-o-zdravstvenoj-ispravnosti-vode-za-ljudsku-potrosnju-u-republici-hrvatskoj-za-2019-godinu/
Inland biodiversity and terrestrial ecosystem	Nationally designated protected areas Natura 2000 network Species conservation Natural and semi natural ecosystem	Ministry of economy and sustainable development Nature Protection Information System of the Republic of Croatia	http://envi-portal.azo.hr/atlas https://mingor.gov.hr/o-ministry-1065/functiong/management-for-nature protection-1180/1180 http://www.haop.hr/hr/pocetna http://www.bioportal.hr/
Biodiversity and marine ecosystems	Marine protected areas	Ministry of economy and sustainable development	http://envi-portal.azo.hr/atlas
	Natura2000 marine sites	Ministry of economy and sustainable development	http://envi-portal.azo.hr/atlas
	Coastal pollution	Ministry of economy and sustainable development	http://envi-portal.azo.hr/atlas
	Bathing water quality	Ministry of economy and sustainable development	http://envi-portal.azo.hr/atlas
	Marine resources	Ministry of economy and sustainable development	http://envi-portal.azo.hr/atlas
Soil	Artificial soils	Ministry of economy and sustainable development	http://envi-portal.azo.hr/atlas
	Soil consumption	Ministry of economy and sustainable development	http://envi-portal.azo.hr/atlas
	Contaminated sites	Ministry of economy and sustainable development	http://envi-portal.azo.hr/atlas
Technological risks	Industry, trade and services	Ministry of economy and sustainable development	http://envi-portal.azo.hr/atlas
	Maritime transport	Ministry of economy and sustainable development	http://envi-portal.azo.hr/atlas
Natural and cultural heritage	Landscape	Ministry of Economy and Sustainable Development	https://min-kulture.gov.hr/en

	Protected sites	*Ministry of Culture and Media*	*https://min-kulture.gov.hr/en*
Energy	*Energy consumption*	*Ministry of economy and sustainable development*	*http://envi-portal.azo.hr/atlas*
	Renewable energy	*Ministry of economy and sustainable development*	*http://envi-portal.azo.hr/atlas*
	Energy efficency	*Ministry of economy and sustainable development*	*http://envi-portal.azo.hr/atlas*
Waste	*Waste production*	*Ministry of economy and sustainable development*	*http://envi-portal.azo.hr/atlas*
	Recycling	*Ministry of economy and sustainable development*	*http://envi-portal.azo.hr/atlas*

Italy (National level)			
Topic	**Typology of indicators**	**Existing data**	**Comments**
Climate change	GHG emission	ISPRA	Data available Reference: National Inventory Report 2021
	Coastal erosion	ISPRA	Data available on the website Reference: Legambiente, Rapporto Spiagge 2021. La situazione e i cambiamenti in corso nelle aree costiere italiane
	Temperature/Variation of rainfall regimes	ISTAT	Data available on the website
	Fires	ISPRA	Data available on the website
	Hydrogeological risks	ISPRA	Data available Reference: Dissesto idrogeologico Italia: pericolosità e indicatori di rischio Edizione 2018
Air quality and human health	Particulate matter emissions	ISPRA	Data available Reference: Italian Emission Inventory 1990-2019. Informative Inventory report 2021
	Exposure to pollutants in urban areas	ISPRA	Data available Reference: Exposure of the Italian population to air pollution, and relationship with Covid-19, ISPRA 2021
Water	Population connected to public water supply system	ISTAT	Data available on the website
	Population connected to public sewage system	ISTAT	Data available on the website
	Water quality	ISPRA	Data available on the website
Inland biodiversity and terrestrial ecosystem	Nationally designated protected areas	Elenco ufficiale aree protette (EUAP)	Data available
	Natura 2000 network	ISPRA; MiTE	Data available on the website
	Species conservation	IUNC red list of threatened species	Data available on the website
	Natural and semi natural ecosystem	ISPRA	Data available
	Marine protected areas	ISPRA	Data available on the website
	Natura2000 marine sites	ISPRA; MiTE	Data available on the website

Biodiversity and marine ecosystems (for marine spatial planning see: https://www.sid.mit.gov.it/login https://sinacloud.isprambiente.it/portal/apps/webappviewer/index.html?id=44b6c75b5e994703b9bd6adf51561a7d and for data related to the marine strategy framework directive: http://www.db-strategiamarina.isprambiente.it/app/#/)	Coastal pollution	ISPRA	Data available
	Bathing water quality	European Environmental Agency	Data available Reference: Italian bathing water quality in 2020
	Marine resources	FAO	Data available Reference: Fishery and Aquaculture Country profiles: The Republic of Italy
Soil	Artificial soils	ISPRA	Data available on the website
	Soil consumption	ISPRA	Data available on the website
	Contaminated sites	ISPRA	Data available on the website
Technological risks	Industry, trade and services	ISTAT	Data available on the website
	Maritime transport	ISTAT	Data available on the website
Natural and cultural heritage	Landscape	ISTAT	Data available Reference: Landscape and cultural heritage, ISTAT 2019
	Protected sites	ISTAT	Data available Reference: Landscape and cultural heritage, ISTAT 2019
Energy	Energy consumption	ISTAT	Data available on the website
	Renewable energy	ISTAT	Data available on the website
	Energy efficiency	Agenzia Nazionale Efficienza Energetica	Data available Reference: Rapporto annuale efficienza energetica 2020
Waste	Waste production	ISPRA	Data available Reference: Rapporto rifiuti urbani edizione 2020
	Recycling	ISPRA	Data available Reference: Rapporto rifiuti urbani edizione 2020

Croatia (regional level)				
Region	**Topic**	**Typology of indicators**	**Existing data**	**Comments**
Istria, Primorsko-Goranska, Lika-Senj, Karlovac,Zadar, Šibenik-Knin, Split-Dalmatia,	Climate change	GHG emission	Ministry of Economy and Sustainable Development	https://mingor.gov.hr/o-ministarstvu-1065/djelokrug/uprava-za-klimatske-aktivnosti-1879/emisije-staklenickih-plinova/inventar-staklenickih-plinova/1909
		Coastal erosion	Croatian Waters	https://www.voda.hr/

Dubrovnik-Neretva		Temperature/Variation of rainfall regimes	Croatian Meteorological and Hydrological Service	https://meteo.hr/index_en.php
		Flood risks	Croatian Waters	https://www.voda.hr/
	Air quality and human health	Particulate matter emissions	Ministry of Economy and Sustainable Development, Public health institute (county level)	http://www.haop.hr/hr/emisije-oneciscujucih-tvari-u-zrak-na-podrucju-republike-hrvatske/emisije-oneciscujucih-tvari-u https://www.hzjz.hr/sluzba-zdravstvena-ekologija/izvjestaj-o-zdravstvenoj-ispravnosti-vode-za-ljudsku-potrosnju-u-republici-hrvatskoj-za-2019-godinu/
		Exposure to pollutants in urban areas	Ministry of Economy and Sustainable Development	http://www.haop.hr/hr/novosti/provjerite-razinu-dugorocnog-oneciscenja-zraka-pomocu-novog-preglednika
	Water	Population connected to public water supply system	Croatian Waters	https://www.voda.hr/
		Population connected to public sewage system	Croatian Waters	https://www.voda.hr/
		Water quality	Croatian Institute of Public Health Public health institute (county level)	https://www.hzjz.hr/sluzba-zdravstvena-ekologija/izvjestaj-o-zdravstvenoj-ispravnosti-vode-za-ljudsku-potrosnju-u-republici-hrvatskoj-za-2019-godinu/ Public Health Institute (county level) websites
	Inland biodiversity and terrestrial ecosystem	Nationally designated protected areas	Ministry of Economy and Sustainable Development	http://envi-portal.azo.hr/atlas
		Natura 2000 network	Ministry of Economy and Sustainable Development	http://envi-portal.azo.hr/atlas
		Species conservation	Ministry of Economy and Sustainable Development	http://envi-portal.azo.hr/atlas
		Natural and semi natural ecosystem	Ministry of Economy and Sustainable Development	http://envi-portal.azo.hr/atlas
	Biodiversity and marine ecosystems	Marine protected areas	Ministry of Economy and Sustainable Development	http://envi-portal.azo.hr/atlas
		Natura2000 marine sites	Ministry of Economy and Sustainable Development	http://envi-portal.azo.hr/atlas
		Coastal pollution	Ministry of Economy and	http://envi-portal.azo.hr/atlas

			Sustainable Development	
		Bathing water quality	Ministry of Economy and Sustainable Development Public Health Institute (county level)	http://envi-portal.azo.hr/atlas Public Health Institute (county level) websites
		Marine resources	Ministry of Economy and Sustainable Development	http://envi-portal.azo.hr/atlas
	Soil	Artificial soils	Ministry of Economy and Sustainable Development	http://envi-portal.azo.hr/atlas
		Soil consumption	Ministry of Economy and Sustainable Development	http://envi-portal.azo.hr/atlas
		Contaminated sites	Ministry of Economy and Sustainable Development	http://envi-portal.azo.hr/atlas
	Technological risks	Industry, trade and services	Ministry of Economy and Sustainable Development	http://envi-portal.azo.hr/atlas
		Maritime transport	Ministry of Economy and Sustainable Development	http://envi-portal.azo.hr/atlas
	Natural and cultural heritage	Landscape	Ministry of Economy and Sustainable Development	http://envi-portal.azo.hr/atlas
		Protected sites	Ministry of Economy and Sustainable Development	https://min-kulture.gov.hr/en
	Energy	Energy consumption	Ministry of Economy and Sustainable Development	http://envi-portal.azo.hr/atlas
		Renewable energy	Ministry of Economy and Sustainable Development	http://envi-portal.azo.hr/atlas
		Energy efficiency	Ministry of Economy and Sustainable Development	http://envi-portal.azo.hr/atlas
	Waste	Waste production	Ministry of Economy and Sustainable Development	http://envi-portal.azo.hr/atlas
		Recycling	Ministry of Economy and Sustainable Development	http://envi-portal.azo.hr/atlas

Italy (regional level)				
Region	**Topic**	**Typology of indicators**	**Existing data**	**Comments**
Friuli Venezia Giulia (see Report on the state of environment in Friuli Venezia Giulia ARPA FVG 2018)	Climate change	GHG emissions Coastal erosion Temperature/Variation of rainfall regimes Fires Flood risks	https://www.meteo.fvg.it/clima/clima_fvg/03_cambiamenti_climatici/01_REPORT_cambiamenti_climatici_e_impatti_per_il_FVG/impattiCCinFVG_marzo2018.pdf	Cognitive study of climate change e of some of their impacts in Friuli Venezia Giulia, March 2018
	Air quality and human health	Particulate matter emissions Exposure to pollutants in urban areas	http://www.arpa.fvg.it/cms/tema/aria/utilita/Documenti_e_presentazioni/tecnico_scientifici.html#Relazioni%20qualita%20aria http://www.arpa.fvg.it/cms/tema/aria/pressioni/Catasto_emissioni/catasto.html	Data on ARPA FVG; Data on air quality improvement plan and regional action plan on air quality.
	Water	Population connected to public water supply system Population connected to public sewage system Water quality	http://www.arpa.fvg.it/cms/istituzionale/consulta/Pubblicazioni/Rapporto-sullo-StatodellAmbiente-2018.html); http://www.alpiorientali.it/direttivo-2000-60 / presentation.html; http://www.regione.fvg.it/rafvg/cms/RAFVG/ambiente-territorio/pianificazione-gestioneterritorio/LEAF20/	Report on the state of environment ARPA FVG; Water Management of the Hydrographic District of the Eastern Alps; Regional Water Protection Plan
	Inland biodiversity and terrestrial ecosystem	Nationally designated protected areas	http://www.regione.fvg.it/rafvg/cms/RAFVG/ambienteterritorio/tutela-ambientegestione-risorse-naturali/FOGLIA42/; http://www.regione.fvg.it/rafvg/cms/RAFVG/ambiente-territorio/tutela-ambiente-gestionerisorse-naturali/FOGLIA41/; http://www.regione.fvg.it/rafvg/cms/RAFVG/ambiente-territorio/tutela-ambientegestionerisorse-naturali/FOGLIA40/; http://www.regione.fvg.it/rafvg/cms/RAFVG/ambiente-territorio/tutela-ambientegestionerisorse-naturali/FOGLIA214/;	List of national and regional protected sites and other relevant areas

			http://www.regione.fvg.it/asp/parchiareeprotette/areeprotette/contenuto/ricerche/ricercaARIA.as; International Waterbird Census; https://www.regione.fvg.it/rafvg/cms/RAFVG/ambienteterritorio/geologia/FOGLIA06/	
		Natura 2000 network	http://www.regione.fvg.it/rafvg/cms/RAFVG/ambiente-territorio/tutela-ambientegestionerisorse-naturali/FOGLIA203/FOGLIA1/	List of Natura2000 regional sites
		Species conservation Natural and semi natural ecosystem	Friuli Venezia Giulia 'carta della natura' 2021 edition; http://www.regione.fvg.it/rafvg/cms/RAFVG/ambi ente-territorio/tutela-ambiente-gestione-risorsenaturali/ FOGLIA01/	https://www.isprambiente.gov.it/it/servizi/sistema-carta-della-natura/carta-della-natura-allascala-1-50.000/friuli-venezia-giulia-1
	Biodiversity and marine ecosystems	Marine protected areas	http://www.regione.fvg.it/rafvg/cms/RAFVG/ambi ente-territorio/tutela-ambiente-gestione-risorsenaturali/ FOGLIA203/FOGLIA 1/	
		Natura2000 marine sites	http://www.regione.fvg.it/rafvg/cms/RAFVG/ambiente-territorio/tutela-ambientegestionerisorse-naturali/FOGLIA203/FOGLIA1/	List of Natura2000 regional sites
		Coastal pollution Bathing water quality	http://www.arpa.fvg.it/cms/tema/acqua/balneazione/index.html	Regional surveillance plan for the management of the health risk associated with algal blooms
	Soil	Artificial soils Soil consumption	https://www.isprambiente.gov.it/it/attivita/suolo-e-territorio/il-consumo-di-suolo/i-dati-sul-consumo-di-suolo	Land consumption, dynamics territorial and ecosystem services Report SNPA 2019 and 2021

		Contaminated sites	http://www.regione.fvg.it/rafvg/cms/RAFVG/ambiente-territorio/tutela-ambientegestione-risorse-naturali/FOGLIA2/FOGLIA27/	Regional plan for the remediation of contaminated sites
	Technological risks	Industry, trade and services	https://www.mite.gov.it/pagina/inventario-nazionale-degli-stabilimenti-rischio-di-incidenterilevante-0 e https://www.rischioindustriale.isprambiente.gov.it/seveso-query-105/Default.php; http://www.regione.fvg.it/rafvg/cms/RAFVG/ambiente-territorio/valutazione-ambientaleautorizzazioni-contributi/FOGLIA3/DITTE/index.html; http://www.regione.fvg.it/rafvg/cms/RAFVG/ambiente-territorio/conoscereambiente-territorio/	Inventory of establishments at risk of a major accident and list of companies that have applied for Integrated Environmental Authorisation
	Natural and cultural heritage	Landscape Protected sites	http://www.regione.fvg.it/rafvg/cms/RAFVG/ambienteterritorio/pianificazione-gestione-territorio/FOGLIA21/; http://webgis.simfvg.it/it/map/bozza-ricognizione-ppr/qdjango/13/	Landscape plan of the Autonomous Region of Friuli Venezia Giulia
	Energy	Energy consumption Renewable energy Energy efficiency	http://www.regione.fvg.it/rafvg/cms/RAFVG/ambiente-territorio/energia/FOGLIA111/	Regional Energy plan
	Waste	Waste production Recycling	http://www.regione.fvg.it/rafvg/cms/RAFVG/ambiente-territorio/tutela-ambientegestione-risorse-naturali/FOGLIA	On the institutional website of ARPA FVG there are updated data relating to production and waste management in the regional section of the Waste Registry and see also

				Report on urban waste ARPA FVG 2021
Veneto	Climate change	GHG emissions	https://www.arpa.veneto.it/dati-ambientali; https:www.arpa.veneto.it/temi-ambientali	Available data on ARPAV website
		Coastal erosion		
		Temperature/Variation of rainfall regimes		
		Fires		
		Flood risks		
	Air quality and human health	Particulate matter emissions		
		Exposure to pollutants in urban areas		
	Water	Population connected to public water supply system		
		Population connected to public sewage system		
		Water quality		
	Inland biodiversity and terrestrial ecosystem	Nationally designated protected areas		
		Natura 2000 network		
		Species conservation		
		Natural and semi natural ecosystem		
	Biodiversity and marine ecosystems	Marine protected areas		
		Natura2000 marine sites		
		Coastal pollution		
		Bathing water quality		
		Marine resources		
	Soil	Artificial soils		
		Soil consumption		
		Contaminated sites		
	Technological risks	Industry, trade and services		
		Maritime transport		
	Natural and cultural heritage	Landscape	https://catalogo.beniculturali.it	On landscape, data platform available: archaeological map of the Veneto region; atlas of archaeological constraints; RAPTOR system; Superintendence Archive; Mapping of terrestrial and submerged cultural and landscape assets
		Protected sites		
	Energy	Energy consumption	https://www.arpa.veneto.it/dati-ambientali; https:www.arpa.veneto.it/temi-ambientali	Available data on ARPAV website
		Renewable energy		
		Energy efficiency		
	Waste	Waste production		
		Recycling		
Emilia-Romagna Open data available: https://dati.arpae.it/ https://webbook.arpae.it/	Climate change	Coastal erosion	https://ambiente.regione.emilia-romagna.it/it/suolo-bacino/argomenti/difesa-della-costa	Regional policies, reports and databases

https://datacatalog.regione.emilia-romagna.it/catalogCTA/dataset?tags=ambiente https://datacatalog.regione.emilia-romagna.it/catalogCTA/group ARPAE Rimini environemntal indicators Yearbook of environmental data year 2020			https://ambiente.regione.emilia-romagna.it/it/geologia/geologia/costa	
		GHG emissions Temperature/Variation of rainfall regimes Fires	https://www.arpae.it/it/temi-ambientali/clima/cosa-fa-arpae-clima https://www.arpae.it/it/temi-ambientali/meteo https://ambiente.regione.emilia-romagna.it/it/cambiamenti-climatici/temi/la-regione-per-il-clima/strategia-regionale-per-i-cambiamenti-climatici https://datacatalog.regione.emilia-romagna.it/catalogCTA/agenda2030	Climate Observatory Regional strategy for climate change 2030 Agenda
		Flood risks	https://ambiente.regione.emilia-romagna.it/it/suolo-bacino/sezioni/piano-di-gestione-del-rischio-alluvioni	Flood risk management plan and cartography
	Air quality and human health	Particulate matter emissions Exposure to pollutants in urban areas	https://www.arpae.it/it/temi-ambientali/aria/inventario-emissioni/inventario-emissioni-piu-recente	Emissions inventory – INEMAR
	Water	Population connected to public water supply system Population connected to public sewage system	https://ambiente.regione.emilia-romagna.it/it/rifiuti/temi/servizi-pubblici-ambientali/gestori-del-servizio/i-gestori-del-servizio-idrico-in-emilia-romagna	Data available from the managing bodies of the integrated water service
		Water quality	https://ambiente.regione.emilia-romagna.it/it/acque/temi/piano-di-tutela-delle-acque https://ambiente.regione.emilia-romagna.it/it/acque/temi/piani%20di%20gestione	Water protection plan and management plans
	Inland biodiversity and terrestrial ecosystem	Nationally designated protected areas	https://ambiente.regione.emilia-romagna.it/it/parchi-natura2000/aree-	MaB - Man and the Biosphere in Emilia-Romagna

			protette/caratteristiche-sistema/mab	
		Natura 2000 network	https://ambiente.regione.emilia-romagna.it/it/parchi-natura2000/rete-natura-2000/siti/rete-natura-2000-in-emilia-romagna	Cartography and tabs
		Species conservation	https://ambiente.regione.emilia-romagna.it/it/parchi-natura2000/sistema-regionale/biodiversita/biodiversita-in-er	General Conservation Measures
		Natural and semi natural ecosystem	https://ambiente.regione.emilia-romagna.it/it/parchi-natura2000/aree-protette/caratteristiche-sistema/programma-regionale/Allegato_A__Programma_regionale.pdf	Regional programme
	Biodiversity and marine ecosystems (for spatial marine planning at regional level see: Tra la terra e il Mare: Analisi e proposte per la pianificazione dello spazio marittimo in Emilia-Romagna (2018) — Ambiente (regione.emilia-romagna.it)	Marine protected areas	https://ambiente.regione.emilia-romagna.it/it/geologia/geologia/costa/database-delluso-del-mare https://ambiente.regione.emilia-romagna.it/it/parchi-natura2000/notizie/notizie-2020/nuovo-sito-di-tutela-marina-in-emilia-romagna	In_Sea: maritime spatial planning
		Natura2000 marine sites	https://ambiente.regione.emilia-romagna.it/it/parchi-natura2000/rete-natura-2000/siti/rete-natura-2000-in-emilia-romagna	Cartography and tabs
		Coastal pollution Bathing water quality	https://www.arpae.it/it/temi-ambientali/balneazione https://www.arpae.it/it/temi-ambientali/balneazione/rapporti-balneazione	Monitoring reports and bathing cartography
		Marine resources	https://ambiente.regione.emilia-romagna.it/it/geologia/geologia/costa/database-delluso-del-mare	In_Sea: maritime spatial planning
	Soil	Artificial soils	https://ambiente.regione.emilia-	Cartography

			romagna.it/it/geologia/suoli	
		Soil consumption	https://www.arpae.it/it/temi-ambientali/suolo	Report
		Contaminated sites		
	Technological risks	Industry, trade and services	https://ambiente.regione.emilia-romagna.it/it/aria-rumore-elettrosmog/temi/stabilimenti-a-rischio-di-incidente-rilevante https://ambiente.regione.emilia-romagna.it/it/aria-rumore-elettrosmog/temi/stabilimenti-a-rischio-di-incidente-rilevante/per-approfondire/catasto-rir	Relevant accident risk Catalog RIR
		Maritime transport	https://mobilita.regione.emilia-romagna.it/Pubblicazioni/monitoraggio/rapporto-annuale-di-monitoraggio-della-mobilita-e-del-trasporto-in-emilia-romagna-2020	Annual monitoring report of mobility and transport in Emilia-Romagna 2020
	Natural and cultural heritage	Landscape	https://datacatalog.regione.emilia-romagna.it/catalogCTA/dataset?tags=ambiente&tags=paesaggio https://territorio.regione.emilia-romagna.it/paesaggio/PTPR	PTPR regional landscape territorial plan
		Protected sites	https://ambiente.regione.emilia-romagna.it/it/parchi-natura2000/rete-natura-2000/siti/rete-natura-2000-in-emilia-romagna	Protected natural areas
	Energy	Energy consumption	https://energia.regione.emilia-romagna.it/piani-programmi-progetti/programmazione-regionale/piano-energetico-per/piano-energetico-regionale#autotoc-item-autotoc-3	The data can be found in the document 3rd annual report of the PER - January 2021
		Renewable energy		
		Energy efficiency		
	Waste	Waste production	https://ambiente.regione.emilia-	

			romagna.it/it/rifiuti/informazioni/sistema-informativo-regionale	
		Recycling	https://ambiente.regione.emilia-romagna.it/it/rifiuti/temi/rifiuti/piano-rifiuti https://ambiente.regione.emilia-romagna.it/it/notizie/primo-piano/rifiuti-lemilia-romagna-differenzia-bene-e-sempre-di-piu-72-5-nel-2020-1-6-sul-2019	Waste plan and report
Marche	Climate change (To measure the effects of climate change the indicators could be integrated by taking in consider what is monitored with the PNACC. https://va.minambiente.it/it)	GHG emission	https://www.regione.marche.it/Regione-Utile/Ambiente/Tutela-della-qualit%C3%A0-dellaria#Inventario-emissioni	The regional data is contained in the regional inventory of emissions: the latest published data is from 2016. More up-to-date data is being published.
		Coastal erosion	https://www.regione.marche.it/Regione-Utile/Paesaggio-Territorio-Urbanistica-Genio-Civile/Difesa-della-costa#Sistema-Informativo-Territoriale	Kmz file for forward / backward coast
		Temperature/Variation of rainfall regimes	http://meteo.regione.marche.it/dati/clima/	For more homogeneous data it is suggested to use supra-regional databases
		Flood risks	https://www.autoritadistrettoac.it/; https://www.autoritadistrettoac.it/pianificazione/pianificazionedistrettuale/pgraac; https://pianoalluvioni.adbpo.it/	The information on the flood risk is contained in the flood hazard and risk maps of the District Basin Authority. The Marches fall almost entirely within the Hydrographic District of the Central Apennines and only partially in that of the Po (for the portion included in the former

				Marecchia-Conca Interregional Basin Authority)
	Air quality and human health	Particulate matter emissions	https://www.arpa.marche.it/qualita-dell-aria-oggi; https://www.arpa.marche.it/indicatori-ambientali?id=836	The information is available on the ARPAM website, section relating to air quality monitoring
		Exposure to pollutants in urban areas	http://85.47.105.98:16382/	Indicator not available. On the ARPAM website you can find information on PM10 in the regional monitoring network, including control units located in urban areas
	Water	Population connected to public water supply system Population connected to public sewage system		Information not available at regional level (data managed by individual operators in the AATOs). AATO 2 indicates that for its area it is able to provide data relating to the 'competent population connected to the water network public ' (395.523,),' competent population connected to the public sewage system' (353.533) e 'Population connected to the public purification system' (329.003), latter year available (2020).
		Water quality	https://www.arpa.marche.it/acque-sotterranee-nuovo https://www.arpa.marche.it/fiumi-nuovo https://www.arpa.marche.it/laghi-nuovo	ARPAM data on water quality are distinguished by rivers, lakes and groundwater
	Inland biodiversity	Nationally designated protected areas	https://www.regione.marche.it/natura2000/	

	and terrestrial ecosystem		pagina_base91f4.html?id=1521	
		Natura 2000 network	https://www.regione.marche.it/natura2000/pagina_basea8e5.html?id=1810	
		Species conservation	https://www.regione.marche.it/natura2000/pagina_base0167.html?id=1503	There is no specific information on the conservation of species, other than that reported in the standard identification forms of Natura 2000 sites
		Natural and semi natural ecosystem	http://www.ambiente.marche.it/Ambiente/Biodiversit%C3%A0ereteecologica/Biodiversit%C3%A0/ReteEcologicaRegionale.aspx	There is no univocal indicator for the Marche Region, but some information is contained in the cognitive frameworks of the REM – Marche Regional Ecological Network
	Biodiversity and marine ecosystems (ISPRA report: http://www.strategiamarina.isprambiente.it/; https://www.isprambiente.gov.it/it/pubblicazioni/manuali-elinee-guida/linee-guida-per-il-monitoraggio-degli-effetti-delloscarico-in-mare-delle-acque-di-produzione-derivantidallestrazione-di-idrocarburi)	Marine protected areas	n.a.	There are no marine protected areas in the Marche region
		Natura2000 marine sites	https://www.regione.marche.it/natura2000/pagina_basea8e5.html?id=1810	
		Coastal pollution	https://www.arpa.marche.it/mare-nuovo	The information is expressed in terms of quality status. Data available for the Marche Region refer to the quality of coastal marine waters
		Bathing water quality	https://www.arpa.marche.it/balneazione-nuovo	
		Marine resources		There is no regional indicator on marine resources
	Soil	Artificial soils	https://www.regione.marche.it/Regione-Utile/Paesaggio-Territorio-Urbanistica-Genio-Civile/Cartografia-e-informazioni-territoriali/OpenData	The land use database is present. For a more homogeneous analysis at the level of the plan area, it is

				suggested to refer to superordinate databases such as the CLC
		Soil consumption		ARPAM (data at municipality level)
		Contaminated sites	https://www.regione.marche.it/Regione-Utile/Ambiente/Rifiuti-e-inquinamento/Siti-contaminati#2028_Il-Piano; https://www.arpa.marche.it/indicatori-ambientali	Information is in the land reclamation plan. Information also available on ARPAM
	Technological risks	Industry, trade and services	http://statistica.regione.marche.it/Statistiche-per-argomento/Pubblicazioni-Industria-e-artigianato	Up-to-date information on industry and crafts is available on the RM statistical site
		Maritime transport	https://porto.ancona.it/it/statistiche-e-studi	Some statistical information is available on the site of the Port System Authority of the Central Adriatic Sea, which includes the ports of the Marche.
	Natural and cultural heritage	Landscape	http://www.ambiente.marche.it/Ambiente/Biodiversit%C3%A0ereteecologica/Biodiversit%C3%A0/ReteEcologicaRegionale.aspx	Information on the areas of the Regional Landscape Plan and on the Functional Ecological Units can be found in the EMN cognitive framework; information system (SIRPAC) on the architectural heritage e regional archaeological
		Protected sites	https://www.turismo.marche.it/Cosa-vedere/Itinerari/Citta-UNESCO-nelle-Marche/564	Unesco sites
	Energy	Energy consumption	http://statistica.regione.marche.it/Statistiche-per-argomento/Tavole-statistiche/Territorio-e-Ambiente-Tavole-Archivio	

		Renewable energy	http://statistica.regione.marche.it/Statistiche-per-argomento/Tavole-statistiche/Territorio-e-Ambiente-Tavole-Archivio	
		Energy efficiency	http://statistica.regione.marche.it/Statistiche-per-argomento/Tavole-statistiche/Territorio-e-Ambiente-Tavole-Archivio	
	Waste	Waste production	https://www.arpa.marche.it	ARPAM waste register, in which reports are periodically published
		Recycling		
Abruzzo	Climate change	GHG emission	http://www.regione.abruzzo.it/content/qualit%C3%AO-delle-acque https://www.artaabruzzo.it/	For data on indicators, ARTA Abruzzo. For water, regional reports on monitoring of surface and underground water
		Coastal erosion		
		Temperature/ Variation of rainfall regimes		
		Fires		
		Flood risks		
	Air quality and human health	Particulate matter emissions		
		Exposure to pollutants in urban areas		
	Water	Population connected to public water supply system		
		Population connected to public sewage system		
		Water quality		
	Inland biodiversity and terrestrial ecosystem	Nationally designated protected areas		
		Natura 2000 network		
		Species conservation		
		Natural and semi natural ecosystem		
	Biodiversty and marine ecosystems	Marine protected areas		
		Natura2000 marine sites		
		Coastal pollution		
		Bathing water quality		
		Marine resources		
	Soil	Artificial soils		
		Soil consumption		
		Contaminated sites		
	Technological risks	Industry, trade and services		
		Maritime transport		
	Natural and cultural heritage	Landscape		
		Protected sites		
	Energy	Energy consumption		
		Renewable energy		
		Energy efficiency		
	Waste	Waste production		
		Recycling		
Molise	Climate change	GHG emission		

		Coastal erosion	https://www.legambiente.it/wp-content/uploads/2021/07/Rapporto-Spiagge-2021.pdf	Legambiente report 2021
		Temperature/ Variation of rainfall regimes	http://www3.regione.molise.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/10855	For more homogeneous data use National database
		Flood risks	https://www.autoritadistrettoac.it/	Risk information floods are contained in the risk hazard maps floods of the Authorities of district Molise falls into the Hydrographic District of the Southern Apennines
	Air quality and human health	Particulate matter emissions	http://www3.regione.molise.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/12909 http://www.arpamoliseairquality.it/ http://www.arpamoliseairquality.it/2021/06/28/relazione-sulla-qualita-dellaria-in-molisereport-2020/	Information is available On the Molise Region website dedicated to the protection of quality of the air and on the ARPAM website, air quality report in Molise Report 2020
		Exposure to pollutants in urban areas	http://www.arpamoliseairquality.it/	Indicator not available. On the ARPAM site you can find information about PM10 in the network regional monitoring, including the control units located in urban environment
	Water	Population connected to public water supply system		Informazione non disponibile a livello regionale (dati gestiti dai singoli gestori nelle AATO)
		Population connected to public sewage system	https://www.isprambiente.gov.it/files/pubblicazioni/rapporti/fanghi/relazione-arpamolise.Pdf	Information available on the ARPAM report

		Water quality	http://www.arpamolise.it/index.php?val=Acque/acque.php#_top	data are available on the site ARPAM to dedicated themes
	Inland biodiversity and terrestrial ecosystem	Nationally designated protected areas	http://www3.regione.molise.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/214	Molise Region Environmental Authority, Regional Phytosanitary Service, Protection e Enhancement of the Mountains and Forests, Biodiversity and Sustainable Development At the Department II. Information and data may be required directly to the Authority Environmental who is competent also on proceedings relating to Natura 2000 sites.
		Natura 2000 network		
		Species conservation		
		Natural and semi natural ecosystem		
	Biodiversity and marine ecosystems	Coastal pollution	http://www3.regione.molise.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/13780	Some information is contained in the protection plan of the waters of the Molise Region
		Bathing water quality	https://www.arpamolise2.it/WP/	ARPA molise
	Soil	Artificial soils	https://www.snpambiente.it/wp-content/uploads/2020/07/Rapporto_consumo_di_suolo_2020.pdf	System data is recalled national protection environmental SNPA
		Soil consumption		
		Contaminated sites	http://www.arpamolise.it/index.php?val=Suolo/suolo.php#_top	The information is contained in the specific thematic area of ARPA Molise
	Technological risks	Industry, trade and services	http://www.arpamolise.it/index.php?val=Previstec/PrevRischTecn.php#_top	Some data available on ARPAM
		Maritime transport		Some statistical information are present on the site of the Port System Authority

				of the Central Adriatic Sea
	Natural and cultural heritage	Landscape	http://www3.regione.molise.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/4520	Information available on the site of the Molise Region dedicated to the protection of the landscape
		Protected sites	http://www.unesco.it/it/RiserveBiosfera/Detail/84	Unesco site Collemeluccio-Montedimezzo
	Energy	Energy consumption	http://www3.regione.molise.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/15303	Information is available on the dedicated website of the Region Molise where it is also published the Regional Energy Plan
		Renewable energy	http://www3.regione.molise.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/15303	
		Energy efficiency	http://www3.regione.molise.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/15303	
	Waste	Waste production	http://www3.regione.molise.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/12910	Information is available on the dedicated website of the Region Molise where the Regional management plan some waste
		Recycling	http://www3.regione.molise.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/12910	
Apulia	Climate change	GHG emission	http://www.arpa.puglia.it/pagina2837_indicatori-ambientali.html	Arpa Puglia
		Coastal erosion		
		Temperature/ Variation of rainfall regimes		
		Fires		
		Flood risks		
	Air quality and human health	Particulate matter emissions		
		Exposure to pollutants in urban areas		
	Water	Population connected to public water supply system		
		Population connected to public sewage system		
		Water quality		
	Inland biodiversity and terrestrial ecosystem	Nationally designated protected areas		
		Natura 2000 network		
		Species conservation		

		Natural and semi natural ecosystem		
	Biodiversity and marine ecosystems	Marine protected areas		
		Natura2000 marine sites		
		Coastal pollution		
		Bathing water quality		
		Marine resources		
	Soil	Artificial soils		
		Soil consumption		
		Contaminated sites		
	Technological risks	Industry, trade and services		
		Maritime transport		
	Natural and cultural heritage	Landscape		
		Protected sites		
	Energy	Energy consumption		
		Renewable energy		
		Energy efficiency		
	Waste	Waste production		
		Recycling		

APPENDIX 3 – STRATEGIES, PLANS AND PROGRAMMES RELEVANT FOR THE COOPERATION AREA SUGGESTED DURING THE CONSULTATION

COMMUNITY-LEVEL POLICIES	
Topic	***Reference***
Biodiversity/landscape and cultural heritage	*Pan-European Biological and Landscape Diversity Strategy (PEBLDS), approved at the Ministerial Conference 'Environment for Europe' (Sofia, Bulgaria, 23-25 October 1995)* *European Landscape Convention ('Florence Convention', Council of Europe Treaty Series no. 176)* *Communication from the Commission - Agenda for a sustainable and competitive European tourism (COM/2007/0621)* *Aarhus Convention (25 June 1998)* *Habitat Directive (92/43/EC)*

	Birds Directive (2009/147/EC) *EU 2030 Biodiversity Strategy (COM(2020) 380)* *Regulation (EU) establishing the Recovery and Resilience Facility (2021/241/EC)* *UNESCO Convention on the Protection of the Underwater Cultural Heritage (2 November 2001)* *UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage (17 October 2003)* *UNESCO Recommendation on HUL (Historic Urban Landscape) 2011*
Biodiversity and marine ecosystem	*EU Blue Growth Strategy* *Marine Strategy Framework Directive (2008/56/EC)* *Methodological criteria and standards relating to the good ecological status of marine waters (2010/477 / EU)* *European Union maritime security strategy (EUMSS)* *Directive establishing a framework for maritime spatial planning. (2014/89/EC)* *EU Regulation Common Fishery Policy (1380/2013/EC)* *UN decade of Ocean Science for Sustainable Development 2021-2030*
Technological risks	*EU Security Union Strategy (COM/2020/605)*
Water	*Nitrates Directive (91/676/EEC)* *EU Water Framework Directive (2000/60/EC)* *Bathing water quality Directive (2006/7/EC)* *Groundwater Directive (2006/118/EC)* *Directive on urban waste-water treatment. (91/271/EC)*
Air quality	*Thematic Strategy on Air Pollution (COM/2005/446)* *Convention on Long-range Trans-boundary Air Pollution (CLRTAP)* *Ambient air quality and cleaner air for Europe (2008/50/EC)*

	Clean Air Policy Package (COM(2013) 918) *Sustainable and Smart Mobility Strategy (SWD/2020/331)*
Soil	*UN Convention to Combat Desertification 2018-2030 Strategic Framework* *EU Soil Thematic strategy (COM(2006)231)*
Energy	*Clean energy for all Europeans (COM/2016/860)* *Regulation on the Governance of the Energy Union and Climate Action (2018/1999/EC)*
Human Health	*European Health Strategy 'Together for Health' (COM(2007/630)*
Waste	*Waste Framework Directive (2008/98/EC)* *New circular economy action plan (COM/2020/98)*
Climate change	*European Climate Change Programme (ECCP)* *EU Adaptation Strategy (COM (2013) 216)* *European Green deal (COM(2019) 640)* *Proposal for a decision on a General Union Environment Action Programme to 2030 (COM/2020/652)* *European Climate Law (COM(2020) 80)* *Directive on the assessment and management of flood risks (2007/60/EC)* *Regulation (EU) on the establishment of a framework to facilitate sustainable investment (2020/852/EC)*
Cross-border level relevant strategies on environmental issues	
Transversal	*EU Strategy for the Adriatic and Ionian Region (EUSAIR)*
Biodiversity/Natural ecosystems	*Strategic Programme for Mediterranean forests (SPMF)*
Marine ecosystems	*Barcelona Convention of Unites Nation for Mediterranean protection and protocols (UNEP/MAP)*

Transversal	*Mediterranean Strategy for Sustainable Development (MSSD) 2016-2025*
Croatian national strategies	
Biodiversity/natural ecosystems	*The Strategy and Action Plan for the Protection of Biological and Landscape Diversity (SAPPBLD)*
	Strategy for Sustainable Development of the Republic of Croatia
Marine ecosystems	*National Strategy of Maritime Development and Integrated Maritime Policy*
Energy	*National energy and climate plan*
	National Energy Strategy (NES)
Climate	*Climate Change Adaptation Strategy*
	Draft Action Plan for Implementing the Strategy on Adaptation to Climate Change
Waste	*Waste management plan of the Republic of Croatia for the period 2017-2022*
Italian national strategies and plans	
Trasversal	*National recovery and resilience plan*
Biodiversity/natural ecosystems	*National Strategy for Biodiversity (NSB)*
	National Sustainable Development Strategy 2017/2030 (NSDS)
Biodiversity and marine ecosystems	*Marine Strategy (MaS) (National Law 190/2010)* *Guideline for the Coastal defense plans* *Management and conservation plan of Natura2000 marine sites and of Marine Protected Areas*
Climate change	*National strategy of adaptation to climate change (NSACC)*

	Flood risk Management Plan *Integrated National Plan for Energy and Climate 2030*
Landscape	*Code of cultural and landscape heritage (National Law 42/2004)*
Energy	*National energy and climate plan*
Water	*River basin district management plans* *Hydrogeological structure plan* *Hydraulic safety plans*
Air quality	National air pollution control programme Air quality evaluation parameters National Law 155/10 National Strategic Plan for sustainable mobility (DPCM 1360 of 24 April 2019)

Croatian regional strategies		
Region	***Topic***	***Reference***
Istria	*Transversal*	*Development strategy of Istrian Region*
Dubrovnik – Neretva	*Energy*	*Plan for the use of renewable energy resources in Dubrovnik – Neretva*
	Transversal	*Development strategy of Dubrovnik-Neretva County*
Zadar	*Energy*	*Energy Efficiency Action Plan of the City of Zadar for the period 2017-2019*
	Transversal	*Development plan of Zadar County*
Split-Dalmatia	*Waste*	*Action Plan for the development of the circular economy in Split-Dalmatia*

	Transversal	*Development strategy of Split-Dalmatia County*
Šibenik-Knin	*Climate*	*Coastal Plan of the Šibenik-Knin County*
	Transversal	*Development strategy of Šibenik-Knin County*
Karlovac	*Transversal*	*Development strategy of Karlovac County*
Primorsko-goranska	*Transversal*	*Development strategy of Primorsko-goranska County*
Lika-Senj	*Energy*	*Energy Efficiency Action plan of the Lika –Senj County 2020-2022*

Italian regional strategies		
Region	***Topic***	***Reference***
Veneto	*Energy*	*Regional Energy Plan – Renewables sources - Energy saving - Energy efficiency*
	Water	*Water protection and water management plans* *Hydrogeological structure plan*
	Trasversal	*Regional strategy for sustainable development and Agenda 2030 (DCR n.80 of 20.07.20)* *Veneto Regional Territorial Coordination Plan* *Strategic plan of tourism in the Veneto region* *Territorial provincial coordination plan* *Regional snow plan* *regional quarry activity plan*
	Climate change	*Flood risk management plan*
	Biodiversity and terrestrial ecosystems	*Environmental plan of regional / national parks* *Wildlife and hunting plan*
	Landscape	*Regional landscape plans area* *Area Plan of the Lagoon and the Venetian area*

		Regional Landscape Plan Area 'Arch Adriatic Coastal Lagoon of Venice and the Po Delta'
	Air quality	*Regional Plan for the Protection and Restoration of the Atmosphere* *Regional transport plan*
	Waste	*Regional Urban and Special Waste Management Plan for Veneto*
	Bidiversity and marine ecosystems	*Management and conservation plans (MPA and Natura2000 marine sites)*
Friuli Venezia Giulia	*Trasversal* *(http://www.regione.fvg.it/rafvg/cms/RAFVG/ambiente-territorio/pianificazione-gestioneterritorio/)*	*Territorial Government Plan* *General Regional Urban Planning of Friuli Venezia Giulia* *Plan for the construction, completion and development of the regional public broadband network*
	Waste *(http://www.regione.fvg.it/rafvg/cms/RAFVG/ambiente-territorio/tutela-ambiente-gestione-risorse-naturali/FOGLIA2/)*	*Regional municipal waste management plan* *Regional asbestos plan* *Plan for the remediation of polluted areas (http://www.regione.fvg.it/rafvg/cms/RAFVG/ambiente-territorio/tutela-ambientegestione-risorse-naturali/FOGLIA2/FOGLIA27/)*
	Landscape	*Regional landscape plan (http://www.regione.fvg.it/rafvg/cms/RAFVG/ambienteterritorio/pianificazione-gestione-territorio/FOGLIA21/)*
	Energy	*Regional Energy Plan (http://www.regione.fvg.it/rafvg/cms/RAFVG/ambiente-territorio/energia/FOGLIA111/)* *Regional plan of transport infrastructures, freight mobility and logistics* *Regional plan for the rehabilitation of radioelectric plants*
	Biodiversity and terrestrial ecosystems *(http://www.regione.fvg.it/rafvg/cms/RAFVG/ambiente-territorio/tutela-ambientegestionerisorse-naturali/FOGLIA203/FOGLIA1/);*	*Rete Natura2000 management Plan* *Conservation and Development Plan for natural reserves*
	Soil	*Regional plan for the remediation of contaminated sites (http://www.regione.fvg.it/rafvg/cms/RAFVG/ambiente-territorio/tutela-ambientegestione-risorse-naturali/FOGLIA2/FOGLIA27/)* *Provisions for the protection and the enhancement of the geodiversity, the geological and speleological heritage of the areas karst*

		(https://www.regione.fvg.it/rafvg/cms/RAFVG/ambienteterritorio/geologia/FOGLIA06/)
	Water	*Regional water protection plan (http://www.regione.fvg.it/rafvg/cms/RAFVG/ambiente-territorio/pianificazione-gestioneterritorio/FOGLIA20/)* *Plan for the hydrogeological structure of the basins of the rivers Isonzo, Tagliamento, Piave, Brenta-Bacchiglione (http://pai.adbve.it/index_PAI4B.html)* *Plan for the hydrogeological structure of the sub-basin of Fella river (Municipalities of Malborghetto Valbruna, Pontebba, Chiusaforte, Dogna, Moggio Udinese, Resiutta, Tarvisio)(http://pai.adbve.it/PAI_Fella/index_fella.html)* *Plan for the hydrogeological structure of regional basins (PAIR) – basins hydrographic of the tributaries of the Lagoon of Marano-Grado, the catchment area of T. Slizza and the hydrographic basin of Levante (http://www.regione.fvg.it/rafvg/cms/RAFVG/ambienteterritorio/geologia/FOGLIA24/)* *Plan for the hydrogeological structure of the regional basins* *Water Management Plan of the Hydrographic District of the Eastern Alps (http://www.alpiorientali.it/direttiva-2000-60/presentazione.html)*
	Climate change	*Flood Risk Management Plan of hydrographic district of the Eastern Alps (http://www.alpiorientali.it/direttiva-2007-60/pgra-2015-2021/piano-di-gestione-del-rischioalluvioni.html)*
	Coastal marine waters	*Regional surveillance plan for the management of the health risk associated with algal blooms (http://www.arpa.fvg.it/cms/tema/acqua/balneazione/index.html)* *Marine protected areas management and conservation plans (MPA and Natura2000 marine sites)*
	Air quality and health *(http://www.regione.fvg.it/rafvg/cms/RAFVG/ambiente-territorio/pianificazione-gestioneterritorio/)*	*Regional Air Quality Improvement Plan* *Regional action plan on air quality* *Regional Plan of Local Public Transport* *Regional plan for mining activities* *Regional plan of inspections in establishments at risk of major accidents of lower threshold*
Emilia Romagna	*Water*	*Water protection plan*
	Biodiversity and marine ecosystems	*Management and conservation plans (Natura2000 marine sites)*

	Energy	*Regional Energy Plan 2030*
	Climate	*Mitigation and adaptation strategy for climate change* *Pact for work and climate*
	Air quality	*Regional integrated plan on air 2020* *Padania basin agreement 2021*
Marche	*Transversal*	*Preliminary document to the regional strategy for the Sustainable Development*
	Energy	*Regional Environmental Energy Plan*
	Biodiversity and marine ecosystems	*Integrated management plan of coastal areas (https://www.regione.marche.it/Regione-Utile/Paesaggio-Territorio-Urbanistica-Genio-Civile/Difesa-della-costa#Piano-GIZC-2019)* *Management and conservation plans (Natura2000 marine sites)* *Management Plan Natura 2000 Site ZSC/ZPS IT 5320009 "Fiume Esino in località Ripa Bianca* *(https://www.riservaripabianca.it/piano-di-gestione-del-sito-natura-2000/)*
	Climate change	*Flood Risk Management Plan*
	Water	*Water protection plan (https://www.regione.marche.it/Regione-Utile/Ambiente/Tutela-delle-acque/PTA#Che-cosa-%C3%A8-il-PTA)* *Hydrogeological Structure Plan* *Management plan of the river basin district* *Spatial planning tools River floods Regional Law n. 22 of 2011 (Verification of Hydraulic Compatibility (V.C.I.) and of Hydraulic Invariance (V.I.I))*
	Air quality	*Recovery plan and maintenance of ambient air quality*
Abruzzo	*Climate*	*Regional Adaptation Strategy to Climate Change*
	Landscape	*Regional Landscape Plan* *Municipal territories regulatory plans*
	Water	*Water protection plan (http://www.regione.abruzzo.it/content/piano-tutela-delle-acque)* *District Management Plans*

		Hydrogeological Structure Plan (www.distrettoappenninomeridionale.it)
	Biodiversity and marine ecosystems	*Coastal Defense Plan from erosion, climate change's effects and pollution* *Marine protected areas management and conservation plans (MPA and Natura2000 marine sites)*
	Air quality	*Regional Plan for the Protection of Air Quality*
Molise	*Energy*	*Regional Environmental Energy Plan (http://www3.regione.molise.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/I 5303)*
	Climate	*Positioning of Molise on the sustainability objectives of the National Strategy for Sustainable Development and the 2030 Agenda*
	Water	*Water protection plan* *District Management Plans* *Hydrogeological Structure Plan (www.distrettoappenninomeridionale.it)*
	Biodiversity and marine ecosystems	*Management and conservation plans (Natura2000 marine sites)*
	Air quality	*Integrated Regional Plan for Molise Air Quality*
	Waste	*Waste regional management plan (http://www3.regione.molise.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/I 2910)*
Apulia	*Energy*	*Regional Environmental Energy Plan*
	Biodiversity and marine ecosystems	*Regional Coastal Plan* *Marine protected areas management and conservation plans (Natura2000 marine sites)*
	Air quality	*Regional air quality plan*
	Water	*Regional water protection plan*

APPENDIX 4 – OPINIONS AND SUGGESTIONS RECEIVED DURING THE CONSULTATION PHASE AND ANSWERS

Region	Administration	Contribution/observation	Answer to the observation
Apulia	Agenzia Regionale strategica per lo sviluppo ecosostenibile del territorio	Si suggerisce di introdurre i seguenti temi ambientali: agenti fisici (rumori e vibrazioni), radiazioni ionizzanti e non, campi magnetici ed elettromagnetici, mobilità. Per la tematica acqua, si suggerisce di suddividere in: acque superficiali, acque sotterranee, acque destinate al consumo umano, rete idrica e fognaria	Environmental themes have been addressed based on data availability and relevance with cross-border programme objectives. Data on noise pollution and water has been added in chapter III, air quality and health and inland water quality and supply of the ER
		Inserire tra gli obiettivi ambientali anche il dissesto idrogeologico e il consumo di suolo	Hydrogeological risk and soil consumption have been added. See chapter VI of the ER
		Da avviare, già nella fase di scoping, uno screening di VINCA con identificazione dei Siti di Importanza Comunicati interessati dal programma	The section on Natura2000 sites is already included in the report (see sub-chapter VII.3 of the ER)
		Da verificare la coerenza con la pianificazione regione e provinciale nelle aree interessate dal programma	Plan, Programme and Strategies included in the analysis are those relevant at transboundary level and concerning issues related to the IP
	Sezione risorse idriche	Si suggerisce di integrare documenti chiave sullo stato dell'ambiente inerenti alla sua area di competenza	Plan, Programme and Strategies included in the analysis are those relevant at transboundary level and concerning issues related to the IP. Nevertheless, a list of Plans and Programme suggested in the scoping phase is reported in appendix 3 of the ER, for further analysis at project level
	ARPA	Da approfondire la tematica relativa all'inquinamento costiero, aggiungendo anche le informazioni derivanti dal monitoraggio dei rifiuti marini e delle microplastiche	Environmental themes have been addressed based on data availability and relevance with cross-border programme objectives. Data on marine litter have been added in chapter III, biodiversity and marine ecosystems, of the ER
		Per la tematica suoli, si suggerisce di aggiungere gli obiettivi ambientali di riduzione del consumo di suolo e frammentazione territorio naturale e agricolo	Soil consumption and fragmentation of the natural and agricultural territory have been added in chapter III, soil quality and land use, of the ER
		Si suggerisce il link di ARPA Puglia che rimanda a documenti utili per la descrizione dello stato dell'ambiente	Environmental themes have been addressed based on data availability and relevance with cross-border programme objectives
		Da approfondire la sinergia tra il programma e il piano nazionale di ripresa e resilienza	The recovery and resilience plan is considered in the coherence analysis (see sub-chapter V.2 of the ER, Italy principal strategies on environmental issues)
Abruzzo	Dipartimento territorio – ambiente Servizio Gestione e qualità acque	Si segnala di fare riferimento al Piano di Tutela delle Acque regionale e ai dati sul monitoraggio delle acque superficiali e sotterranee	Environmental themes have been addressed based on data availability and relevance with cross-border programme objectives. Data on water have been added in chapter III, inland water quality and supply, of the ER
		In riferimento alla tematica acqua si segnalano ulteriori indicatori	Environmental themes have been addressed based on data availability and

			relevance with cross-border programme objectives. Data on water have been added in chapter III, inland water quality and supply, of the ER
	Ministero della Cultura	Si segnalano ulteriori piani sulla tutela del patrimonio culturale e del paesaggio e si chiede di verificare la presenza di aree tutelate ai sensi del Codice dei Beni Culturali e del Paesaggio	Addition plans and strategies on cultural heritage have been added in the coherence analysis (see sub-chapter V.2 of the ER, Italy principal strategies on environmental issues). The reference to regional plans on landscape and cultural heritage has been added in appendix 3
		Si suggerisce di approfondire la tematica della compatibilità dello sviluppo economico sostenibile con la tutela del paesaggio e del patrimonio culturale, con riferimento all'utilizzo di energia da fonti rinnovabili e ad interventi di efficientamento energetico. Si suggerisce un approfondimento sull'impatto delle reti tecnologiche per la dotazione della connettività a banda larga	The theme related to landscape is covered in the context analysis (see chapter III, Landscape and cultural heritage of the ER)
	Autorità di Bacino Distrettuale dell'Appennino Meridionale	Si suggerisce di integrare la lista documenti chiave sullo stato dell'ambiente	The documents have been integrated in the analysis, based on their cross-border relevance. Regional data sources have been added in appendix 2 of the ER
		Dare rilevanza autonoma al tema dell'Economia circolare, che dovrebbe essere riferita non solo alla gestione dei rifiuti, ma anche alla corretta gestione delle risorse ambientali	The circular economy and correct management of natural resources have been addressed in the entire ER
Emilia Romagna	Parco Delta del Po	Tab.1: 'Biodiversità ed ecosistemi naturali', includere le aree regionali protette. Obiettivo specifico OSp vii: azioni per il recupero della plastica in mare e nelle coste, corridoi ecologici e riduzione della frammentazione degli ecosistemi costieri dovuta alla rete viaria, attività di conservazione a livello transfrontaliero (zone umide costiere)	Data on protected areas are reported in chapter III, Inland biodiversity and terrestrial ecosystem. The regional references are reported for each region in appendix 2 of the ER. The suggestion has been considered in SO 2.7, challenge 16 - Result 3
	Servizio Valutazione Impatto e Promozione Sostenibilità Ambientale – Posizione Organizzativa VAS Piani e Programmi	Suggerire azioni mirate alla conservazione di ecosistemi naturali marino-costieri e dei servizi eco-sistemici e la messa in atto di misure di mitigazione, promozione di progetti di 'gestione integrata delle zone costiere', monitoraggi sul trasporto solido dei corsi d'acqua, sviluppo di nuove tecnologie per il ripristino del flusso naturale dei sedimenti	The suggestion has been considered in SO2.7, challenge 16 – Result 1
		Aggiornare l'elenco di piani regionali potenzialmente utili	Plan, Programme and Strategies included in the analysis are those relevant at transboundary level and concerning issues related with the IP. Nevertheless, a list of Plans, and Programme suggested in the scoping phase is reported in appendix 3 of the ER, for further analysis at project level
		Aggiornare l'elenco di fonti di dati ambientali a livello europeo, nazionale e regionale per l'analisi di contesto	The relevant data sources for the programme area have been added in the report. It worth nothing that the context analysis will be drafted using common indicators and homogeneous data for all the CBC area. The data sources suggested at regional level have been added in appendix 2 of the ER

		Per il tema del Patrimonio naturale e culturale, includere anche la 'valorizzazione'	In the cultural heritage, valorisation has been added (see table in chapter VI of the ER)
		Inserire nuovi temi ambientali con i relativi indicatori e indicare precise criticità del territorio e rischi associati ai cambiamenti climatici	Environmental themes have been added based on data availability and relevance with cross-border programme objectives. The analysis of climate change risk is available in chapter III, climate change and associate risks, of the ER
		Includere nel Rapporto Ambientale la valutazione delle 'ragionevoli alternative'	Alternative scenarios have been taken into account in the ER, related to budget allocation by priority (see sub-chapter X.1 of the ER)
		Includere nel Rapporto Ambientale l'analisi di incidenza	This is already included in the report (see sub-chapter VII.3 of the ER)
		Nel sistema di monitoraggio utilizzare indicatori in grado di valutare l'efficienza delle azioni rispetto all'effetto ambientale valutato	A specific chapter is already dedicated to the evaluation of the efficiency of the actions compared to the environmental effects (see sub-chapter VII.2 of the ER)
Friuli Venezia Giulia	Azienda sanitaria universitaria Giuliano Isontina	Includere alcuni documenti chiave sullo stato dell'ambiente per il Friuli	The information has been reported in the context analysis (see chapter III, soil quality and land use, of the ER)
		Nel problema ambientale relativo alla qualità dell'aria, valutare anche i principali parametri di valutazione (National Law 155/10)	According to national legislation, the evaluation parameters have been considered (see chapter III, air quality and health, of the ER)
		Integrare l'obiettivo ambientale riguardante l'impatto da trasporto marittimo derivante dal turismo	Maritime transport related to tourism has been added and addressed in chapter III, technological risks, of the ER
		In termini di priorità ambientali, includere nel nuovo programma: organizzazione di workshop e seminari tecnici sui temi dell'ambiente della trasparenza e della partecipazione nei processi di valutazione ambientale	The suggestion has been considered in SO 2.7, challenge 16 - Result 2
Friuli Venezia Giulia	ARPA - FVG	Nel Rapporto Ambientale dettagliare le azioni correlate ai singoli obiettivi specifici e i criteri e/o la metodologia utilizzata per la selezione dei progetti finanziabili	The actions have been correlated with the SOs (see sub-chapter I.2, Programme strategy, of the ER). Concerning the criteria and the methodology, references have been added in chapter VIII, Mitigation and orientation measures. Additional evaluations will be done, if it is the case, at a later stage
		Effettuare un'analisi dei punti di forza e di debolezza del Programma e delle opportunità e delle minacce che lo possono condizionare	This analysis is not relevant for the scope of the ER
		Presentare l'esito della verifica di coerenza sia interna che esterna tramite appositi paragrafi descrittivi riassuntivi	This is already included in the report (see chapter IV and V of the ER)
		Integrare l'elenco di fonti di dati ambientali a livello regionale per l'analisi di contesto con i database suggeriti	The data sources for the programme area are noted in the report. The context analysis will be drafted using common indicators and homogeneous data for all the CBC area. The data sources suggested at regional level have been added in appendix 2 of the ER
		Includere nell'analisi delle alternative gli orizzonti temporali previsti per il programma e gli effetti ambientali, individuando le alternative	The evaluation of alternatives is addressed in sub-chapter X.1 of the ER. The analysis of the temporal horizon will be addressed, if it is the case, in a later stage

		più coerenti con i criteri di sostenibilità e gli obiettivi del programma	
		L'analisi e valutazione degli effetti, disaggregata per singolo aspetto ambientale e per singola azione, deve essere riaggregata organicamente in base al contesto ambientale	The evaluation of effects, with the reference to each SO and associate action, is addressed in sub-chapter VII.2 of the ER
		Monitorare le misure di mitigazione tramite opportuni indicatori descritti nel piano di monitoraggio di VAS, al momento della definizione puntuale delle azioni o dei bandi	The mitigation measures are addressed in chapter VIII of the ER. The evaluation related to the definition of the action and of the offers will be done, if it is the case, in a later stage
		Nel sistema di monitoraggio, chiarire la diversa tipologia di indicatori utilizzati e porre particolare attenzione a Indicatori di Processo che siano significativi in base alle Azioni di Programma	Monitoring is addressed in chapter IX of the ER. The evaluation related to the actions of the Programme will be done, if it is the case, in a later stage
		Implementare il Monitoraggio di VAS anche in fasi successive al fine di includere nel monitoraggio tutte le ricadute ambientali derivanti dalle azioni, di cui i bandi dovranno prevederne la misura	The ER proposed a specific organisation for monitoring programme implementation (see chapter IX of the ER)
	Direzione Centrale Risorse Agroalimentari, Forestali e Ittiche	Si suggerisce di integrare l'elenco di Piani e Strategie regionali e l'elenco di fonti di dati ambientali	Plan, Programme and Strategies included in the analysis are those relevant at transboundary level and concerning issues related to the IP. Nevertheless, a list of Plans, and Programme suggested in the scoping phase will be added as annex to the ER, for further analysis at project level. The relevant data sources for the programme area have been mentioned in the report. The data sources suggested at regional level have been added in appendix 2 of the ER
Marche	Unione Montana dei Sibillini	Interventi finalizzati ad identificare e affrontare le sfide che nascono dalle 'complesse relazioni tra cambiamento ambientale globale e lo sviluppo sostenibile'	The suggestion is considered in SO 2.4, challenge 12 - Result 3
	PF Tutela delle Acque	Aggiornare l'elenco di piani regionali potenzialmente utili	Plan, Programme and Strategies included in the analysis are those relevant at transboundary level and concerning issues related to the IP. Nevertheless, a list of Plans, and Programme suggested in the scoping phase have been added in the appendix 3 of the ER, for further analysis at project level
		Pag. 56 del rapporto di Scoping, per la voce 'Rischi di alluvioni' si suggerisce l'inserimento di link e modifiche alla frase	The suggestion has been added in appendix 2 of the ER in the table related to regional data sources
	AATO 2	Nella tematica 'Acqua' si suggerisce di integrare l'indicatore 'popolazione collegata al sistema depurativo pubblico' In relazione alle 'Fonti di informazioni dati', si segnalano ulteriori dati relativi all'ultimo anno disponibile (2020)	Environmental themes have been addressed based on data availability and relevance with cross-border programme objectives. Data on water have been addressed in chapter III, inland water quality and supply. The suggestion related to the source has been added in appendix 2 of the ER in the table related to regional data sources
	ARPAM	Si suggerisce di integrare le fonti di informazioni relative agli indicatori associati alle tematiche: cambiamenti climatici, acqua ed ecosistemi	Environmental themes have been addressed based on data availability and relevance with cross-border programme objectives. Each theme has been addressed

		marini, biodiversità ed ecosistemi naturali, suolo, salute umana e rifiuti	in the contest analysis. The data sources suggested at regional level have been added in appendix 2 of the ER
		Si segnala che tra le tematiche ambientali strategiche potrebbe essere inserita anche quella riguardante 'Sviluppo sostenibile e ambiente', indicando possibili obiettivi principali	The suggestion has been considered in SO 4.6, challenge 29 - Result 1
		Si suggerisce di inserire tra gli obiettivi ambientali generali anche la riduzione del consumo suolo	The theme related to land use has been added. Soil consumption and fragmentation of natural and agricultural territory have been added in chapter III, soil quality and land use. The general environmental objective on land use has also been added (see table of chapter VI of the ER)
		Nel Rapporto Ambientale, gli Indicatori Ambientali correlati agli obiettivi ambientali dovranno essere coerenti con la produzione di dati ed informazioni a livello istituzionale/pubblico	The analysis of indicators is coherent with data sources available at public/institutional level (see chapter III of the ER)
		Dovrà essere considerata anche la coerenza esterna del Programma	The analysis of external coherence is already included in the ER (see chapter V of the ER)
		Relativamente al monitoraggio, si suggerisce di definire la metodologia e l'oggetto del monitoraggio e gli Indicatori ambientali complessivi di contesto e di contributo	This is already included in the ER (see chapter IX of the ER)
		Si suggerisce di definire la metodologia per stimare gli effetti significativi positivi e/o negativi e/o nessun effetto, il quadro complessivo degli effetti ambientali, la valutazione degli effetti e il perseguimento degli obiettivi di sostenibilità	This is already included in the ER (see sub-chapter VII.1 Methodology for assessment of the ER)
	Servizio Tutela Gestione ed Assetto del Territorio Posizione di Funzione Valutazioni ed Autorizzazioni Ambientali, Qualità dell'Aria e Protezione Naturalistica	Tab. 1 - Si suggerisce di sostituire l'indicatore 'temperatura' inerente i cambiamenti climatici, con indicatori più idonei ad inquadrare il contesto dei rischi climatici	Environmental themes have been added based on data availability and relevance with cross-border programme objectives. The analysis of climate change risk is available on chapter III, climate change and associate risks, of the ER
		Si suggerisce di definire l'indicatore 'emissioni di polveri sottili' nel rapporto ambientale in relazione alle tipologie prevalenti di azioni/progetti	The comment is not clear. The evaluation of the typology of actions/projects will be done, if it is the case, in a later stage
		Per il tema biodiversità ed ecosistemi naturali, si suggerisce di considerare la variazione di naturalità	Duly noted. See chapter III, inland biodiversity and terrestrial ecosystem, of the ER
		Per quanto riguarda l'indicatore 'inquinamento costiero', i dati disponibili per la Regione Marche fanno riferimento alla qualità delle acque marino costiere	The comment has been added in the appendix 2 of the ER, on the regional data sources
		Per una descrizione uniforme delle principali caratteristiche di paesaggio, si suggerisce di far riferimento alle classi di uso del suolo	The theme related to the analysis of landscape types has been addressed in chapter III, landscape and cultural heritage, of the ER
		Per quanto riguarda il quadro di riferimento strategico, sarebbe opportuno già in questa fase una prima identificazione degli strumenti programmatici e strategici da cui derivano gli obiettivi di riferimento	The analysis has been carried out based on the level of detail reached by the Programme. A further identification of the programmatic and strategic instruments could be considered in a later stage
		Per quanto riguarda gli obiettivi della politica di conservazione e gestione della biodiversità, si ritiene importante menzionare la Strategia	The EU Biodiversity strategy for 2030 has been considered for the analysis and the reference has been added in sub- chapter

		dell'UE sulla biodiversità per il 2030 (Com(2020) 380	V.1 of the ER, Biodiversity, Landscape and Cultural Heritage Policy Framework
		Tab. 2: Considerare l'aspetto legato alla temperatura massima giornaliera come riguardante la mitigazione e non l'adattamento ai cambiamenti climatici. Per l'indicatore 'Gestione del suolo' si suggerisce di citare esplicitamente nell'obiettivo ambientale la riduzione del consumo di suolo	The environmental objective related to the heating degree days has been removed. The environmental objective on soil consumption has been added in chapter VI of the ER
		Il capitolo 5.1 fa riferimento alla valutazione di incidenza e non alla valutazione appropriata	According to the directive, sub- chapter VII.3 of the ER refers to appropriate analysis
		Nella valutazione dei probabili effetti ambientali significativi, si suggerisce, in fase di valutazione, di identificare in maniera più chiara le tipologie di intervento in relazione agli obiettivi specifici	This is already included in the ER (see sub-chapter VII.2 of the ER)
		Dal momento che la valutazione degli effetti viene approfondita nella successiva fase, si suggerisce di utilizzare questa prima analisi come solo riscontro della presenza di interazioni	This is already included in the ER (see sub-chapter VII.2 of the ER)
		Per quel che riguarda l'analisi di alternative, si suggerisce di approfondirla in funzione di una diversa allocazione delle risorse	Alternative has been analysed based on budgetary scenarios (sub-chapter X.1 of the ER)
Molise	Autorità di Bacino Distrettuale dell'Appennino Meridionale	Si suggerisce di integrare la lista documenti chiave sullo stato dell'ambiente	The documents have been integrated in the analysis, based on their cross-border relevance. Regional data sources have been added in appendix 2 of the ER
		Dare rilevanza autonoma al tema dell'Economia circolare, che dovrebbe essere riferita non solo alla gestione dei rifiuti, ma anche alla corretta gestione delle risorse ambientali	The circular economy and the correct management of natural resources have been addressed in the entire ER
	Agenzia Regionale per lo Sviluppo Agricolo, Rurale e della Pesca	Tra le tipologie di indicatori, si suggerisce di considerare anche la tematica rischio incendi	The theme related to fire risk has been added in chapter III, climate change and associated risks, of the ER
	Regione Molise	Si suggerisce di integrare l'elenco che individua le fonti, non esaustive, dei dati richiesti per l'estensione dei documenti ambientali	The data sources at regional level have been added in appendix 2 of the ER
Veneto	Environmental Authority (Regional Commission SEA)	Da sottolineare il ruolo della valutazione durante la fase di elaborazione del programma, fornendo indicazioni circa le alternative possibili	The analysis of alternatives has been reported in sub- chapter X.1 of the ER
		Da approfondire gli obiettivi dell'agenda 2030 per lo Sviluppo Sostenibile, da integrare con la strategia regionale	The objectives have been analysed based on cross-border relevance and to the 2030 agency for the Sustainable Development. The reference to regional strategy has been added in appendix 3 of the ER
		Integrare l'elenco di piani e programmi da analizzare nell'analisi di coerenza esterna	The analysis of coherence has been carried out based on cross-border relevance. The Plans and Programmes at regional level has been added in appendix 3 of the ER
		Si evidenzia la necessità che vengano sviluppate azioni per contrastare fenomeni legati ai cambiamenti climatici	The suggestion has been considered in SO 2.4.
		Devono essere approfondite nel Rapporto Ambientale ulteriori tematiche e settori rilevanti e per le componenti ambientali che presentano criticità, le cause e le misure previste per mitigare gli effetti negativi	The analysis is available in chapter III, VII and VIII of the ER

		Devono essere valutate le prescrizioni/raccomandazioni e i contributi delle Autorià Ambientali	The recommendations for each Environmental Authority are reported in this table (appendix 4 of the ER)
		Devono essere individuare azioni concrete per il raggiungimento degli obiettivi	This is already included in the entire ER
		Devono essere individuate le ragionevoli alternative	See sub-chapter X.1 of the ER
		Deve essere portata avanti una valutazione di incidenza	See sub-chapter VII.3 of the ER
		The ER should contain information as for Annex VI, Second section, National Law 152/2006	This is already included in the entire ER
		Da considerare specifici elementi per il piano di monitoraggio	The monitoring elements have been reported in chapter IX of the ER
	Ministero della Transizione Ecologica	L'elenco riportato nell'Appendice 1 dovrà essere integrato con i riferimenti delle Autorità di bacino distrettuale competenti	Appendix 1 refers only to Environmental Authorities, not to authorities with environmental competences
		Integrare l'elenco di piani e programmi da analizzare nell'analisi di coerenza esterna	The plans and programmes, with transboundary relevance, have been added in the ER. Regional plans and programmes have been added in appendix 3 of the ER
		In merito alle questioni ambientali e agli indicatori di contesto si suggerisce di integrarli utilizzando gli indicatori della Direttiva Quadro Acque 2000/60/CE. Aggiungere riferimenti relativi al rischio idrogeologico nella tabella 2 'Aspetti ambientali e obiettivi ambientali generali'. Per la metodologia per la valutazione dei probabili effetti ambientali significativi (par. 5.3), indicare la matrice delle componenti ambientali interessate	Environmental themes have been addressed based on data availability and relevance with cross-border programme objectives. Hydrogeological risk has been added (see section VI of the ER). For the evaluation of the environmental effects see chapter VII of the ER
		Si suggerisce di integrare nel capitolo 4 'obiettivi di sviluppo sostenibili e ambientali' a pag. 13, l'indicazione della Direttiva Europea sulla Pianificazione dello Spazio Marittimo	The reference to the Directive has been added in chapter V of the ER
		Nella tabella 1, capitolo 3 si suggerisce di modificare le nomenclature dei temi ambientali e i relativi indicatori	The suggestions on environmental themes have been integrated. See chapter VI of the ER
		Nella tabella 2 Aspetti ambientali e obiettivi ambientali generali si consiglia di apportare modifiche nella voce dedicata all'ambiente marino	The suggestions on environmental objectives have been integrated. See chapter VI of the ER
		Si consiglia di integrare le fonti di informazioni e dati con le fonti suggerite	Data source has been added based on cross-border relevance. The complete list of data sources at European, national and regional levels is available in appendix 2 of the ER
		Si consiglia di integrare l'elenco di strategie, piani e programmi rilevanti per l'area di cooperazione	The plans and programmes indicated, with transboundary relevance, will be added in the ER. The complete list of data sources at European, national and regional levels is available in appendix 3 of the ER
		Si rappresenta che, laddove gli interventi previsti per il raggiungimento degli obiettivi del Piano ricadano anche all'interno dei Siti di interesse Nazionale, gli stessi dovranno essere	Duly noted. This should be done at a later stage in the implementation phase regarding project selection.

		sottoposti alla valutazione di competenza della Direzione di competenza del Ministero	
		In sede di pianificazione e successiva progettazione sia data particolare rilevanza alla valutazione di soluzioni alternative che non interessino, a livello progettuale, direttamente o indirettamente siti Natura 2000 o altre tipologie di aree protette e tutelate	Duly noted. This has been stressed in sub-chapter VII.3 of the ER
	Ministero della Cultura	Si suggerisce di coordinare gli obiettivi programmatici con i contenuti del nuovo Piano Territoriale Regionale di Coordinamento (P.T.R.C.) del Veneto	This document has been considered only based on cross-border relevance. The complete list of data sources at regional level is available in appendix 3 of the ER
		Per quanto riguarda l'analisi delle alternative, si suggerisce un'analisi di dettaglio che tenga in debito conto gli aspetti legati alla conservazione dei segni storici del paesaggio e alle possibili interferenze, evidenziando le possibili conseguenze attese nel caso di mantenimento dello status quo (scenario O)	The analysis of alternative has been done considering three different scenarios discussed during the task forces and based on the expected budget allocation
		Si suggerisce di integrare i riferimenti ad importanti strumenti giuridici internazionali	The plans and programmes indicated, with transboundary relevance, have been added in the ER. The completed list of data sources is available in appendix 3 of the ER
		Si suggerisce di integrare le informazioni inerenti le Autorità/Enti che dovranno essere coinvolti nel programma in base alle rispettive competenze istituzionali e amministrative	In the chapter related to monitoring a brief description of competences and roles in programme implementation has been provided
		Si suggerisce di analizzare le relazioni paesaggistiche e culturali fra i beni tutelati e il contesto di riferimento, in modo da poter evidenziare le possibili conseguenze che l'attuazione del Programma possa generare nel palinsesto attuale e le rispondenze con gli obiettivi di tutela paesaggistica territorialmente attesi	The theme related to the analysis of landscape types has been addressed in chapter III, landscape and cultural heritage, of the ER
		Si suggerisce di valutare in chiave paesaggistico-percettiva il potenziale impatto, sia in termini di consumo di suolo che di trasformazione dei luoghi, conseguente all'implemento delle tecnologie per le energie rinnovabili e allo sviluppo dei servizi di mobilità transfrontaliera	The theme related to the analysis of landscape types has been addressed in chapter III, landscape and cultural heritage, of the ER
		Si suggerisce di integrare le considerazioni inerenti le misure previste per impedire, ridurre o compensare nel modo più completo possibile gli eventuali impatti negativi sui beni culturali e sul paesaggio (con particolare riferimento agli obiettivi strategici OSt3 e OSt4)	Duly noted. See chapter VIII, related to mitigation measures
		Si suggerisce di approfondire adeguatamente il tema dedicato al sistema di monitoraggio	See chapter IX of the ER
	Consorzio di Bonifica Adige Euganeo	Si richiede di integrare il campo relativo ai cambiamenti climatici con indicatori aggiuntivi	Environmental themes have been added based on data availability and relevance with cross-border programme objectives. The analysis of climate change risk is available in chapter III, climate change and associate risks, of the ER
	ARPAV	Si suggerisce di approfondire alcuni ulteriori documenti strategici e pianificatori	The plans and programmes indicated, with transboundary relevance, have been added in the ER. The complete data sources have been reported in Appendix 3 of the ER
		Si suggerisce di integrare nel Rapporto Preliminare le tipologie di misure attuative su	Past programming achievements have been illustrated in the ER. Environmental themes

		cui il Programma si basa per raggiungere gli obiettivi specifici, e gli esiti del periodo di programmazione precedente. Per le tematiche ambientali proposte, si suggerisce di effettuare una prima valutazione sulla pertinenza delle medesime in relazione agli obiettivi di Programma, individuando indicatori di contributo misurabili	have been addressed based on the relevance with cross-border programme objectives. In addition, specific indicators have been identified in the chapter IX related to monitoring
	Consiglio di Bacino Laguna di Venezia	Si suggerisce di sviluppare i futuri elaborati tenendo conto di ulteriori documenti a livello europeo	The plans and programmes indicated, with transboundary relevance, have been added in the ER. The complete data sources have been reported in Appendix 3 of the ER
	Comune di Treviso	Per il Tema Cambiamento climatico, considerare anche l'attenuazione degli impatti degli eventi meteorici avversi e l'erosione costiera. Per il tema Qualità del suolo e paesaggio si suggerisce tra gli obiettivi la riduzione del consumo di suolo e la rinaturalizzazione di aree antropizzate. Per il Tema Salute, rischio sanitario e problemi ambientali l'obiettivo dovrebbe comprendere anche la riduzione dell'esposizione agli inquinanti nelle aree rurali o comunque scarsamente urbanizzate	Environmental themes have been added based on data availability and relevance with cross-border programme objectives. The analysis of climate change risk is available on chapter III of the ER, climate change and associate risks. Soil consumption and fragmentation of the natural and agricultural territory have been added in chapter III of the ER, soil quality and land use. The theme related to human health and exposure to pollutants has been added in chapter III of the ER, air quality and health
		Si suggerisce di integrare nel Rapporto Ambientale le connessioni dei territori oggetto del Programma con aree interne adiacenti agli stessi, legate ad essi da aspetti culturali, ambientali e sociali	The analysis is limited to the area covered by the Programme
	Soprintendenza Archeologia, belle arti e paesaggio per il Comune di Venezia e Laguna	Si ritiene debba essere tenuta in considerazione la peculiarità dell'ambiente lagunare particolarmente fragile. Si ritiene utile consultare il PALAV (Piano d'Area della Laguna e dell'area Veneziana) e, per gli aspetti archeologici, la proposta di Piano Paesaggistico d'Ambito recepita dalla Giunta Regionale con delibera n. 699 del 14/05/2015. Si ritiene utile fare riferimento, a livello di proposta metodologica, alla Recommendation on HUL (Historic Urban Landscape-Paesaggio Storico Urbano), che l'UNESCO ha emanato alla fine del 2011	A focus has been done on the Laguna in the chapter III related to the context analysis.
		Si ritiene non esaustiva l'illustrazione dei contenuti degli obiettivi generali e specifici del Programma e del rapporto con altri pertinenti piani o programmi, in particolare con i piani paesaggistici d'ambito attualmente vigenti e con i Piani di gestione dei siti Natura 2000 e Piani di gestione UNESCO	Duly noted, data sources have been analysed based on cross-border relevance. Additional data sources have been added in Appendix 3 of the ER
		Si ritiene non esaustivo il metodo di analisi dei contesti territoriali per la valutazione delle strategie di intervento coerentemente con gli strumenti di pianificazione paesaggistica. Si suggerisce di raccordare il Piano con lo stato attuale della pianificazione paesaggistica della Regione (Piano Territoriale Regionale di Coordinamento del Veneto)	Duly noted, data sources have been analysed based on cross-border relevance. Additional data sources have been added in Appendix 3 of the ER

		Si ritiene non esaustiva la considerazione dei possibili impatti significativi sull'ambiente, compresi, tra gli altri, quelli relativi ai beni materiali, al patrimonio culturale, architettonico, archeologico, il paesaggio e l'interazione tra questi e gli altri fattori ambientali (aree tutelate per legge ex art. 142 e ai beni paesaggistici ex art. 136 del National Law. n.42/2004), rispetto ad un utilizzo di energia da fonti rinnovabili	Duly noted. See sub-chapter VII.2 of the ER
		Si ritiene non esaustiva la considerazione delle misure previste per mitigare gli eventuali impatti negativi significativi sull'ambiente, e quindi anche sui beni culturali e sul paesaggio, conseguenti all'attuazione del Programma, con particolare riguardo al miglioramento del ruolo del turismo culturale e sostenibile nello sviluppo economico	The analysis on mitigation measures is developed in chapter VIII of the ER
		Si ritiene utile un approfondimento delle caratteristiche culturali e paesaggistiche delle aree che potrebbero essere significativamente interessate dall'attuazione degli obiettivi del Piano (beni culturali tutelati ai sensi della parte II e della Parte III del National Law 42/2004). È auspicabile la consultazione della mappatura dei beni culturali e paesaggistici terrestri e sommersi, prodotta dal MIC (https://catalogo.beniculturali.it/)	Environmental themes have been added based on data availability and relevance with cross-border programme objectives. The data source related to mapping cultural sites has been added in appendix 2 of the ER
		Si ritiene non esaustiva la valutazione dell'impatto né le eventuali azioni di mitigazione per quanto riguarda i beni archeologici. Si raccomanda una tempestiva applicazione delle previsioni dell'art. 25 del Codice dei Contratti Pubblici (National Law. 50/2016 e s.m.), come best practice per garantire la conservazione dello stato dei siti e dei beni di interesse archeologico	Duly noted, the analysis of the effects and mitigation measures is reported in chapters VII and VIII of the ER
Croatia	Ministry of Economy and Sustainable Development	The ER should assess, impacts of programme on the NATURA 2000 network, mitigation measures and the conclusion that the programme will not have adversely effects on conservation objectives and the integrity of the NATURA 2000 network	See sub-chapter VII.3 of the ER
		The ER should assess, the impacts, mitigation measures and the conclusion on the acceptability of the programme, on biodiversity, on protected areas, on geodiversity and landscape	See chapter VII and VIII of the ER
		Suggest new data sources in the document	Data sources have been added in appendix 2 of the ER
		Modify the Croatian regions (counties) covered by the programme	The County of Istria is included in the entire ER
		Identify the challenges of protecting the marine environment in terms of the need to introduce an ecosystem approach to human activity management and sustainable management of marine resources	This is already included in the entire ER

APPENDIX 5 – SPECIES ON THE IUCN RED LIST RELEVANT FOR THE CBC AREA

The species of the CBC area in the IUCN red lists are under the following categories:

- critically endangered (CR);
- endangered (EN);
- vulnerable (VU);
- near threatened (NT);
- least concern (LC).

The table also notes if the species are also protected by any of the following legal instruments:

Convention on International Trade in Endangered Species of Wild Fauna and Flora (C.I.T.E.S., Washington Convention, 1973):

- Appendix I: species threatened with extinction which are or may be affected by trade;
- Appendix II: Species whose exploitation is regulated;

Convention on the Conservation of European Wildlife and Natural (Bern Convention, 1979):

- Appendix II: Strictly protected fauna species;
- Appendix III: Protected fauna species;

Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention – CSM, 1979);

- Appendix I: migratory species which are endangered;
- Appendix II: migratory species which have an unfavourable conservation status

Convention for the Protection of the Mediterranean Sea Against Pollution (Barcelona Convention, 1976).:

- Annex II: Endangered or threatened species
- Annex III: Species whose exploitation is regulated

Species relevant for the CBC area on the IUCN red list. The IUCN category is listed (CR: critically endangered, EN: endangered, VU: vulnerable, NT: Near Threatened, LC: least concern) and the current tendency of the population (IUCN). The (Italian) endemism is also pointed out. The main threats (summarised in the IUCN threats categories) are also listed.

					CITES		**Berna Convention**		**Dir. 43/92/CEE (Habitat)**			**Dir. 2009/147/ CE (Birds)**	**Barcelona Convention**		**Bonn Convention**		
IUCN		**Ende mism**	**Species/subspecies**	**Main threats**	**App. I**	App.II	**App. II**	App. III	**Ann. II**	**Ann. IV**	All.V	**Ann. I**	**Ann.I I**	Ann.III	**All.I**	All.II	Agreement EUROBATS
Cat.	**Tend. Pop.**																
INSECTS																	
LC	?		*Aeshna grandis*	Habitat deterioration/loss, Human disturbance													
VU	D		*Nehalennia speciosa*	Habitat deterioration/loss, Invasive alien species, Pollution, Intrinsic factors, Human disturbance													
LC	S		*Erythromma najas*	Habitat deterioration/loss, Pollution, Human disturbance													
LC	D		*Lestes macrostigma*	Habitat deterioration/loss, Human disturbance													
LC	?		*Sympetrum depressiusculum*	Habitat deterioration/loss													

LC	S		*Sympetrum flaveolum*	Habitat deterioration/loss, Pollution, Human disturbance													
JAWLESS FISHES																	
LC	?	**E**	*Lampetra zanandreai*	Habitat deterioration/loss, Invasive alien species, Pollution, Human disturbance			x		x		x						
CARTILAGINEOUS FISHES																	
NT	D		*Prionace glauca*	Exploitation, Human disturbance										x		x	
CR	D		*Galeorhinus galeus*	Exploitation, Human disturbance									x			x	
NT	D		*Mustelus asterias*	Exploitation, Human disturbance										x			
EN	D		*Mustelus mustelus*	Exploitation, Human disturbance										x			
VU	D		*Mustelus punctulatus*	Exploitation, Human disturbance										x			
VU	D		*Alopias vulpinus*	Exploitation, Human disturbance		x (Alopias spp.)								x		x	
EN	D		*Mobula mobular*	Exploitation, Pollution, Human disturbance		x (Mobula spp.)	x						x		x	x	

EN	D		*Rostroraja alba*	Exploitation, Human disturbance				x						x			
CR	D		*Rhinobatos rhinobatos*	Habitat deterioration/loss, Exploitation, Human disturbance									x		x	x	
VU	D		*Squalus acanthias*	Exploitation, Human disturbance										x		x	
CR	D		*Squatina aculeata*	Exploitation, Human disturbance									x				
CR	D		*Squatina oculata*	Exploitation, Human disturbance									x				
CR	D		*Squatina squatina*	Habitat deterioration/loss, Exploitation, Human disturbance									x		x	x	
BONY FISHES																	
CR	D	**E**	*Acipenser naccarii*	Habitat deterioration/loss, Invasive alien species, Exploitation, Incidental mortality, Pollution, Human disturbance			x		x	x	X						
CR	D		*Anguilla anguilla*	Habitat deterioration/loss, Exploitation, Pollution, Human disturbance		x										x	
VU	D		*Alosa fallax*	Habitat deterioration/loss, Exploitation, Human disturbance													

LC	?		*Barbatula barbatula*	Habitat deterioration/loss, Pollution, Human disturbance													
EN	D	E	*Barbus caninus*	Habitat deterioration/loss, Human disturbance				x	x		X						
EN	D	E	*Chondrostoma soetta*	Habitat deterioration/loss, Invasive alien species, Exploitation, Human disturbance				x	x								
EN	D		*Gobio benacensis*	Habitat deterioration/loss, Invasive alien species, Pollution				x									
LC	D	E	*Protochondrostoma genei*	Habitat deterioration/loss, Pollution, Human disturbance				x	x								
LC	?	E	*Rutilus pigus*	Habitat deterioration/loss, Invasive alien species, Exploitation, Human disturbance					x								
VU	D	E	*Alburnus albidus*	Habitat deterioration/loss, Invasive alien species, Human disturbance					x								
LC	S	E	*Barbus plebejus*	Habitat deterioration/loss, Invasive alien species,				x	x		X						

				Exploitation, Human disturbance													
NT	D	E	*Barbus tyberinus*	Habitat deterioration/loss, Invasive alien species													
NT	?	E	*Knipowitschia punctatissimus*	Habitat deterioration/loss, Pollution, Human disturbance													
VU	?	E	*Knipowitschia croaticus*	Habitat deterioration/loss, Invasive alien species													
NT	D	E	*Salmo cettii*	Habitat deterioration/loss, Invasive alien species, Exploitation, Pollution, Intrinsic factors, Human disturbance													
LC	D	E	*Salmo marmoratus*	Habitat deterioration/loss, Exploitation, Human disturbance					x								
LC	?		Thymallus thymallus	Habitat deterioration/loss, Human disturbance				x			x						
AMPHIBIANS																	
EN	D		*Bombina pachypus*	Habitat deterioration/loss, Intrinsic factors, Human disturbance			x (Bombina variegata)		x (Bombina variegata)	x (Bombina variegata)							

LC	S		*Bufo bufo*	Habitat deterioration/loss, Incidental mortality, Human disturbance				x									
LC	D		*Pelobates fuscus*	Habitat deterioration/loss, Invasive alien species, Pollution, Human disturbance			x			x							
VU	D	**E**	*Rana latastei*	Habitat deterioration/loss, Invasive alien species, Pollution, Natural disaster, Human disturbance			x		x	x							
VU	D		*Proteus anguinus*	Habitat deterioration/loss, Pollution, Human disturbance			x		x	x							
EN	D	**E**	*Salamandra atra ssp. Pasubiensis*	Habitat deterioration/loss, Intrinsic factors													
VU	D	**E**	*Salamandra atra ssp. Aurorae*	Habitat deterioration/loss, Exploitation, Human disturbance					x	x							
BIRDS																	
LC	?		*Anas crecca*	Habitat deterioration/loss													
VU	D		*Aythya ferina*	Habitat deterioration/loss, Pollution													

NT	D		*Aythya nyroca*	Habitat deterioration/loss, Exploitation								x			x		
LC	?		*Netta rufina*	Habitat deterioration/loss, Exploitation, Pollution													
LC	D		*Anas clypeata*	Habitat deterioration/loss													
LC	D		*Anas querquedula*	Habitat deterioration/loss, Exploitation													
LC	I		*Anas strepera*	Habitat deterioration/loss, Exploitation													
LC	S		*Aythya fuligula*	Habitat deterioration/loss, Exploitation, Human disturbance													
LC	I		*Tadorna tadorna*	Habitat deterioration/loss, Exploitation													
LC	D		*Burhinus oedicnemus*	Habitat deterioration/loss, Exploitation								x				x	
LC	D		*Charadrius alexandrinus*	Habitat deterioration/loss, Human disturbance								x					
LC	D		*Charadrius morinellus*	Habitat deterioration/loss								x					

LC	D		*Glareola pratincola*	Habitat deterioration/loss								x				x		
NT	D		*Limosa limosa*	Habitat deterioration/loss, Exploitation, Human disturbance														
LC	D		*Chlidonias niger*	Habitat deterioration/loss								x				x		
LC	D		*Sternula albifrons*	Habitat deterioration/loss								x				x		
LC	S		*Chlidonias hybrida*	Habitat deterioration/loss, Exploitation								x						
LC	S		*Sterna sandvicensis*	Habitat deterioration/loss, Human disturbance								x				x		
LC	D		*Botaurus stellaris*	Habitat deterioration/loss, Exploitation, Pollution, Human disturbance								x				x		
LC	D		*Ixobrychus minutus*	Habitat deterioration/loss, Human disturbance								x				x		
LC	D		*Nycticorax nycticorax*	Habitat deterioration/loss								x						
LC	D		*Plegadis falcinellus*	Habitat deterioration/loss, Human disturbance								x				x		

LC	?		*Platalea leucorodia*	Habitat deterioration/loss, Human disturbance								x				x	
LC	I		*Columba oenas*	Habitat deterioration/loss													
LC	D		*Coracias garrulus*	Habitat deterioration/loss, Exploitation								x				x	
LC	S		*Clamator glandarius*	Exploitation, Pollution													
EN	D		*Neophron percnopterus*	Habitat deterioration/loss, Exploitation, Human disturbance								x			x		
LC	I		*Gyps fulvus*	Habitat deterioration/loss, Persecution, Human disturbance								x					
LC	S		*Circaetus gallicus*	Habitat deterioration/loss, Exploitation								x					
LC	I		*Circus aeruginosus*	Exploitation								x					
LC	D		*Circus pygargus*	Habitat deterioration/loss, Exploitation, Human disturbance								x					
LC	I		*Milvus milvus*	Habitat deterioration/loss, Exploitation, Human disturbance								x					

LC	I		*Falco biarmicus*	Habitat deterioration/loss, Exploitation, Pollution								x					
NT	D		*Falco vespertinus*	None								x				x	
NT	D		*Alectoris graeca*	Habitat deterioration/loss, Exploitation, Human disturbance								x (Alectoris graeca saxatilis e Alectoris graeca)					
LC	D		*Lagopus muta*	Human disturbance								x (Lagopus mutus helveticus)					
LC	D		*Tetrao urogallus*	Human disturbance								x					
NT	D		*Tetrax tetrax*	Habitat deterioration/loss, Human disturbance								x				x	
LC	S		*Crex crex*	Habitat deterioration/loss, Human disturbance								x				x	
LC	?		*Calandrella brachydactyla*	Habitat deterioration/loss, Human disturbance								x					
LC	D		*Alauda arvensis*	Habitat deterioration/loss, Pollution, Human disturbance													
LC	D		*Melanocorypha calandra*	Habitat deterioration/loss, Exploitation, Incidental								x					

				mortality, Human disturbance													
LC	D		*Pyrrhula pyrrhula*	None													
LC	S		*Cecropis daurica*	Pollution, Human disturbance													
LC	D		*Riparia riparia*	Habitat deterioration/loss, Human disturbance													
LC	D		*Lanius senator*	None													
LC	D		*Lanius collurio*	Habitat deterioration/loss								x					
LC	D		*Lanius minor*	Habitat deterioration/loss, Human disturbance								x				x	
LC	D		*Anthus trivialis*	Habitat deterioration/loss													
LC	D		*Motacilla flava*	Habitat deterioration/loss													
LC	D		*Passer hispaniolensis*	None													
VU	D	**E**	*Passer italiae*	Habitat deterioration/loss, Exploitation, Pollution													
LC	D		*Passer montanus*	None													
LC	I		*Remiz pendulinus*	None													
LC	S		*Acrocephalus schoenobaenus*	None													

LC	S		*Sylvia nisoria*	None								x					
LC	S		*Locustella luscinioides*	None													
LC	I		*Sylvia hortensis*	Habitat deterioration/loss													
LC	S		*Acrocephalus melanopogon*	Habitat deterioration/loss								x					
NT	D		*Sylvia undata*	None								x					
LC	?		*Panurus biarmicus*	Habitat deterioration/loss, Invasive alien species													
LC	D		*Oenanthe hispanica*	Habitat deterioration/loss													
LC	D		*Monticola saxatilis*	Habitat deterioration/loss, Exploitation, Human disturbance													
LC	S		*Saxicola torquatus*	Habitat deterioration/loss													
LC	D		*Jynx torquilla*	None													
LC	D		*Dendrocopos leucotos*	Habitat deterioration/loss								x					
LC	I		*Dendrocopos medius*	Habitat deterioration/loss								x					
MAMMALS																	
LC	S	**E**	*Canis lupus*	Exploitation, Incidental mortality, Persecution		x	x		x	x							

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NT	D		*Lutra lutra*	Incidental mortality, Pollution, Intrinsic factors, Human disturbance	x		x		x	x							
LC	S		*Ursus arctos*	Habitat deterioration/loss, Exploitation, Persecution, Intrinsic factors, Human disturbance		x	x		x	x							
CR	D		*Ursus arctos ssp. Arctos*	Exploitation, Persecution, Natural disaster, Intrinsic factors, Human disturbance		x	x		x	x							
CR	D	**E**	*Ursus arctos ssp. Marsicanus*	Habitat deterioration/loss, Exploitation, Persecution, Intrinsic factors, Human disturbance		x	x		x	x							
VU	I		*Balaenoptera physalus*	Incidental mortality, Pollution	x					x			x			x	
VU	I	**E**	*Rupicapra pyrenaica ornata*	Exploitation, Intrinsic factors, Human disturbance		x	x		x	x							
VU	I	**E**	*Capreolus capreolus ssp. Italicus*	Exploitation, Intrinsic factors				x									
LC	?		*Delphinus delphis*	Habitat deterioration/loss, Pollution, Human disturbance						x			x		x	x	

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VU	?		*Physeter macrocephalus*	Exploitation, Incidental mortality	x					x			x		x	x	
VU	D		*Miniopterus schreibersii*	Habitat deterioration/loss, Pollution, Human disturbance			x		x	x							x
LC	D		*Rhinolophus hipposideros*	Habitat deterioration/loss, Human disturbance			x		x	x							x
NT	D		*Rhinolophus euryale*	Habitat deterioration/loss, Human disturbance			x		x	x							x
LC	D		*Rhinolophus ferrumequinum*	Habitat deterioration/loss, Human disturbance					x	x							x
VU	D		*Nyctalus lasiopterus*	Habitat deterioration/loss, Human disturbance			x			x							x
NT	D	**E**	*Barbastella barbastellus*	Habitat deterioration/loss, Human disturbance			x (Bombina variegata)		x	x							x
NT	D		*Myotis bechsteinii*	Habitat deterioration/loss, Human disturbance			x		x	x							x
VU	D		*Myotis capaccinii*	Habitat deterioration/loss, Pollution, Human disturbance			x		x	x							x

LC	D		*Myotis blythii*	Habitat deterioration/loss, Human disturbance			x		x	x							x
LC	S		*Myotis myotis*	Habitat deterioration/loss, Human disturbance			x		x	x							x
LC	?		*Myotis mystacinus*	Habitat deterioration/loss, Human disturbance			x			x							x
LC	S		*Myotis nattereri*	Habitat deterioration/loss, Human disturbance			x			x							x
LC	?		*Nyctalus noctula*	Habitat deterioration/loss, Human disturbance			x			x							x
REPTILES																	
VU	D		*Vipera ursinii*	Habitat deterioration/loss, Exploitation, Incidental mortality, Human disturbance	x				x	x							
VU	D		*Caretta caretta*	Habitat deterioration/loss, Incidental mortality, Human disturbance					x	x					X		
NT	?		*Emys orbicularis*	Habitat deterioration/loss, Invasive alien species, Incidental mortality, Pollution, Human disturbance			x		x	x							

NT	D		*Testudo hermanni*	Habitat deterioration/loss, Exploitation, Natural disaster, Human disturbance		x	x		x	x							
CORALS																	
EN	D		*Corallium rubrum*	Exploitation, Incidental mortality, Human disturbance							x			x			
VU	D		*Eunicella singularis*	Invasive alien species, Incidental mortality													
EN	D		*Leiopathes glaberrima*	Incidental mortality									x (since 2013)				
CR	D		*Funiculina quadrangularis*	Incidental mortality													
VU	D		*Virgularia mirabilis*	Incidental mortality													
CR	D		*Lophelia pertusa*	Habitat deterioration/loss, Incidental mortality, Pollution									x				
VU	D		*Desmophyllum dianthus*	Habitat deterioration/loss, Incidental mortality, Pollution													
VU	D		*Dendrophyllia cornigera*	Incidental mortality													

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