2014 - 2020 Interreg V-A
Italy - Croatia CBC Programme
Call for proposal 2019 Strategic

CoAStal and marine waters integrated monitoring systems for ecosystems proteCtion AnD managemEnt
CASCADE
Project ID: 10255941

Priority Axis: Environment and cultural heritage
Specific objective: Improve the environmental quality conditions of the sea and coastal area by use of sustainable and innovative technologies and approaches.

D5.3.1

Report on integrated coastal/marine management systems implemented in relevant pilots by involved partners

PP5 – IUAV

Final version

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Project acronym	CASCADE
Project ID number	10255941
Project title	CoAStal and marine waters integrated monitoring systems for ecosystems protection AnD managemEnt
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Activity number	Activity 5.3
Activity title	Integrated coastal/marine management systems
Partner in charge	PP5 – IUAV
Partners involved	All PPs

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1. Introduction

In order to better define the notion of integrated coastal/marine management systems, and constraining the area of interest of this document three main definitions were considered, which are namely: a) Integrated Coastal Zone Management; b) Maritime Spatial Planning; c) land-sea interaction. Integrated Coastal Zone Management, ICZM, is a dynamic, multidisciplinary and iterative process to promote sustainable management of coastal zones (CEC Communication 2000/547 ICZM). It covers the full cycle of information collection, planning (in its broadest sense), decision making, management and monitoring of implementation. ICZM uses the informed participation and cooperation of all stakeholders to assess the societal goals in a given coastal area, and to take actions towards meeting these objectives. ICZM seeks, over the long-term, to balance environmental, economic, social, cultural and recreational objectives, all within the limits set by natural dynamics. 'Integrated' in ICZM refers to the integration of objectives and also to the integration of the many instruments needed to meet these objectives. It means integration of all relevant policy areas, sectors, and levels of administration. It means integration of the terrestrial and marine components of the target territory, in both time and space. Based on the IOC/UNESCO (UNESCO-IOC, 2009), Marine Spatial Planning, MSP, is a practical way to create and establish a more rational organization of the use of marine space and the interactions between its uses, to balance demands for development with the need to protect marine ecosystems, and to achieve social and economic objectives in an open and planned way. MSP is a public process of analyzing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic, and social objectives that are usually specified through a political process. MSP deals with managing human activities in marine areas, not marine ecosystems, or components of ecosystems. In particular, the focus will be on allocating human activities to specific marine areas by objective, e.g., development or preservation areas, or by specific uses, e.g., wind farms, offshore aquaculture, or sand and gravel mining. The term “land-sea interactions” (LSI) is used in the context of planning and management of marine and coastal areas (e.g. Smith et al., 2011; Kerr et al., 2014). Most of the activities taking place in the marine environment also have a terrestrial component or connection. The coherence and integration between the planning of marine and terrestrial spaces are important and should be achieved through consistency of policies, plans and decisions. Almost all maritime uses require ground support installations. Some uses, mostly on the ground (for example, beach tourism, water-front, ports), extend their domain also at the sea. These interactions should be identified and mapped, in order to assess their cumulative impacts and potential conflicts and synergies. The interactions between the terrestrial and marine areas may include, for example, the outflow of contaminants

from a terrestrial agricultural area to a freshwater body, which is in contact with the coastal waters, as well as the laying of a submarine cable in the intertidal area to connect an offshore wind farm to the national power grid.

The present document reports on different activities carried out within CASCADE project, connected to the integrated management of coastal/marine Natura 2000 sites. An introductory analysis of the Natura 2000 sites (section 2) was carried out, considering the different pilots, and with the active contribution of all the project partners. This was intended to provide an overall geographical characterization the sites. The process, carried out with the support of standardized questionnaires, made it possible to compare the different sites by identifying, first of all, whether they are regulated by management plans and then determining the relationship of these plans with other planning instruments. Section 3 focuses on the analysis of selected tools and techniques capable to support integrated coastal/marine management systems. Two parallel efforts were carried out, focusing at different spatial scales, from pilot to regional. These include: 1) suitable actions supporting coastal/marine integrated management, with a local scale focus at each pilot site; 2) tools and methodologies for mapping Land-Sea interactions, with a wide-scale focus on the western Adriatic coastal area.

2. Integrated knowledge on project sites characteristics and existing management plans

This section aims at characterizing the current management of the areas, and how these are integrated within the existing planning framework. These contents are the result of the contribution provided by all project partners involved in Cascade project, that were interviewed through a questionnaire purposely designed by P5 (IUAV University of Venice). The procedure allowed to obtain a homogeneous comparative picture and facilitating a dialogue between the respective Croatian and Italian Natura 2000 sites.

The topic was approached at two analytical levels: first proposing a review of the sites present in the Pilots, 33 in total, even if not included in the project activities, and reconstructing the framework of spatial and legal characteristics. In particular, the following are highlighted:

- the legal reference through which the site has been designated;
- the institution responsible for managing the site;
- whether a management plan is in force at the site;
- the typology of the area: marine, lagoon, coastal, river mouth, etc.;
- area extension (ha);
- the extent of marine area (%);
- regional effort in integrated coastal zone management;

Results of this analysis, synthetized in Tables 1-3, highlight wide range of conditions which the project took into consideration, both in terms of site typologies, and of management instruments development.

Sites considered in the analysis are listed in Table 1, and mapped in Figure 1. A reference to the existing regional efforts in ICZM relevant for each site, as identified by the current analysis is reported in Table 2. Among the sites presented in the previous paragraphs, it should be noted that out of a total of 33 sites analyzed, 9 are on Croatian territory and 24 in the Italian one. Among these, 7 are coastal-marine sites, 8 marine, 10 coastal, 3 river mouths, 2 coastal-river mouths, 1 lagoon, 1 continental and 1 in brackish waters. The total extension of the 33 Natura 2000 sites covers an area of 230.848,87 ha (28,2% Italian and 71,8% Croatian). In particular, marine sites cover 36,7% of the total extension of the sites, 30% are along the coasts, 14,2% is the extension of the river mouth sites, 7,09% is covered by the lagoon of Marano and Grado and 6,6% are coastal-marine sites. Akvatorij Zapadne Istre Marine Area (HR5000032) is the largest sites with an area of 72,748.439 ha (32% of the total). At 12 sites a management plan is in force, of these 6 are coastal-marine sites, 3 are coastal sites, and 3 transitional, including 2 river mouths and one lagoon.

SITE-CODE	SITE-NAME	Area (ha)	Marine waters (%)	Type	Country
HR5000032	Akvatorij zapadne Istre	72.748,44	31,51	Marine area	HR
HR1000023	SZ Dalmacija i Pag	59.892,83	25,94	Coastal Area	HR
HR5000031	Delta Neretve	23.816,56	10,32	River mouth	HR
IT3320037	Laguna di Marano e Grado	16.370,29	7,09	Lagoon	IT
IT3340006	Carso triestino e goriziano	9.653,82	4,18	Continental	IT
IT9140005	Torre Guaceto e Macchia S. Giovanni	7.974,71	3,45	Coastal and marine area	IT
IT4060005	Sacca di Goro, Po di Goro, Valle Dindona, Foce del Po di Volano	4.867,63	2,11	River mouth	IT
IT7120215	Torre Cerrano	3.417,64	1,48	Coastal and marine area	IT
HR2000604	Nacionalni park Brijuni	3.397,47	1,47	Marine area	HR
IT9140003	Stagni e Saline di Punta della Contessa	2.856,01	1,24	Coastal and marine area	IT
IT4060004	Valle Bertuzzi, Valle Porticino – Canneviè	2.688,98	1,16	Transitional brackish area	IT
IT3330005	Foce dell'Isonzo - Isola della Cona	2.669,61	1,16	River mouth	IT
IT3250047	Tegnùe di Chioggia	2.653,06	1,15	Marine area	IT
IT3330009	Trezze San Pietro e Bardelli	2.381,26	1,03	Marine area	IT
HR3000176	Ninski zaljev	2.258,60	0,98	Marine area	HR
IT4060003	Vene di Bellocchio, Sacca di Bellocchio, Foce del Fiume Reno, Pineta di Bellocchio	2.242,12	0,97	Coastal area	IT
HR4000005	Privlaka - Ninski zaljev - Ljubački zaljev	2.002,50	0,87	Coastal area	HR
IT4070004	Pialasse Baiona, Risega e Pontazzo	1.594,83	0,69	Coastal area	IT
IT4070009	Ortazzo, Ortazzino, Foce del Torrente Bevano	1.254,41	0,54	Coastal area	IT
IT7222217	Foce Saccione - Bonifica Ramitelli	870,31	0,38	Coastal area	IT
IT3330006	Valle Cavanata e Banco Mula di Muggia	860,40	0,37	Coastal area	IT
IT7222216	Foce Biferno - Litorale	817,62	0,35	Coastal area and	IT

	di Campomarino			river mouth	
IT7228221	Foce Trigno - Marina di Petacciato	747,17	0,32	Coastal area and river mouth	IT
HR3000001	Limski kanal - more	672,45	0,29	Marine area	HR
HR3000126	Ušće Cetine	667,44	0,29	Marine area	HR
IT9140008	Torre Guaceto	547,70	0,24	Coastal and marine area	IT
HR2000616	Donji Kamenjak	370,35	0,16	Coastal area	HR
IT5320006	Portonovo e falesia calcarea a mare	228,63	0,10	Coastal and marine area	IT
IT5340001	Litorale di Porto d'Ascoli	213,53	0,09	Coastal and marine area	IT
IT9150004	Torre dell'Orso	59,97	0,03	Coastal area	IT
IT3340007	Area marina di Miramare	24,66	0,01	Marine area (MPA)	IT
IT5310007	Litorale della Baia del Re	17,10	0,01	Coastal and marine area	IT
IT9150022	Palude dei Tamari	10,77	0,00	Coastal area	IT

Table 1. Natura 2000 sites considered in the analysis.

Figure 1. Location of Natura 2000 sites considered in the analysis.

Pilot area	Regional effort in ICZM
P1 - Grado and	Piano Paesaggistico Regionale (PPR-FVG):

Marano Lagoon and Gulf of Trieste (IT)	https://www.regione.fvg.it/rafvg/cms/RAFVG/ambiente-territorio/pianificazione-gestione-territorio/FOGLIA21/ Info geomorfologia costiera Regione FVG (sezione incaricata per GIZC): https://www.regione.fvg.it/rafvg/cms/RAFVG/ambiente-territorio/tutela-ambiente-gestione-risorse-naturali/FOGLIA201/FOGLIA21/articolo.html
P2 - Transitional (e.g. Goro area and Bevano Mouth) and coastal areas in Emilia Romagna (IT)	delibera del Consiglio Regionale di approvazione delle linee guida GIZC: https://ambiente.regione.emilia-romagna.it/it/suolo-bacino/argomenti/progetti-interventi/difesa-della-costa/gizc Progetto "CAMP Italia": https://www.minambiente.it/pagina/il-progetto-camp-italia
P3 - Torre Guaceto - Canale Reale, Punta della Contessa, Melendugno in Puglia (IT)	Piano Regionale delle Coste - PRC - Puglia: http://www.sit.puglia.it/portal/portale_pianificazione_regionale/Piano%20Regionale%20delle%20Coste Archivio documentazione coste, Autorità di Bacino Distrettuale dell'Appennino Meridionale Sede Puglia: https://www.adb.puglia.it/public/news.php?extend.97 PIANO REGIONALE DELLE COSTE (Puglia): https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwj6vtzdzKfuAhXTQUEAHZV8AnoQFjADegQIARAC&url=http%3A%2F%2Fcartografia.sit.puglia.it%2Fdoc%2FVAS_RA_2009_06.pdf&usg=AOvVaw3wy4uPpAooznoDqYdUMKjV
P4 - Neretva river mouth (HR)	"The Group for Integrated Coastal Management in the Dubrovnik-Neretva County: https://wikicoasting.eu/good_practice/the-group-for-integrated-coastal-management-in-the-dubrovnik-neretva-county/ ICZM Guidelines for Dubrovnik-Neretva County: https://slideplayer.com/slide/9158084/"
P5 - Coastal area in Veneto (IT) with a focus on Tegnùe di Chioggia	"Documenti regionali di riferimento per la Difesa dei litorali: https://www.regione.veneto.it/web/ambiente-e-territorio/difesa-dei-litorali"
P6 - Miljašić Jaruga river mouth, Nin bay (HR)	"Zadar county integrated sea use and management plan: https://www.msp-platform.eu/practices/zadar-county-integrated-sea-use-and-management-plan"
P7 - Coastal area in Molise (Biferno river mouth, Campomarino Coast	REGIONE Molise - "Definizione dei problemi e degli scenari futuri del paesaggio molisano": https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwjU8aOR5L7uAhV04uAKHftfD88QFjAAegQIAhA

and Bonifica Ramitelli SAC) (IT)	C&url=http%3A%2F%2Fwww.regione.molise.it%2Fweb%2Fservizi%2Fservizi obeniambientali.nsf%2F0%2F33705a0ce91cc800c12573a20033c5cd%2F%24 FILE%2FRapporto%2520molise_04_A.pdf&usg=AOvVaw36GrP6f1pqAsmvJES 96x5O LEGGE REGIONALE per la Realizzazione e gestione delle aree naturali protette http://www.regione.molise.it/web/crm/lr.nsf/0/09907A1267F11076C1256F 46003B33B8?OpenDocument
P8 - Northern-eastern Adriatic in Croatia (HR)	"Report on Monitoring of IMAP Common Indicator 16-Istria County: http://iczmplatform.org//storage/documents/LivYXi124r1FTealwpsuLihmllA 5hVbENebctKP5.pdf ANALYSIS OF ICZM PRACTICE IN REGION OF ISTRIA (CROATIA): https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ca d=rja&uact=8&ved=2ahUKEwi4yYGK7r7uAhUjyYUKHbpCDoEQFjAAegQIBRA C&url=https%3A%2F%2Fwww.istra-istria.hr%2Fmedia%2Ffiler_public%2F0b%2F7c%2F0b7cab48-23e1-4942-a4c3-bd522ccea20b%2Fanalysis_of_iczm_practice_in_region_of_istria_march_20 13.pdf&usg=AOvVaw0s2be6w-Jw_-MIc7g0FsM0"
P9 - Cetina river mouth (HR)	Split-Dalmatia County (2021), Marine Environment and Coastal Area Management Plan of the Split-Dalmatia County - SDC Coastal Plan, Split Document: https://www.pomorskodobro.dalmacija.hr/DesktopModules/Bring2mind/D MX/API/Entries/Download?language=hr-HR&Command=Core_Download&EntryId=11315&PortalId=4 Decision on the adoption (OJ SDC 132/2021): https://www.dalmacija.hr/DesktopModules/Bring2mind/DMX/API/Entries/ Download?language=hr-HR&EntryId=11287&Command=Core_Download&PortalId=0&TabId=313
P10 - Torre del Cerrano, Pineto Abruzzo (IT)	"Analisi di rischio delle aree vulnerabili della fascia costiera"della Regione Abruzzo: http://www.bura.regione.abruzzo.it/singolodoc.aspx?link=2018/Speciale_35 _5.html Piano regionale di difesa della costa: https://www.regione.abruzzo.it/content/piano-di-difesa-della-costa"
P11 - Marche coastal area (IT)	Piano GIZC - Regione Marche: https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ve d=2ahUKEwjU8aOR5L7uAhV04uAKHftfD88QFjABegQIARAC&url=https%3A% 2F%2Fwww.regione.marche.it%2FPortals%2F0%2FPaesaggio_Territorio_Urb anistica%2FDifesa_Costa%2FAggPianoGIZC%2F2_PIANO_GIZC_2018_PARTI_

	A_B_C_D.pdf&usg=AOvVaw1TX95lhX2iaT6x53xqjCNj

Table 2. Regional ICZM efforts within project pilot areas.

2.1 Knowledge framework: integration with other planning instruments

The second part of the analysis carried out through questionnaires, focused on the relationship/consideration among the various levels of planning and the management plans of Natura 2000 sites. Sites were analyzed with respect to the following aspects:

1. what are the planning tools at the provincial/regional/national level integrated within the management plan;
2. whether the management plan is considered in the regional landscape plan;
3. to which river basin the Natura 2000 site belongs and if there are specific measures relevant to the vulnerability and conservation of the Site within the River Basin Management Plan;
4. whether the impacts (threats and pressures) identified by the Natura 2000 Standard Data form have a sectorial plan and whether Natura 2000 sites as considered in these plans.

Overall, results of this analysis highlighted that 11 sites are included and considered in regional plan (Landscape in IT or Spatial Plan in HR). Only for 3 sites specific conservation measures in the River Basin Management Plan are considered and all the measures are related, in part, to protect or improve water quality. 7 sites registered threats, pressures and activities with high impacts. At 7 sites threats, pressures and activities with impacts are not identified. Considered the high variety of sites under analysis, results are here presented in this document in a disaggregated way, referring independently to each pilot area. The following paragraphs 2.1.1-2.1.9 will report specific information for each pilot.

2.1.1 P1 - Grado and Marano Lagoon and Gulf of Trieste (IT)

Integration with other planning instruments.
If your Nat2k site/s has an implemented management plan, which are the planning instruments at the county/regional/national level integrated in this management plan? (it should be specified within the management plan and within the external coherence analysis performed for the SEA) **Laguna di Grado e Marano ZPS, ZSC, IT3320037.** **<u>Plan adopted</u>** **Adoption: DGR n. 719 of 21 March 2018.** **Adoption notice: BUR n. 16 of 18.04.2018. On that date, the plan adopted came into force resulting in the termination of the specific conservation measures previously in force (DGR 1964/2016).**

Natural Reserve included for 38.6% in the SAC / SPA

Planning instruments related to the MP (PdG):
Regional, infraregional and supraregional instruments:

- **Management plan for the catchment areas of the Eastern Alps;**
- **Flood risk management plan for the Eastern Alps district;**
- **Extract plan for the hydraulic defense of the Cormor stream;**
- **Extract plan for the hydraulic defense of the Corno stream;**
- **Regional plan of transport infrastructures, freight mobility and logistics;**
- **Regional territorial planning: general regional urban planning (PURG) and territorial government plan (PGT);**
- **Regulation for the regulation of the agronomic use of nitrogen fertilizers in ordinary areas and in nitrate vulnerable areas (RFA);**
- **Rural Development Program (RDP) 2014-2020.**

Local and sub-regional tools:

- **Sub-regional territorial plan of the Aussa-Corno industrial area (PTI);**
- **Municipal general regulatory plans (Grado, Marano);**
- **Regulatory plan for ports (Grado, Marano).**

In addition, other tools are also presented which may have relations with the PG but which have not yet seen the end of their approval procedure. The following tools are highlighted:

- **Regional water protection plan (PTA);**
- **Regional landscape plan (PPR);**
- **Regional waste management plan - Regional location criteria for waste recovery and disposal plants (CLIR)**

References:
https://www.regione.fvg.it/rafvg/cms/RAFVG/ambiente-territorio/tutela-ambiente-gestione-risorse-naturali/FOGLIA203/FOGLIA120/
http://mtom.regione.fvg.it/storage//2018_719/Allegato%202%20alla%20Delibera%20719-2018.pdf(Structure: pag.14, 15; Plans: chapter B5)
SEA https://www.regione.fvg.it/rafvg/export/sites/default/RAFVG/ambiente-territorio/tutela-ambiente-gestione-risorse-naturali/FOGLIA400/FOGLIA3/allegati/Relazione_assoggettabilita_VCN.pdf

MPA Miramare (ZSC, MCS, MAB)
Plan not ready
The Region of Friuli Venezia Giulia identified the Marine Area of Miramare as a site of the Natura 2000 Network with DGR 1151/2011.
By decision 2013/23 / EU of 16th November 2012, the European Commission identified the site, which was included in the sixth updated list of continental SCIs published in the GUE of 26.01.2013.
From 17.06.2020 (ministerial decree 20A03718, MATTM) the site has been designated SAC: special conservation area.
With DGR 1701/2019 published in the 1st ordinary supplement n. 29 of 23 October 2019 to the official bulletin n 43 of October 2019, the conservation measures (MCS) of the site have been approved.

Reference:
https://www.regione.fvg.it/rafvg/cms/RAFVG/ambiente-territorio/tutela-ambiente-gestione-risorse-naturali/FOGLIA203/FOGLIA119/ See MSC Allegato 1, Allegato 3, Allegato 6

https://www.ampmiramare.it/amp/ricerca-e-monitoraggio/ **Siti Natura 2000**
https://ampmiramare.it/wp-content/uploads/DEF_quaderno_mab_ristampa_2020_dimensioni-ridotte.pdf **MAB**

ZSC - IT3340006 Carso triestino e goriziano
ZSC included in ZPS (the area is included in two laws of reference and the perimeters are a little different)
MCS
MAB
Plan not ready
The site-specific conservation measures (MCS) approved with DGR 30 January 2020 n 134 are in force since 13.02.2020.
(The measures replace those approved with DGR n.1964 of 21.10.2016 in force since 10.11.2016 and those adopted with DGR 546 of 28.03.13, in force since 10.04.2013)
From 08.11.2013 the site has been designated SAC: special conservation area.
Throughout the ZPS (SPA):
- the safeguard measures contained in the Regional Law 14/2007 and in the D.P.Reg. 301 of 20 September 2007
- interventions that can determine a significant impact are subjected to an impact assessment according to the indications of DGR 1323/2014.

Falesie di Duino http://www.comune.duino-aurisina.ts.it/fileadmin/_migrated/content_uploads/all3_REL.pdf
https://www.regione.fvg.it/rafvg/cms/RAFVG/ambiente-territorio/tutela-ambiente-gestione-risorse-naturali/FOGLIA203/FOGLIA105/

Does the regional landscape plan (i.e. Piano Paesaggistico Regionale PPR in Italy) consider the presence of the Nat2k site/s and its natural and cultural heritage? (Yes/No) If your answer was "yes", please explain how the Nat2k site is integrated in the regional landscape plan?

YES
The PPR of FVG Region includes the presence of the Nat2k sites considered in CASCADE and their natural and cultural heritage. The sites are part of an ecological network.

Excluding other regulations:

Laguna di Grado e Marano
All. 21 AP 12 – Laguna e costa – pag. 84,85, chapter 3-4
http://bur.regione.fvg.it/newbur/downloadPDF?doc=0&name=2018/05/09/18_SO25_1_DPR_111_21_ALL21.pdf

MPA Miramare and Carso triestino e goriziano (Falesie di Duino)
All. 20 AP 11 – Carso e costiera orientale - Pag. 80, 81, chapter 3-4
http://bur.regione.fvg.it/newbur/downloadPDF?doc=0&name=2018/05/09/18_SO25_1_DPR_111_20_ALL20.pdf

Reference:
http://mtom.regione.fvg.it/storage/2018_719/Allegato%202%20alla%20Delibera%20719-2018.pdf **(pag.136)**
https://www.regione.fvg.it/rafvg/cms/RAFVG/ambiente-territorio/pianificazione-gestione-territorio/FOGLIA21/
→ **C - SCHEDE DEGLI AMBITI DI PAESAGGIO**

2c) Which river basin includes your Nat2k site/s? (Please mention name and the competent authority in charge for this specific river basin). Are there specific measures of relevance for the vulnerability and conservation of the Nat2k site specified in the River Basin Management Plan?

Basin: Eastern Alps

Managing authority: Easter Alps Basin District
The River Basin Management Plans send back to the Management Plans, which are more updated.
Last approved plan: 2015-2021.
Next plan: 2021-2027 to be approved in the year.

Mention to N2Ks in the 2021-2027 plan:

The District Basin Authority is at the forefront of the pilot activities for the protection of the environment and the Natura 2000 network. It engaged the study of the anthropogenic impacts on protected areas and develops specific management tools for problems affecting water, agriculture, habitats and species of community importance.

Info about protected areas not available.

Reference:
https://www.mite.gov.it/direttive/distretti-idrografici
http://www.alpiorientali.it/
http://www.alpiorientali.it/VGP_PdGA_2021_2027_16_12_acque.pdf **pg.94**
http://www.alpiorientali.it/dati/direttive/acque/wfd_20160302/08%20Programma%20delle%20misure%20-%2020160302.pdf **pg.286**

Based on the Natura 2000 Standard Data form of your pilot, which Threats, Pressures and Activities with impacts on the site (section 4.3) are identified? Which of the activities generating threats and pressures have a sectorial plan? The presence of the SIC is considered within these sectorial plans? Are the sectorial plan measures integrated with the measures of the SIC management plan (if implemented)?

Laguna di Grado e Marano

Negative Impacts				
Rank	**Threats and pressures [code]**	**Description**	**I/O**	**Explanations, WFD reporting use**
H	A01	Cultivation	o	includes increase of agricultural area
M	D03.01	Port areas	b	WFD
M	D03.01.04	Industrial ports	o	
M	D03.02	Shipping lanes	i	includes canals, WFD
M	E01	Urbanised areas, human habitation	o	
M	E02	Industrial or commercial areas	b	
M	F01	Marine and Freshwater Aquaculture	i	
M	F02	Fishing and harvesting aquatic ressources	b	includes effects of bycatch/accidential catch in all subcategories
M	F03.01	Hunting	b	
M	F03.02	Taking and removal of animals (terrestrial)	i	
L	F06	Hunting, fishing or collecting activities not referred to above	i	e.g. harvesting of shellfish

M	G01	Outdoor sports and leisure activities, recreational activities	b	
H	G01.01	Nautical sports	o	
L	G02	Sport and leisure structures	i	
H	H01.01	Pollution to surface waters by industrial plants	o	WFD- differs further into UWWT, IPPC and other plants
M	H01.05	Diffuse pollution to surface waters due to agricultural and forestry activities	o	WFD (WFD does not include forestry effluents)
M	H05	Soil pollution and solid waste (excluding discharges)	i	
M	I01	Invasive non-native species	b	plant & animal species
H	J02.02	Removal of sediments (mud...)	i	
M	J02.11	Siltation rate changes, dumping, depositing of dredged deposits	i	
M	J02.12	Dumping, depositing of dredged deposits	i	
H	K01.01	Erosion	i	
M	K01.02	Silting up	i	
M	K03.05	Antagonism arising from introduction of species	b	

Rank: H = high, M = medium, L = low
Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,
T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions
i = inside, o = outside, b = both

MPA Miramare

Negative Impacts				
Rank	**Threats and pressures [code]**	**Description**	**I/O**	**Explanations, WFD reporting use**
M	D02	Utility and service lines	o	
M	D03.01	Port areas	o	WFD
M	F01.02	Suspension culture	b	e.g. mussels, seaweed, fish
L	F02.03	Leisure fishing	o	other than bait-fishing
L	F03.02.03	Trapping, poisoning, poaching	i	
H	G01	Outdoor sports and leisure activities, recreational activities	i	
L	G01.01	Nautical sports	o	
M	G05.11	Death or injury by collision	b	e.g. marine mammals
L	H	Pollution	o	
H	H06.01	Excess energy	o	incl. geophysical surveys, if not under H06.05 (Seismic exploration, explosions)

Carso triestino e goriziano

Negative Impacts				
Rank	**Threats and pressures [code]**	**Description**	**I/O**	**Explanations, WFD reporting use**
M	A01	Cultivation	b	includes increase of agricultural area
M	A02.03	Grassland removal for arable land	i	
M	A04.01	Intensive grazing	i	
H	A04.03	Abandonment of pastoral systems, lack of grazing	i	
L	B02	Forest and Plantation management & use	i	
M	D01.01	Paths, tracks, cycling tracks	i	
M	D01.04	Railway lines, TGV	i	
M	D02.01	Electricity and phone lines	i	
M	D02.02	Pipe lines	b	
M	E01	Urbanised areas, human habitation	o	
M	F01.02	Suspension culture	i	e.g. mussels, seaweed, fish
M	F03.01	Hunting	i	
M	G01.02	Walking, horseriding and non-motorised vehicles	i	
M	G01.04	Mountaineering, rock climbing, speleology	i	
M	G05.11	Death or injury by collision	b	e.g. marine mammals
M	H06.01	Noise nuisance, noise pollution	i	
M	I01	Invasive non-native species	i	plant & animal species
M	J01	Fire and fire suppression	i	
M	J02.01.03	Infilling of ditches, dykes, ponds, pools, marshes or pits	b	WFD
M	J02.05	Modification of hydrographic functioning, general	i	
H	K02.02	Accumulation of organic material	i	
M	K03.05	Antagonism arising from introduction of species	b	

Rank: H = high, M = medium, L = low
Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,
T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions
i = inside, o = outside, b = both

No sectorial plans implemented with SIC, MCSs and single urbanistic plans present.

2.1.2 P2 – Transitional (e.g. Goro area and Bevano Mouth) and coastal areas in Emilia Romagna (IT)

Sacca di Goro. Integration with other planning instruments.
2a) If your Nat2k site/s has an implemented management plan, which are the planning instruments at the county/regional/national level integrated in this management plan? (it should be specified within the management plan and within the external coherence analysis performed for the SEA) **There is a management plan with instruments such as Active Interventions (AI), Incentivization (IN), Monitoring plans (MR) and Didactic programs (DP); there is a routine monitoring for transitional waters.**
2b) Does the regional landscape plan (i.e. Piano Paesaggistico Regionale PPR in Italy) consider the presence of the Nat2k site/s and its natural and cultural heritage? **No the PTPR does not consider the N2000 sites by itself, the PTP consider the natural and cultural features of the landscape.**
2c) Which river basin includes your Nat2k site/s? (Please mention name and the competent authority in charge for this specific river basin). **Po river basin, the competent Authority is Autorità di Bacino Distrettuale del Fiume Po (ADBPO).** *Are there specific measures of relevance for the vulnerability and conservation of the Nat2k site specified in the River Basin Management Plan?* **The ADBPO just reviews the Po river basin Management Plan, it is not possible to mention relevant examples, but considering the Sacca di Goro is in the delta the relevant measures are those with the aim to improve the quality of the freshwater and to restore the River continuity for the flow of sediments and migration of species.**
2d) Based on the Natura 2000 Standard Data form of your pilot, which Threats, Pressures and Activities with impacts on the site (section 4.3) are identified? **J01 Mixed source pollution to surface and ground waters (limnic and terrestrial) (High),** **F07 Sports, tourism and leisure activities (Medium),** **G14 Use of lead ammunitions or fishing weights (Medium),** **B29 Other forestry activities, excluding those relating to agro-forestry (Medium).** *Which of the activities generating threats and pressures have a sectorial plan? The presence of the SIC is considered within these sectorial plans? Are the sectorial plan measures integrated with the measures of the SIC management plan (if implemented)?* **The management plan foresees specific action dedicated to Agriculture.**

Lago delle Nazioni - Integration with other planning instruments
2a) If your Nat2k site/s has an implemented management plan, which are the planning instruments at the county/regional/national level integrated in this management plan? (it should be specified within the management plan and within the external coherence analysis performed for the SEA) **There is a routine monitoring in one station as part of transitional waters of the Emilia-Romagna Region.**
2b) Does the regional landscape plan (i.e. Piano Paesaggistico Regionale PPR in Italy) consider the presence of the Nat2k site/s and its natural and cultural heritage? **No**
2c) Which river basin includes your Nat2k site/s? (Please mention name and the competent authority in charge for

this specific river basin). **Po di Volano as part of the river Po delta, authority: Autorità di Bacino Distrettuale del Fiume Po.** *Are there specific measures of relevance for the vulnerability and conservation of the Nat2k site specified in the River Basin Management Plan?* **NO**
2d) Based on the Natura 2000 Standard Data form of your pilot, which Threats, Pressures and Activities with impacts on the site (section 4.3) are identified? **For the whole area, not only the lake:** **J01 Mixed source pollution to surface and ground waters (limnic and terrestrial) (High),** **G14 Use of lead ammunitions or fishing weights (Medium),** **D05 Development and operation of energy production plants (including bioenergy plants, fossil and nuclear energy plants) (Low),** **B29 Other forestry activities, excluding those relating to agro-forestry (Medium).**

Foce Bevano - Integration with other planning instruments
2a) If your Nat2k site/s has an implemented management plan, which are the planning instruments at the county/regional/national level integrated in this management plan? (it should be specified within the management plan and within the external coherence analysis performed for the SEA) **No**
2b) Does the regional landscape plan (i.e. Piano Paesaggistico Regionale PPR in Italy) consider the presence of the Nat2k site/s and its natural and cultural heritage? **Yes** *If your answer was "yes", please explain how the Nat2k site is integrated in the regional landscape plan?* **Is part of the Po Delta Park instituted in 1988 with Regional Law (L.R. n. 27/88) and which is part of the protected area system of Emilia-Romagna Region.**
2c) Which river basin includes your Nat2k site/s? (Please mention name and the competent authority in charge for this specific river basin). **Bevano river, Authority: Autorità Bacini Regionali Romagnoli.** *Are there specific measures of relevance for the vulnerability and conservation of the Nat2k site specified in the River Basin Management Plan? (Yes/No, please mention relevant examples)* **NO**
2d) Based on the Natura 2000 Standard Data form of your pilot, which Threats, Pressures and Activities with impacts on the site (section 4.3) are identified? **D06 Transmission of electricity and communications (cables) (Medium),** **G14 Use of lead ammunitions or fishing weights (Medium),** **B29 Other forestry activities, excluding those relating to agro-forestry (Medium).**

2.1.3 P3 - Torre Guaceto - Canale Reale, Punta della Contessa, Melendugno (IT)

Torre Guaceto e Macchia S.Giovanni, Palude dei Tamari, Torre dell'Orso, Paludi e Saline di Punta della Contessa. Integration with other planning instruments.
2a) If your Nat2k site/s has an implemented management plan, which are the planning instruments at the county/regional/national level integrated in this management plan? (it should be specified within the management

plan and within the external coherence analysis performed for the SEA)

In drafting the quinquennial management plan of the state natural reserve di "Torre Guaceto" and of the SIC "Torre Guaceto" e Macchia S.Giovanni" (IT9140005), PUTT/p (landscape plan) and PRG (General urbanistic development plan) of Municipality of Carovigno were evaluated to verify and define the SIC perimeters, to identify the indispensable interventions for protection, conservation and enhancement of the reserve, to apply the standard for implementation of the site.
Planning instruments at the county/regional/national level are not integrated in the other management plans. Among the specific short-medium term objectives of the Paludi e Saline di Punta della Contessa (IT9140003) management plan, there is the adaptation and updating of the municipal planning and programming instruments to the needs of habitat protections. In particular, the Municipality of Brindisi should insert the information of the SIC site management plan in its current urban plan and regulations.
The management plan of SIC site of Lecce province includes Palude dei Tamari (IT9150022) and Torre dell'Orso (IT9150004). In this management plan, some documents and guidelines (Linee nazionali per la gestione dei Siti Natura 2000, Manuale per la redazione dei Piani di Gestione dei siti Natura 2000, Piano Territoriale di Coordinamento Provinciale, Regolamento forestale regionale, Piano Urbanistico Territoriale Tematico "Paesaggio" - PUTT/P) are listed as standards for implementation in the SIC site. Moreover, a participatory process will be developed for supplement the territorial planning instruments with the indications of the SIC management plan.

2b) Does the regional landscape plan (i.e. Piano Paesaggistico Regionale PPR in Italy) consider the presence of the Nat2k site/s and its natural and cultural heritage? (Yes/No) If your answer was "yes", please explain how the Nat2k site is integrated in the regional landscape plan?

Yes, PPTR Puglia (Territorial landscape plan of Regione Puglia) considers the presence of Nat2k sites. In fact, it defines safeguarding and utilization measures (art. 73 of the NTA, Implementing technical standard), stating that every project and initiative in these areas are subjected to landscape assessment (defined in art. 91 of the NTA). Moreover, it also establish that all plans, projects and interventions that are in contrast with the quality objectives and the regulations of use referred to art. 37 (such as construction and expansion of plants for wastewater treatment and for disposal and waste recovery, construction and expansion of energy production plants, realization and expansion of mining activities) are not eligible.

2c) Which river basin includes your Nat2k site/s? (Please mention name and the competent authority in charge for this specific river basin). Are there specific measures of relevance for the vulnerability and conservation of the Nat2k site specified in the River Basin Management Plan?

The site area is characterized by minor basins and endorheic basins in the River Basin Management Plan of the Autorità di bacino distrettuale dell'Appennino meridionale.
The larger river basins are Fiume Grande that partially crosses the Paludi e Saline di Punta della Contessa (IT9140003) site and the Canale Reale that flows into the state natural reserve of "Torre Guaceto" and of the SIC "Torre Guaceto" e Macchia S.Giovanni" (IT9140005).

2d) Based on the Natura 2000 Standard Data form of your pilot, which Threats, Pressures and Activities with impacts on the site (section 4.3) are identified? Which of the activities generating threats and pressures have a sectorial plan? The presence of the SIC is considered within these sectorial plans? Are the sectorial plan measures integrated with the measures of the SIC management plan (if implemented)?

Threats, Pressures and Activities with impacts on the site (section 4.3) are not identified.

2.1.4 P4 – Neretva river mouth (HR)

Neretva river mouth. Integration with other planning instruments
2a) If your Nat2k site/s has an implemented management plan, which are the planning instruments at the county/regional/national level integrated in this management plan? (it should be specified within the management plan and within the external coherence analysis performed for the SEA) **The management plan for Delta Neretve has not been implemented yet, but is in a high level of preparation.**
2b) Does the regional landscape plan (i.e. Piano Paesaggistico Regionale PPR in Italy) consider the presence of the Nat2k site/s and its natural and cultural heritage? (Yes/No) If your answer was "yes", please explain how the Nat2k site is integrated in the regional landscape plan? **Yes. The borders of the area and legislative measures in accordance to the Nature Protection Act (Official Gazette No. 80/13, 15/18, 14/19 and 127/19) are integrated into planning decrees (fisheries, water management, forestry, local, regional spatial plans).**
2c) Which river basin includes your Nat2k site/s? (Please mention name and the competent authority in charge for this specific river basin). Are there specific measures of relevance for the vulnerability and conservation of the Nat2k site specified in the River Basin Management Plan? (Yes/No, please mention relevant examples) **HR5000031 Delta Neretve is part of Neretva River basin, which is under the management of Croatian Waters. Within its activities Croatian Waters must respect regulations of the Croatian Nature Protection Act. Croatian Waters also have obligation to implement Water Management Plan for the areas they manage. That Plan has to be evaluated and go through assessment of acceptability of plans , programmes and interventions for the ecological network. During that procedure, legislative measures are determined.**
2d) Based on the Natura 2000 Standard Data form of your pilot, which Threats, Pressures and Activities with impacts on the site (section 4.3) are identified? Which of the activities generating threats and pressures have a sectorial plan? The presence of the SIC is considered within these sectorial plans? Are the sectorial plan measures integrated with the measures of the SIC management plan (if implemented)? **Threats, pressures and activities with impacts on the site identified are as follows:** • **modification of cultivation practices** • **use of biocides, hormones and chemicals** • **fertilization** • **roads, paths and railroads** • **urbanized areas, human habitation** • **discharges** • **fishing and harvesting aquatic resources** • **pollution to surface waters (limnic & terrestrial)** • **garbage and solid waste** • **invasive non-native species** • **human induced changes in hydraulic conditions** **All of the activities with impact are implemented in the regional spatial plan. All of the sectorial plans are implemented when in accordance to the regional spatial plan.**

2.1.5 P5 - Coastal area in Veneto (IT)

Tegnùe di Chioggia. Integration with other planning instruments
2a) If your Nat2k site/s has an implemented management plan, which are the planning instruments at the

county/regional/national level integrated in this management plan? (it should be specified within the management plan and within the external coherence analysis performed for the SEA) **The management plan for the Tegnùe di Chioggia area has not been implemented yet. The Chioggia city council recently signed and agreement with ISPRA and Ente Parco Delta del Po to take the responsibility of the management of the site.**
2b) Does the regional landscape plan (i.e. Piano Paesaggistico Regionale PPR in Italy) consider the presence of the Nat2k site/s and its natural and cultural heritage? (Yes/No) If your answer was "yes", please explain how the Nat2k site is integrated in the regional landscape plan? **The site "Tegnùe di Chioggia" is included within the "Regional Territorial Coordination Plan (PTRC)" as part of the state of art of all the Natura 2000 sites network. For these sites, the Plan recognizes as in force the regulatory measures defined in Article 4, paragraphs 3, 4, 5 and 6, of LR 15/2007 on which are to be considered conservation measures, pursuant to Article 4 of Presidential Decree 357/1997, as amended, as they they regulate the activities to be carried out within these areas.** **The PPR of Veneto Region does not include the presence of the Nat2k sites considered in CASCADE and their natural and cultural heritage.**
2c) Which river basin includes your Nat2k site/s? (Please mention name and the competent authority in charge for this specific river basin). Are there specific measures of relevance for the vulnerability and conservation of the Nat2k site specified in the River Basin Management Plan? (Yes/No, please mention relevant examples) **Being entirely located in marine waters, no river basin is present within the site. Nonetheless, two rivers, Adige and Brenta should be regarded as primary drivers for the water quality parameters in these coastal waters. These two rivers are under the Autorità di Bacino distrettuale delle Alpi Orientali.**
2d) Based on the Natura 2000 Standard Data form of your pilot, which Threats, Pressures and Activities with impacts on the site (section 4.3) are identified? Which of the activities generating threats and pressures have a sectorial plan? The presence of the SIC is considered within these sectorial plans? Are the sectorial plan measures integrated with the measures of the SIC management plan (if implemented)? **No pressures identified.**

2.1.6 P6 - Miljašić Jaruga river mouth, Nin bay (HR)

Dalmacija i Pag, Ninski zaljev, Privlaka - Ninski zaljev - Ljubački zaljev. Integration with other planning instruments
2a) If your Nat2k site/s has an implemented management plan, which are the planning instruments at the county/regional/national level integrated in this management plan? (it should be specified within the management plan and within the external coherence analysis performed for the SEA) **There are no implemented management plans for Nat2k sites in Croatia yet. Anyway, for conservation areas significant for birds there is Ordinance on conservation objectives and conservation measures for target bird species in ecological network areas (OG 25/20). For conservation areas significant for species and habitats types there is a draft version of conservation objectives for target habitats and species for most conservation areas. The relevant ordinance is in preparation.**
2b) Does the regional landscape plan (i.e. Piano Paesaggistico Regionale PPR in Italy) consider the presence of the Nat2k site/s and its natural and cultural heritage? (Yes/No) If your answer was "yes", please explain how the Nat2k

site is integrated in the regional landscape plan? **There is no regional landscape plan but Zadar County Spatial Plan, as well as Town of Nin Spatial Plan, defines conditions on landscape, nature and cultural heritage protection for wider project area.**
2c) Which river basin includes your Nat2k site/s? (Please mention name and the competent authority in charge for this specific river basin). Are there specific measures of relevance for the vulnerability and conservation of the Nat2k site specified in the River Basin Management Plan? (Yes/No, please mention relevant examples) **Watercourse Miljašić Jaruga represents a surface waterbody JKRN0052_001, Miljašić Jaruga, which is in a moderate state. The coastal sea of the Nin Bay, into which the Miljašić Jaruga flows, belongs to the coastal water body Southern part of Kvarnerić O423-KVJ. It is a coastal waterbody of the type "euhaline coastal sea of fine-grained sediment". This coastal waterbody is in good condition. Basic and additional measures for waterbodies that have not achieved good conditions are defined in national River Basin Management Plan. Relevant examples of measures concerning waterbody JKRN0052_001 are: control measures for point sources of pollution (repairing damage at the source, ...), control measures for diffuse pollution sources (I. Action program for the protection of waters against pollution caused by nitrates of agricultural origin, OG 15/13 and 22/15, etc.), etc.**
2d) Based on the Natura 2000 Standard Data form of your pilot, which Threats, Pressures and Activities with impacts on the site (section 4.3) are identified? Which of the activities generating threats and pressures have a sectorial plan? The presence of the SIC is considered within these sectorial plans? Are the sectorial plan measures integrated with the measures of the SIC management plan (if implemented)? **HR1000023 SZ Dalmacija i Pag** **http://natura2000.dzzp.hr/reportpublish/reportproxy.aspx?paramSITECODE=HR1000023** **-** **HR3000176 Ninski zaljev** **http://natura2000.dzzp.hr/reportpublish/reportproxy.aspx?paramSITECODE=HR3000176** **E01 Urbanised areas, human habitation** **H01 Pollution to surface waters (limnic & terrestrial)** **J02.02 Removal of sediments (mud...)** **J02.02.02 estuarine and coastal dredging** **HR4000005 Privlaka - Ninski zaljev - Ljubački zaljev** http://natura2000.dzzp.hr/reportpublish/reportproxy.aspx?paramSITECODE=HR4000005 **J02.02 Removal of sediments (mud...)** **J02.02.02 estuarine and coastal dredging**

2.1.7 P7 and P10 – Coastal area in Molise (Biferno river mouth, Campomarino Coast and Bonifica Ramitelli SAC); Torre del Cerrano, Pineto Abruzzo

Biferno river mouth, Campomarino Coast and Bonifica Ramitelli SAC. Integration with other planning instruments. Coastal area in Molise
2a) If your Nat2k site/s has an implemented management plan, which are the planning instruments at the county/regional/national level integrated in this management plan? (it should be specified within the management plan and within the external coherence analysis performed for the SEA) **Nat2K site hasn't an implemented management plan.**

The SEA for the Management Plan was not carried out.
2b) Does the regional landscape plan (i.e. Piano Paesaggistico Regionale PPR in Italy) consider the presence of the Nat2k site/s and its natural and cultural heritage? (Yes/No) If your answer was "yes", please explain how the Nat2k site is integrated in the regional landscape plan? **No**
2c) Which river basin includes your Nat2k site/s? **Biferno river basin.** *(Please mention name and the competent authority in charge for this specific river basin). Are there specific measures of relevance for the vulnerability and conservation of the Nat2k site specified in the River Basin Management Plan? (Yes/No, please mention relevant examples)* **No, there aren't.**
2d) Based on the Natura 2000 Standard Data form of your pilot, which Threats, Pressures and Activities with impacts on the site (section 4.3) are identified? **No Threats, Pressures and Activities are identified on the Natura 2000 Standard Data form.** *Which of the activities generating threats and pressures have a sectorial plan?* **No activities and threats have a specific sectorial plan.** *The presence of the SIC is considered within these sectorial plans?* **No.** *Are the sectorial plan measures integrated with the measures of the SIC management plan (if implemented)?* **No.**

Torre del Cerrano, Pineto Abruzzo. Integration with other planning instruments
2a) If your Nat2k site/s has an implemented management plan, which are the planning instruments at the county/regional/national level integrated in this management plan? (it should be specified within the management plan and within the external coherence analysis performed for the SEA) **There are no regional plans integrated with the Management Plan** **The SEA for the Management Plan was not carried out**
2b) Does the regional landscape plan (i.e. Piano Paesaggistico Regionale PPR in Italy) consider the presence of the Nat2k site/s and its natural and cultural heritage? (Yes/No) If your answer was "yes", please explain how the Nat2k site is integrated in the regional landscape plan? **No**
2c) Which river basin includes your Nat2k site/s? **Vomano river basin.**

(Please mention name and the competent authority in charge for this specific river basin). Are there specific measures of relevance for the vulnerability and conservation of the Nat2k site specified in the River Basin Management Plan? (Yes/No, please mention relevant examples)

No, there aren't.

2d) Based on the Natura 2000 Standard Data form of your pilot, which Threats, Pressures and Activities with impacts on the site (section 4.3) are identified?

No Threats, Pressures and Activities are identified on the Natura 2000 Standard Data form.

Which of the activities generating threats and pressures have a sectorial plan?

No activities and threats have a specific sectorial plan.

The presence of the SIC is considered within these sectorial plans?

The Coast Defense Plan considers the presence of the Site.

Are the sectorial plan measures integrated with the measures of the SIC management plan (if implemented)?

No.

2.1.9 P9 - Cetina river mouth (HR)

Cetina river mouth. Integration with other planning instruments

2a) If your Nat2k site/s has an implemented management plan, which are the planning instruments at the county/regional/national level integrated in this management plan? (it should be specified within the management plan and within the external coherence analysis performed for the SEA)

Cetina river mouth Nat2K site does not have a management plan.

2b) Does the regional landscape plan (i.e. Piano Paesaggistico Regionale PPR in Italy) consider the presence of the Nat2k site/s and its natural and cultural heritage? (Yes/No) If your answer was "yes", please explain how the Nat2k site is integrated in the regional landscape plan?

We do have regional planning documents however they are not called regional landscape plan. The main spatial planning documents, which are also a legal obligation, and the basis for issuing all permits for spatial interventions, are spatial plans that are made at the level of counties and local self-government units. The Spatial Plan of the Split-Dalmatia County (SP SDC) and the Spatial Plan of the City of Omiš (SP OM) are relevant for the Cetina estuary. The mentioned spatial planning documents take into account the Nat2k sites in the following way. SP SDC in the graphic part (Annex 3.3 - ecological network) clearly shows the coverage of the Nat2k sites, while in the text part (Article 9) in the list of Nat2k sites states the Cetina estuary, and refers to the existing national legal framework for nature protection. There is no special reference to the mentioned site. SP OM in the graphic part (Annex 3.1 - nature protection, monuments, archeology, units) shows the scope of the site but the legend does not clearly indicate what the display corresponds to (does not state that it is an Nat2k site), while in the text part, in revision of the SP OM in 2010 before the proclamation of Natura 2000 sites (2013), states protection guidelines:
23 Prevent nourishment and concreting of shores
28 Adapt fishing and prevent overfishing

132 Preserve the favorable structure of the sea bed, coastal areas and estuaries
133 Preserve biological species of the habitat type; do not introduce allochthon (non-native) species and genetically modified organisms
135 Repair damaged parts of the coastline where it is possible
Both documents are very confusing, contain numerous additions and corrections, and both are in the process of revision. Due to the legal obligation, which came into force after the adoption of both planning documents, the implementation of strategic assessment of the impact of all strategic planning documents on Nat2k sites, it is assumed that future spatial plans will comply with the conservation measures. Public Institution Sea and Karst as public legal body is involved in all revisions of the planning documents, that does not mean that our suggestions and guidelines will be taken into account.

Spatial Plan of the Split-Dalmatia County (OJ Split-Dalmatia County 1/03, 8/04, 5/05, 5/06, 13/07, 9/13, 147/15), link: http://zzpu-sdz.hr/prostorni-plan-%C5%BEupanije
and the Spatial Plan of the City of Omiš (OJ City of Omiš 4/07, 8/10, 3/13, 2/14, 7/14, 5/15, 10/15, 15/15, 7/16, 9/16), link: http://zzpu-sdz.hr/prostorni-plan-ure%C4%91enja-grada-ili-op%C4%87ine

2c) Which river basin includes your Nat2k site/s? (Please mention name and the competent authority in charge for this specific river basin). Are there specific measures of relevance for the vulnerability and conservation of the Nat2k site specified in the River Basin Management Plan? (Yes/No, please mention relevant examples)

Cetina estuary is part of Adriatic River Basin. Water policy is the responsibility of the Ministry of Agriculture, which proposes laws and regulations, while Croatian Waters is the executive body in charge of water management, i.e. implementation and coordination of state policy in the field of water, including drafting a basic document - River Basin Management Plan. The current management plan covers the period from 2006 to 2021. and encompasses all river basins including Adriatic one. In the River Basin Management Plan there are specific measures of relevance for the vulnerability and conservation of all Nat2k sites. These sites are in the Register of Protected Areas - areas of special water protection. In addition to the implementation of 144 basic measures, it plans to implement 116 additional measures related to the protection of protected areas, i.e. areas of special water protection, of which measures of additional protection of areas intended for habitat protection or species, where maintaining or improving the condition of water is an essential element of their protection, are by far the most important part (98 measures). Measures are incorporated into lower-order plans, but plans are adopted mainly for rivers, not for marine areas to which the Cetina estuary belongs. However Cetina estuary has been singled out as a protected area in transitional waters, and as such is part of the system for monitoring the condition of transitional waters. In accordance with the Water Framework Directive transitional water biological quality is monitored, namely phytoplankton, marine flowering plants, benthic invertebrates and fish. The Cetina estuary also includes beaches that are on the list of areas for swimming and recreation. During the established bathing season, appropriate monitoring and classification of bathing water quality, bathing water quality management and informing the public about bathing water quality are carried out. Up to now, there is no specific Adriatic River Basin Management Plan prepared.

River Basin Management Plan, link:
https://www.voda.hr/sites/default/files/plan_upravljanja_vodnim_podrucjima_2016._-_2021_0.pdf

2d) Based on the Natura 2000 Standard Data form of your pilot, which Threats, Pressures and Activities with impacts on the site (section 4.3) are identified? Which of the activities generating threats and pressures have a sectorial plan? The presence of the SIC is considered within these sectorial plans? Are the sectorial plan measures integrated with the measures of the SIC management plan (if implemented)?

According to SDF, following Threats, Pressures and Activities are impacting Cetina estuary:
D03 - shipping lanes, ports, marine constructions,

E03.01 - disposal of household / recreational facility waste and
G01 - Outdoor sports and leisure activities, recreational activities.

In terms of sectoral plans, freshly adopted Strategic Plan of Tourism Development of the City of Omiš 2020-2030 does not mention that Cetina estuary is part of Nat2k network. It only generaly speaks about natural values of Omiš in the context of tourist attraction bases but with scanty and sometimes wrong information. Waste Management Plan of the City of Omiš for the period 2017-2022 does not mention Cetina estuary neither Nat2k netowork. Each year the local self-government units adopt a maritime domain management plan. Maritime Domain Management Plan in the area of the City of Omiš for 2021 does not mention Cetina estuary neither Nat2k netowork. For the management of the maritime domain, it states the activities for the protection of the maritime domain (signs, signalization, etc.), maintenance of the maritime domain (nourishment of the coastline), regulation of the maritime domain, and special use of the maritime domain based on concession approvals. It is clear that all mentionned activities have a greater or lesser impact on the Cetina estuary habitat types and species, but when planning them, the City does not consult any of the institutions from the nature protection sector probably because it does not have a legal obligation to do so.

Strategic Plan of Tourism Development of the City of Omiš 2020-2030, link:
https://www.visitomis.hr/clients/1/documents/kjvh2u5opeer7e.docx
Waste Management Plan of the City of Omiš for the period 2017-2022, link:
http://dokumenti.azo.hr/Dokumenti/Plan_gospodarenja_otpadom_Grada_Omisa_2017-2022.pdf
Maritime Domain Management Plan in the area of the City of Omiš for 2021, link:
https://www.pomorskodobro.dalmacija.hr/Portals/4/adam/DataTables/nxLAuWKDnEaMkqdnVCbkYQ/Info/Plan%20upravljanja%2016.6.2021..pdf

2.1.10 P11 - Marche coastal area (IT)

Litorale della Baia del Re, Litorale di Porto d'Ascoli, Portonovo e falesia calcarea a mare. Integration with other planning instruments

2a) If your Nat2k site/s has an implemented management plan, which are the planning instruments at the county/regional/national level integrated in this management plan? (it should be specified within the management plan and within the external coherence analysis performed for the SEA)

The regional sectoral plans usually verify the coherence with N2k management plans and refer further consideration to the procedure for the specific evaluation of effects for Natura 2000 ("valutazione di incidenza").
The urban planning is managed at municipality level. The municipalities involved by N2k pilots have, in general, old urban plans, approved prior to the N2K management plans.
IT5310007 Litorale della Baia del Re is interested by the Urban Plan of the city of Fano: the Plan address the N2k with technical rules finalised to the protection and introduces the tools of ecological network. The urban plan dates back to 2009 and was approved before the management measures and the ICZM
IT5340001 Litorale di Porto d'Ascoli is in the territory of the city of Ascoli Piceno: the original Urban plan is very old (1973) and does not includes directly the N2k site.
IT5320006 Portonovo e falesia calcarea a mare is in the territory of two Municipalities, Ancona and Sirolo. The Urban Plan of Ancona (last revision 2021), for the N2k applies the management plan of the Natural Park for Monte Conero (that includes the N2k sites). The Urban plan of Sirolo does not directly address the N2K site but refers to the Natural Park of Monte Conero (that includes the N2K site).

2b) Does the regional landscape plan (i.e. Piano Paesaggistico Regionale PPR in Italy) consider the presence of the Nat2k site/s and its natural and cultural heritage? (Yes/No) If your answer was "yes", please explain how the Nat2k

site is integrated in the regional landscape plan?

No. The PPAR of Marche dates back to 1989, before the N2K network was established. Nevertheless, the PPAR considers the natural and cultural heritage on which the Network is founded and it identifies tools for its protection.

2c) Which river basin includes your Nat2k site/s? (Please mention name and the competent authority in charge for this specific river basin). Are there specific measures of relevance for the vulnerability and conservation of the Nat2k site specified in the River Basin Management Plan? (Yes/No, please mention relevant examples)

The three pilot sites are included in the "Appennino Centrale" River District, the competent Authority is the "Autorità di Bacino Distrettuale dell'Appennino Centrale". The Plan, in the section of Mache Region, does not includes specific measures for the N2K sites of the Pilot.

2d) Based on the Natura 2000 Standard Data form of your pilot, which Threats, Pressures and Activities with impacts on the site (section 4.3) are identified? Which of the activities generating threats and pressures have a sectorial plan? The presence of the SIC is considered within these sectorial plans? Are the sectorial plan measures integrated with the measures of the SIC management plan (if implemented)?

IT5310007 Litorale della Baia del Re
<u>Threats, Pressures and Activities</u>
G05.05 intensive maintenance of public parcs /cleaning of beaches
G05.03 penetration/ disturbance below surface of the seabed
H05 Soil pollution and solid waste (excluding discharges)
H03.01 oil spills in the sea
E01 Urbanised areas, human habitation
C01.01.02 removal of beach materials
G05.01 Trampling, overuse
D03.01.02 piers / tourist harbours or recreational piers
G05.02 shallow surface abrasion/ mechanical damage to seabed surface
G02.10 'other sport / leisure complexes
G01.08 other outdoor sports and leisure activities
I01 invasive non-native species
E03.04.01 costal sand suppletion/ beach nourishment

<u>Sectoral plans addressing pressures and integration of measures of the SIC management plan</u>
Most of the pressures identified are addressed within the ICZM of Marche Region. Pressures deriving from urbanization are managed by urban management plan of city of Fano but the ICZM includes rules for the pilot. Other pressures derive from fruition and tourism, that have not sectoral plan.
The N2ksite has not a proper management plan, but "conservation measures" (Act of the regional administration n. 658/2016). It includes the following main measures:

- **Verification of compatibility between maritime constructions and habitat conservation**
- **Application of the specific evaluation for N2k ("valutazione di incidenza") in case of movements of sand by mechanical means in areas with a verified presence of species characteristic of the habita**
- **Control of alien speciest**

IT5340001 Litorale di Porto d'Ascoli
<u>Threats, Pressures and Activities</u>
A04 grazing

G01.08 other outdoor sports and leisure activities
A07 use of biocides, hormones and chemicals
E03.04.01 costal sand suppletion/ beach nourishment
J01.01 fire and fire suppression
A08 Fertilisation
A03.01 intensive mowing or intensification
D03.01.02 piers / tourist harbours or recreational piers
K02.01 species composition change (succession)
E01 Urbanised areas, human habitation
G02.10 'other sport / leisure complexes
A04.03 abandonment of pastoral systems, lack of grazing
I01 invasive non-native species
G01.03.02 off-road motorized driving
D03.01 port areas
J02.01.03 infilling of ditches, dykes, ponds, pools, marshes or pits
G05.05 intensive maintenance of public parcs /cleaning of beaches
E02 Industrial or commercial areas

Sectoral plans addressing pressures and integration of measures of the SIC management plan
Part of the pressures refer to agricultural sector and are not directly correlated to the coastal environment. The agricultural practices are sustained and regulated by the Regional Agricultural Development Plans (from the European Agricultural Fund for Rural Development - EAFRD); according to the specific European regulation (n. No 1305/2013 for the current programming period) the Rural development plan support the implementation of management measure/plans of the N2k network.
Other pressures derive from urbanization and land use, that are managed by urban management plan of city of Ascoli Piceno but the ICZM includes rules for the pilot.
The N2ksite hasn't a proper management plan, but "conservation measures" (Act of the regional administration n. 411/2014). It includes the following main measures:

- **Maintenance of wetland**
- **Coastal defence and manual cleaning of beach**
- **Contrast to invasive species**
- **Restoration of dunes**
- **Regulation of access and tourism**
- **Reduction of chemicals in agriculture and restoration of traditional agricultural landscape**

IT5320006 Portonovo e falesia calcarea a mare
Threats, Pressures and Activities
F02.02 Professional active fishing Professional active fishing
K02.01 species composition change (succession)
F02.02.02 netting
K02 Biocenotic evolution, succession
G01.08 other outdoor sports and leisure activities
G05.05 intensive maintenance of public parcs /cleaning of beaches
J02.05 Modification of hydrographic functioning, general
J03.02 anthropogenic reduction of habitat connectivity
H01.08 diffuse pollution to surface waters due to household sewage and waste waters
K01.02 Silting up
Sectoral plans addressing pressures and integration of measures of the SIC management plan

Pressures derive from fruition and tourism, that have not sectoral plan. Pressures relate to water quality and hydrography, are managed by the regional plan for water protection, now part of the River District Management Plan. The Plan is in line with the conservation objectives of the N2k site, even if not specific conservation measures are directly implemented.
The N2ksite has a proper management plan (Act of the regional administration n. 533/2015).
The management plan introduces a list of measure addressing possible threats, especially related to fruition, as for example:

- **Prohibition of climbing**
- **Prohibition of change in land use in case of presence of habitat**
- **Prohibition of planting alien species**
- **Prohibition of using herbicides and fungicides in specific areas**
- **Regulation of fruition and touristic flows**

The N2k site, with other two N2k sites, IT5320006 and IT5320007, is in the territory of the "Conero Natural Park" and the management plan acts as plan for the Natural Park.

3. Tools for integrated coastal/ marine management systems

This section of the document focuses on the analysis of selected tools and techniques capable to support integrated coastal/marine management systems. Two different efforts were carried out and described in the following paragraphs 3.1-3.2, focusing at different spatial scales, from pilot to regional. These include: 1) suitable actions supporting coastal/marine integrated management, with a local scale focus at each pilot site; 2) tools and methodologies for mapping Land-Sea interactions, with a wide-scale focus on the western Adriatic coastal area.

3.1 Suitable actions for supporting coastal/marine integrated management

Within the CASCADE project, it was possible to characterize the potential of activities carried out at different pilots for supporting integrated coastal and marine management. These contents are the result of the contribution provided by all project partners involved in Cascade project, that were interviewed through a questionnaire designed by the IUAV University of Venice, and aimed at collecting information from the different pilots based on a common set of questions. Results are resumed in the table below, which can be regarded as an useful knowledge base of suitable actions aimed at increasing the integrated marine/coastal management capacity.

3.1.1. P1 - Grado and Marano Lagoon and Gulf of Trieste (IT)

How did the activities carried out within Cascade project contribute to actively involve local stakeholders at your pilot? **ARPAFVG organized workshops and several events such as Trieste next that had allowed to actively engage people and display the improved knowledge regarding the pilot area of PP4, these events have been the occasion to show people the acquired instruments bought with the project. During these events local stakeholders had the opportunity to ask questions directly also speaking with our technicians involved in the monitoring and in the analysis activities.**
How did the activities carried out within Cascade project contribute to maintain and improve the monitoring and modelling capacity at your pilot? **With CASCADE project we had the opportunity to install three new instruments to collect physical-chemical data on the Grado and Marano lagoon environment. This permit to enhance the monitoring system already in place in the lagoon that was unable to acquire data continuously and remotely. Therefore, with this new technologies ARPA FVG had considerably improved the amount of data available to validate SHYFEM models implemented in the activity 4.1.2.**
How did the activities carried out within Cascade project contribute to identify new pressures/impacts or improve available knowledge on known pressures/impacts? **With CASCADE project we were able to collect data regarding the ecosystem biodiversity of the rocky shore of**

the Gulf of Trieste in 13 sites, improving knowledge about the distribution of macrozoobenthic communities on mediolittoral rocky substrates, which are the most directly affected by the rapid widespread of human-induced coastal modifications. The application of the AMBI index, developed by Slovenian colleagues and never apply to the coast of Italy, had permitted to evaluate the disturbance due to anthropic pressure on the basis of the proportion sensitive/tolerant species to organic enrichment, revealing that 75% of the sampling sites were in pristine/slightly altered conditions, whereas 25% were moderately altered
How did the activities carried out within Cascade project contribute to the draft/identification of measures relevant for management of the system? **Traditional monitoring techniques have proven to be limiting, highlighting the need of innovative and integrated approaches, so ARPAFVG updated its monitoring network increasing the efficiency and quality of the data acquired. Data obtained from monitoring activities have been used to implement physical and geochemical model in the lagoon. Moreover, the development of a robust model could be used to improve the management systems the future but also that already in place.** **As far as the Gulf of Trieste, we had identified through the application of the AMBI index the high pressure zones have been identified providing useful information for a correct future management of the area.**
How did the activities carried out within Cascade project contribute to the production of guidelines for protection and management ? **The activities carried out during the project provide useful information to the managing authorities and local stakeholder in charge of the production of guidelines and programs to manage the environment.**
How did the activities carried out within Cascade project contribute to operatively support management (through the organization of local forums, stimulating the creation of permanent co-management tables, etc..)? **n.a.**
Other aspects of interest for management not reported above **n.a.**

3.1.2. P2. Transitional (e.g. Goro area and Bevano Mouth) and coastal areas in Emilia Romagna (IT)

How did the activities carried out within Cascade project contribute to actively involve local stakeholders at your pilot? **Workshops and scientific training organized by ARPAE, Delta2000 and UNIBO allowed to actively engage several people and share expertise and findings in different fields of our research. Local stakeholders (fishermen, clam farmers) also took part to sampling activities and to the scientific training.**
How did the activities carried out within Cascade project contribute to maintain and improve the monitoring and modelling capacity at your pilot? **Monitoring activities in pilot area 2 have been carried out monthly/quarterly to follow both environmental parameters and biological factors as well as the biological community. Data obtained from monitoring and sampling activities have been used to implement physical and bio-geochemical model in the area.**
How did the activities carried out within Cascade project contribute to identify new pressures/impacts or improve

available knowledge on known pressures/impacts? **Laboratory trials and monitoring program have been used to define pressures and impacts on the area. Monitoring inorganic nutrients in the water, salinity and the biological community has allowed to validate and verify well-known pressures affecting brackish and coastal waters.**
How did the activities carried out within Cascade project contribute to the draft/identification of measures relevant for management of the system? **Occasionally, traditional monitoring techniques have proven to be limiting, highlighting the need of innovative and integrated approaches. Coupling innovative and traditional tools could lead to an in-depth assessment of biodiversity and of its threats in transitional marine habitat.**
How did the activities carried out within Cascade project contribute to the production of guidelines for protection and management ? **In Emilia-Romagna (P2 area) monitoring activities for coastal waters are actually well defined, however new techniques, such as the use of molecular biology and of remote sensing, are under development and increasingly used, thus it is not excluded that in the near future some of the results obtained during Cascade project will be of help in defining new monitoring tools.**
How did the activities carried out within Cascade project contribute to operatively support management (through the organization of local forums, stimulating the creation of permanent co-management tables, etc..)? **n.a.**
Other aspects of interest for management not reported above **n.a.**

3.1.3. P3. Torre Guaceto - Canale Reale, Punta della Contessa, Melendugno (IT)

How did the activities carried out within Cascade project contribute to actively involve local stakeholders at your pilot? **Local stakeholders at P3 "Torre Guaceto - Canale Reale, Punta della Contessa, Melendugno in Puglia" were involved in different activities:** - **On February 2022, for D2.3.2, a questionnaire for engaging with CASCADE stakeholders' community and gather from them a feedback on the CASCADE project outcomes was prepared by PP1-CMCC in collaboration with LP-Regione Puglia and PP13-UNIMOL, and the help of PP2-IRB for the Croatian translation. It was published online in English, Italian and Croatian languages. Regione Puglia sent over 160 emails with the link of the online questionnaire to stakeholders in all the region (coastal municipalities, regional and local authorities, professional orders, research Institutes, universities, cooperatives, consortium, aquaculture associations, natural reserves);** - **N.7 events organized by Regione Puglia engaged more than 550 professionals such as architects, geologists, engineering, biologists, etc., opening a discussion between researchers, local and regional authorities, managers of protected natural areas, etc.:** - **On 29th November and 1st December 2022, two webinars (D.5.2.2) were organized to develop species**

recovery skills and capacities with special reference to the pilot area of the CASCADE Project including Torre Guaceto, Canale Reale Punta della Contessa and Melendugno. A debate took place between representatives of Regione Puglia, Unisalento, Consorzio di Torre Guaceto and Legambiente;

- **On 17th and 19th January 2023, two webinars (D.5.3.2) were dedicated to stakeholders who are interested in integrated ecosystem management, protected areas planning and management. The online events provided a training session on the skills development about the marine coastal systems management and presented best practice examples on valorization, sustainable promotion and adaptive management of the Torre Guaceto protected area and on the correct management of PAs for the safeguard and protection of biodiversity. A discussion took place between representatives of Regione Puglia, University of Bari, Consorzio di Torre Guaceto, Parco Naturale regionale del Mar Piccolo di Taranto, Wildlife center of the province of Brindisi and Brindisi Municipality;**
- **On 7th February 2023, a Seminary (D.2.4.5) took place for sharing experiences on technical-scientific activities carried out throughout the Apulian marine and coastal areas, among which the P3 pilot area (Torre Guaceto, Punta della Contessa, Melendugno) of CASCADE Interreg Project, and subsequently results presentation. The speakers were representatives of Università degli Studi di Bari, Unisalento and Consorzio of Torre Guaceto;**
- **On 9th February 2023, a workshop (D.2.4.5) had as objective the sharing on technical- scientific activities carried out in marine and coastal areas in both Italy and Croatia, focusing on some pilot areas of the CASCADE Interreg Project, and following projects results displaying. It featured as protagonists some Cascade partners (PP5-IUAV, PP6-UNIBO and PP2-IRB);**
- **On 10th February 2023, a Scientific Training Online (D.2.4.5) was addressed to stakeholder that were experts in marine ecosystems. The online event was focused on the main techniques for studying marine ecosystems with an in-depth analysis on the technological progress that have contributed, in the last few decades, to an increasing detailed knowledge of both the sea and the ecosystems it houses;**
- **For disseminating and engage the stakeholders, Regione Puglia invited n. 150 stakeholder, including coastal municipalities, regional and local authorities, professional orders, research Institutes, universities, cooperatives, consortium, aquaculture associations, natural reserves to attend the final Italian event of the CASCADE project on April 13 2023, in Lecce. 80 people attended the final event and discussed about coastal and marine ecosystems in Italy and Croatia: monitoring (observing and modelling) systems and results and also about preservation and protection of coastal and marine areas: the way for the correct management.**

How did the activities carried out within Cascade project contribute to maintain and improve the monitoring and modelling capacity at your pilot?

The monitoring system implemented by CMCC within the project in the Torre Guaceto Marine Protected Area (MPA) is an experimental technology based on low-cost, miniaturized and user-friendly characteristics. The integration of this system on existing platforms will allow both to extend the observing capacities in space and time and to collect continuous data for numerical models validation. In order to achieve these goals different installations were carried out to test electronics, sensors and data transmission. Preliminary tests were carried out in a 'lab-site' and then on a delimitation buoy made available from the MPA.

Regione Puglia purchased an Unmanned Surface Vehicle (USV) equipped with a Multibeam Norbit IWBM, a Side Scan Sonar Blueprint Starfish 425 F and a sound velocity profile for hydrographic and environmental survey applications and n. 4 hydrophones for noise and sound monitoring. The USV is a surface vehicle autonomous that operates without the need for a crew. It is capable of navigating on the surface of water autonomously due to the presence of motors and an operator-programmable navigation. It will allow to peform missions in marine

areas and coastal areas, measuring several water parameters, thanks to the instruments it is equipped with.

Moreover, the activities performed by the University of Salento at the different study sites of the pilot area and, particularly on the energy budget response of benthic invertebrate species characteristic of the coastal ecosystems has highlighted the relevance of functional species traits, as the metabolic costs.

How did the activities carried out within Cascade project contribute to identify new pressures/impacts or improve available knowledge on known pressures/impacts?

The activities done have contributed to highlight the functional relationships connecting pressures, such as chemical pollution, urban pollution, agriculture demands and by-products and habitat destruction, with state change, such as those dealing with ecosystem components and processes, intermediate and final ecosystem services, and with impacts, such as those on goods and benefits from provisioning, regulating and cultural ecosystem services. State changes include changes in habitat and species diversity, density and distribution of endemic and IUCN Red List species, functionality of ecosystem processes as organic matter decomposition, nutrient cycling and carbon sequestration, primary production, natural hazard regulation and coastal landscape natural heritage. The analysis of these functional relationships has also been developed using the D(rivers)A(ctivities)P(ressures)S(tate change)I(mpact) [W(elfare)]R(esponse)[M(easures)] evolution of the DPSIR model, which more clearly connects the human needs in the definition of both Pressures and also State targets for the activation of Response measures.

How did the activities carried out within Cascade project contribute to the draft/identification of measures relevant for management of the system?

Apulia Region implemented the analysis of existing planning tools and management plans in force or under development in the areas as well as a wider analysis at international level regarding the protection, restoration and sustainable management of small protected areas or coastal/marine ecosystems, also with reference to soft restoration actions. The analysis highlighted as of particular interest the "Guidelines for the environmental management of the Mediterranean and Black sea saltworks (management model) in the Natura 2000 network. LIFE10 NAT/IT/000256". The management covers the aspects related both to habitat and species conservation with practical measures such as water management for habitat, period of flooding to facilitate bird nesting, construction of breeding islets, flooding during winter to avoid predators such as rats. The guidelines cover saltworks in activity as well as abandoned, therefore particularly adapted to be applied to the different basins of P3 area of Salina di Punta della Contessa for the terrestrial part of the site.

How did the activities carried out within Cascade project contribute to the production of guidelines for protection and management ?

The monitoring activities and studies performed to deepen the knowledge on the functioning of the *Saline Punta della Contessa* transitional aquatic ecosystems have produced results, which are of potential interest for the local administration for the definition of protection and management of these ecosystems. All improvements of the protection and management actions on the *Saline Punta della Contessa* transitional aquatic ecosystems resulting from the activities carried out within Cascade project would have an added value for high diversity of the bird fauna, including flagship species as the greater flamingo bird, despite these ecosystem location in a highly industrialized area.

How did the activities carried out within Cascade project contribute to operatively support management (through the organization of local forums, stimulating the creation of permanent co-management tables, etc..)?

A continuous diaslogue between Regione Puglia and the president, the director and the technical manager of the Consorzio di Torre Guaceto took place during the several online and in presence meeting which occurred at events organized for stakeholders. The discussion was about integrated ecosystem management and the

planning for protected areas preservation, with particular regards to MPA of Torre Guaceto and its seaward extension of the marine protected area.
Other aspects of interest for management not reported above **n.a.**

3.1.4. P4. Neretva river mouth (HR)

How did the activities carried out within Cascade project contribute to actively involve local stakeholders at your pilot? **Through CASCADE project, site visits and multiple workshops were organized and carried out in the area with local stakeholders. Thanks to the wide range of local stakeholders present, it was possible to take advantage of the variety of perspectives and different aspects of management of the area. Other than stakeholders being informed about the project activities and results, it also allowed the stakeholders to interact among each other, exchange information and knowledge, and come to possible solutions to different pressures identified in the area through open discussions.**
How did the activities carried out within Cascade project contribute to maintain and improve the monitoring and modelling capacity at your pilot? **The monitoring system implemented by IOF provided more detailed data which was used to determine the levels of hazardous substances, organic compounds and marine biotoxins in samples from the Neretva estuary area in order to assess the impact of water pollution on aquatic life and ecosystems.** **The activities carried out under the project established the monitoring and modeling procedures in the pilot area.**
How did the activities carried out within Cascade project contribute to identify new pressures/impacts or improve available knowledge on known pressures/impacts? **During the workshops held for CASCADE project representatives from different sectors expressed opinions and views from their sectors, which resulted in better understanding of the complexity of the area. The research and analyses conducted within the project confirmed the existing pressures and impacts.**
How did the activities carried out within Cascade project contribute to the draft/identification of measures relevant for management of the system? **One of the pressures identified was the need for monitoring unification, or rather the enhancement of existing coastal zone monitoring and management systems, which is one of the main goals of this project. The environmental studies carried out within the project provided a critical overview of the impact of water pollution in terms of global challenges, threats and climate impacts, also focusing on various possible preventive measures. The information and data gathered during the project will be used as input during the planned revision of the River Neretva Delta Management Plan.**
How did the activities carried out within Cascade project contribute to the production of guidelines for protection and management ? **Since the scientific base is needed for production of guidelines for protection and management of natural areas, the research conducted through CASCADE project and the data produced will enhance the scientific knowledge available on biodiversity monitoring and management of coastal area of Neretva River.**

How did the activities carried out within Cascade project contribute to operatively support management (through the organization of local forums, stimulating the creation of permanent co-management tables, etc..)? **The participatory process of the workshops held during the Cascade project implied that the stakeholders are deeply interested and want to be more involved in the process of planning the measures for restoration and conservation of the Neretva River Delta. Therefore the pilot action for soft restoration actions was aimed at raising awareness and increasing knowledge of the local community which inevitably will have long-term positive effect on their willingless to react and participate in the future strategies and methodologies drafting in order to introduce necessary changes for the benefit of the ecosystem and the local community itself.**
Other aspects of interest for management not reported above **n/a**

3.1.5. P5. Gulf of Venice and Tegnùe di Chioggia area

How did the activities carried out within Cascade project contribute to actively involve local stakeholders at your pilot?

Local stakeholders at P5 "Gulf of Venice and Tegnùe di Chioggia area" were involved in three ways:

- **By promoting an open meeting (initial event presenting project activities), held in Chioggia (hybrid mode) on November 24 2021, entitled "The management of the Natura 2000 site Tegnùe di Chioggia in the framework of maritime spatial planning of the region". This event brought together participants from 14 different institutions, including research and academy, fisheries, tourism (diving), local NGOs, and governmental bodies (coastguard).**
- **By promoting, as a follow up of this meeting, a discussion held within local researchers interested in the Tegnùe area, and representing different institutions (CNR-ISMAR, UNIBO, UNIPD, IUAV) with the intent of stimulating the process towards the establishment of a management body for the Tegnùe Natura 2000 site, and the set up of a management plan;**
- **By organizing a final event, presenting pilot-related project outcomes, held in Chioggia on May 19 2023. Within the event, a participatory round-table was held, involving the different actors interested in the management of the Tegnùe di Chioggia site.**

How did the activities carried out within Cascade project contribute to maintain and improve the monitoring and modelling capacity at your pilot?

Monitoring capability was progressed in two ways:
by ensuring the continuity and comparability of collected data with historical datasets existing in the area;
by testing alternative methodologies / integrating new spatial data for model development.

In order to achieve these goals, a set of in-situ experimental activities were carried out between June 2021 and December 2022, including 4 different actions: A) a video recording survey; B) a non-destructive photographic sampling survey; C) 3 campaigns with gillnets targeting fish fauna; D) 3 campaigns implementing an active bioacoustics survey.
Modelling capability was progressed by developing a spatialized food web model for the area, making use of the Ecopath with Ecosim (EwE) software. This model required as an input different sources of data, which included existing monitoring data available for the area, operational oceanography data, and field data collected in-situ during CASCADE activities. Possible model applications to support management were explored, in particular the model was tested with respect to the comparison of scenarios (under short and long term drivers of pressure; with respect to alternative management choices).

How did the activities carried out within Cascade project contribute to identify new pressures/impacts or improve available knowledge on known pressures/impacts?

Sampling on the fish community carried out within CASCADE shown a decrease with respect to the situation depicted from former activities carried out at the site until 2007. Possible drivers of changes are currently being analyzed.
Food web model simulations compared ecosystem indicators, by combining climate change and fishery management scenarios, indicating that fishing effort policies do not alter the direction of the change in ecosystem indicators imposed by climate change, although they can mitigate or exacerbate its effects.

How did the activities carried out within Cascade project contribute to the draft/identification of measures relevant for management of the system?

Existing measures currently applied in Natura 2000 sites and MPAs at the national level were reviewed. Tentative measures related to monitoring, ocean literacy, and citizen science were discussed with local stakeholders during the meeting held in Chioggia, on May 19 2023. In addition, mechanisms for the financial coverage of this measures were explored, with particular reference to opportunities offered by the funding provided under PNRR for protected areas and natural parks.
How did the activities carried out within Cascade project contribute to the production of guidelines for protection and management ? **N.d.**
How did the activities carried out within Cascade project contribute to operatively support management (through the organization of local forums, stimulating the creation of permanent co-management tables, etc..)? **The second activity described at point 1 "promoting, as a follow up of this meeting, a discussion held within local researchers interested in the Tegnùe area, and representing different institutions (CNR-ISMAR, UNIBO, UNIPD, IUAV) …" contributed to stimulate the dialogue on this theme among different institutions. At the moment, after the designation of a consortium which will take care of the management of the site, a scientific committee will be established, including different representatives from these institutions.**
Other aspects of interest for management not reported above **N.d.**

3.1.6. P6. Miljašić Jaruga river mouth, Nin bay (HR)

How did the activities carried out within Cascade project contribute to actively involve local stakeholders at your pilot? **They are informed, educated and familiar with the situation in the pilot area and will contribute to its protection through joint activities and cooperation. (educational workshops still need to be done).**
How did the activities carried out within Cascade project contribute to maintain and improve the monitoring and modelling capacity at your pilot? **The activities carried out under the project established entirely the monitoring and modeling procedures in the pilot area. The project introduced the methodology of oceanographic measurements in Nin' Bay for the short-term period and for the long-term period in the operational mode. In connection with previous activities, numerical modeling of oceanographic parameters was introduced, which is a great progress for the pilot area.**
How did the activities carried out within Cascade project contribute to identify new pressures/impacts or improve available knowledge on known pressures/impacts? **In the area of Nin Bay, erosion processes have been taking place for several decades, due to natural (wind, waves, currents) and anthropogenic influences (use of sand for construction purposes). Activities conducted in the scope of the project, especially modeling of sea wave parameters for the period of the past 17 years (2006-2023) improved understanding of the erosion processes and gave example of possible monitoring of the future structural measures (groins, dreging stc.).** **In the past, the Miljašić Jaruga river was a natural equilibrium force that transported sediments from the port of Nin and in this way enabled the existence of the Nin muds and the Ždrijac beach. After the reconstruction of Miljašić Jaruga (there is no documented date, but possibly 50-70 years ago) and the redirection of the river from**

the port of Nin, the movement of sediments in one direction and deposition in the port of Nin began. In the area of the Queen's beach and Ždrijac beach one can observe the retreat (disappearance) of the coastline. River regulation also led to a change in the hydrological regime, which resulted in an increasing number of floods in the Miljašić Jaruga area (especially one in 2018). **Monitoring and numerical modeling of the Miljašić Jaruga River will allow a better understanding of the flood regime in the estuary and improve the management of the studied area.**
How did the activities carried out within Cascade project contribute to the draft/identification of measures relevant for management of the system? **The basis for the formulation of a long-term program of measures was laid by reviewing the current situation and measures for the management of coastal and marine resources. The implementation of measures will achieve the conditions of sustainable use of the Miljašić Jaruga River with implemented environmental process protection measures as well as climate change protection measures**
How did the activities carried out within Cascade project contribute to the production of guidelines for protection and management? **There is no integrated coastal and marine resource management system in the Pilot area but a maritime asset management plan is implemented annually. The activities carried out under the project enabled the identification of priority areas of protection and management, namely protection of area from the negative impacts of climate change, sustainable spatial development, and protection of water resources of the Miljašić Jaruga River for the integrated coastal and marine resource management system proposal.**
How did the activities carried out within Cascade project contribute to operatively support management (through the organization of local forums, stimulating the creation of permanent co-management tables, etc..)? -
Other aspects of interest for management not reported above -

3.2 Land Sea Interactions mapping

As described in section 1 of this document, consideration of land-sea interactions (LSI) is an important element in the management of coastal/marine areas, fostering the coexistence among maritime activities, and between maritime activities and nature conservation. It is therefore regarded as a mandatory step in managing the marine space, as underlined by the Maritime Spatial Planning Directive (2014/89/EU).

The consideration of LSI could be an important contribution to the identification of appropriate conservation measures in marine Natura 2000 sites, also fostering integration with maritime uses and activities in the surrounding areas. Identifying, mapping and understanding the complexity of interactions between anthropogenic activities that originate on land with effects on the status of marine-coastal waters and vice versa is therefore crucial for the proper management of related resources and habitats.

Within CASCADE project activities we identified suitable methodologies to synthesize geospatial information, in order to build knowledge maps for LSI at the wide spatial scale, by means of Quantum GIS and R package (v4.2.0). The reference area for this exercise considered a set of existing land-sea interaction hotspots, which were identified within the current version of Italian national maritime spatial plans, which are currently undergoing the Strategic Environmental Assessment consultation. The six hotspots considered were, namely: Gulf of Trieste, Gulf of Venezia, Ravenna, Ancona, Termoli, Bari.

Three macro-areas of land -sea interactions have been identified for the study area:

1) Maritime traffic: the transport of goods, people, as well as the traffic of fishing-related fleets inevitably exploits maritime space by producing an impact of anthropogenic origin and reconnects with the coastal environment through geographical interaction hotspots (harbours) where goods, people and fish land.
2) Coastal tourism: the coasts represent another land-sea interaction hotspot for the tourism sector in particular. In fact, coastal tourism inevitably produces land consumption related to the creation of infrastructures for tourist accommodation, the use of boats for the arrival - departure - movement of tourists, as well as waste.
3) Agriculture: the agricultural sector, on the other hand, interacts with the sea through the discharge of loads of nutrients linked to agricultural production (fertilisers, for example), which spill into the sea through the rivers, sometimes producing eutrophication phenomena. The river mouths and rivers themselves thus represent the hotspot of land-sea interaction linked to agricultural activities.

Maps were therefore produced for each hot-spot, and considering an homogeneous scale of representation. In the following paragraphs, maps related to each indicator type are presented, along with a synthetized description of the processing steps carried out to derive it.

Land artificialization

The information for this indicator was obtained by merging the Copernicus Coastal zone (CCZ) 2018, and the Corine Land Cover (CLC) 2018, code 1 built-up. Both layers were clipped on coastal city councils. For each municipal area, the urbanized area within each municipality was calculated and the percentage of what was built was obtained with this formula for each municipality (see column percent 3 in the attributes table).

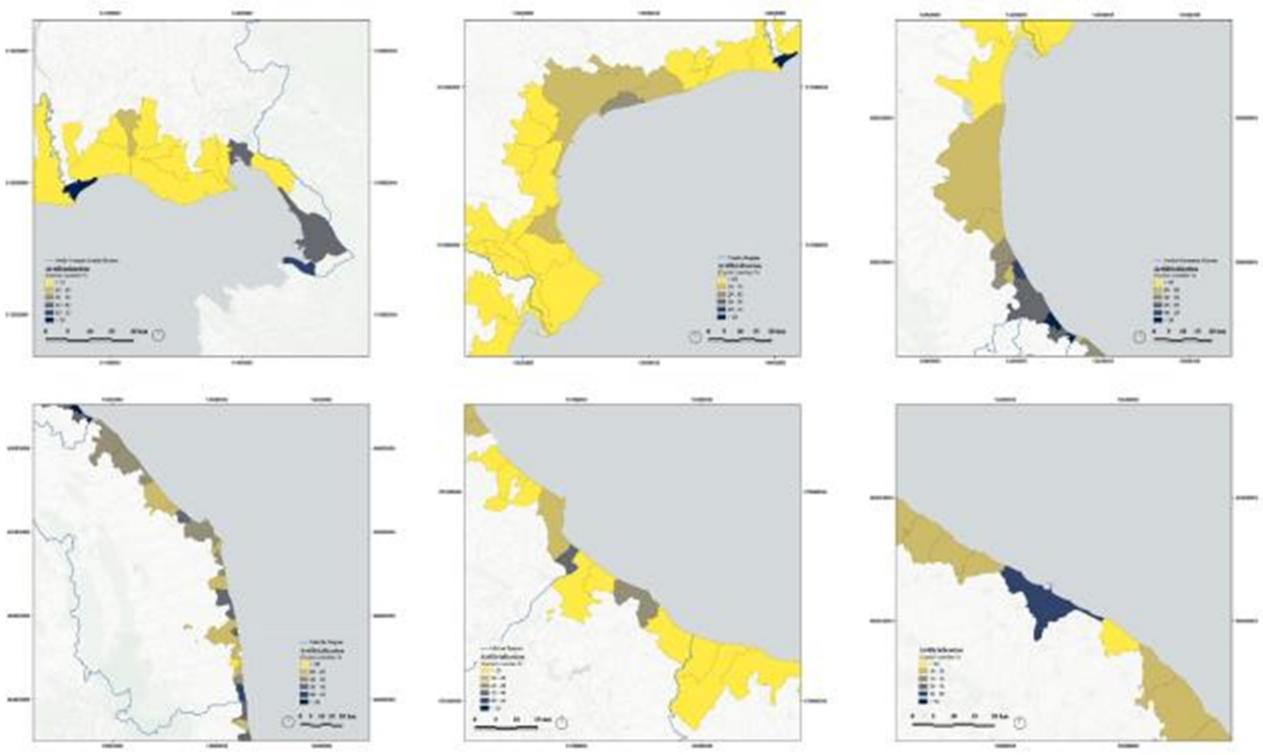


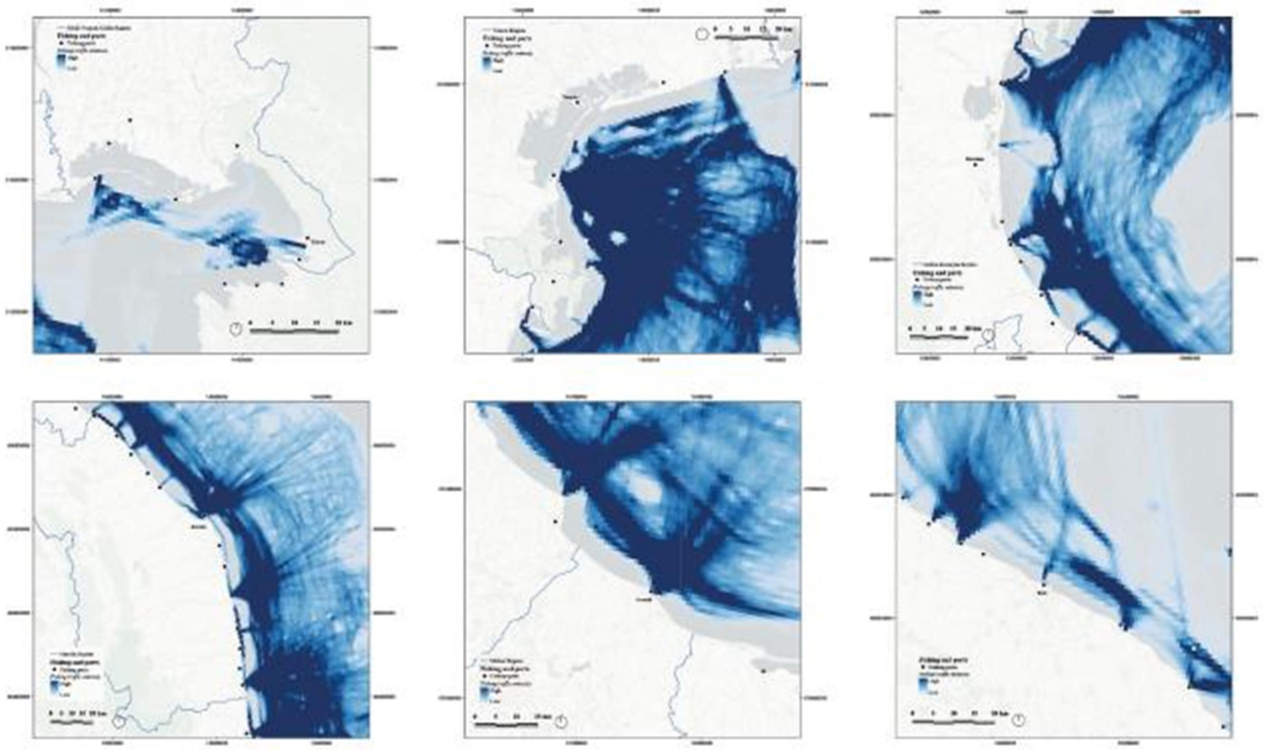
Figure 2. Example of processed data for 6 Adriatic LSI hotspot: land artificialization indicator.

Traffic

Maritime traffic was disaggregated and treated independently in three different segments: commercial shipping, passenger transport, fishing.

The intensity of marine traffic was extracted from the Vessel traffic density layers downloaded from EMODNET human activities spatial repository1. Each layer of traffic intensity has an initial resolution of 1 km^2 and was resampled towards a resolution grid of 5 km^2. This change in resolution was set to identify and better represent hotspots of traffic intensity over the study area.

Information on ports for the cargo and passenger sector was obtained from the port layer "Main Ports Stats 2015-2016" downloaded from Tools4MSP data portal2. The intensity of cargo traffic at each port was quantified in the total amount of shipped goods (TOnx1000) as measured for the year 2016. The intensity of passenger traffic was measured in total number of passengers (excluding cruises) between the year 2015/2016. Information on ports for the fishing sector were extracted from the Report (available only in italian) "La Pesca in Veneto 2018"3. The number of operating boats and the total annual catches (in tons) for the year 2018, were considered as the main indicators of intensity of the fishing activity.



[1] https://www.emodnet-humanactivities.eu/download-data.php
[2] http://data.tools4msp.eu/layers/geonode%3Aports_stats_201516
[3] https://www.venetoagricoltura.org/argomento/osservatorio-socio-economico-della-pesca-e-dellacquacoltura-dellalto-adriatico/

Figure 3. Example of processed data for 6 Adriatic LSI hotspot: maritime traffic (fishing and ports) indicator.

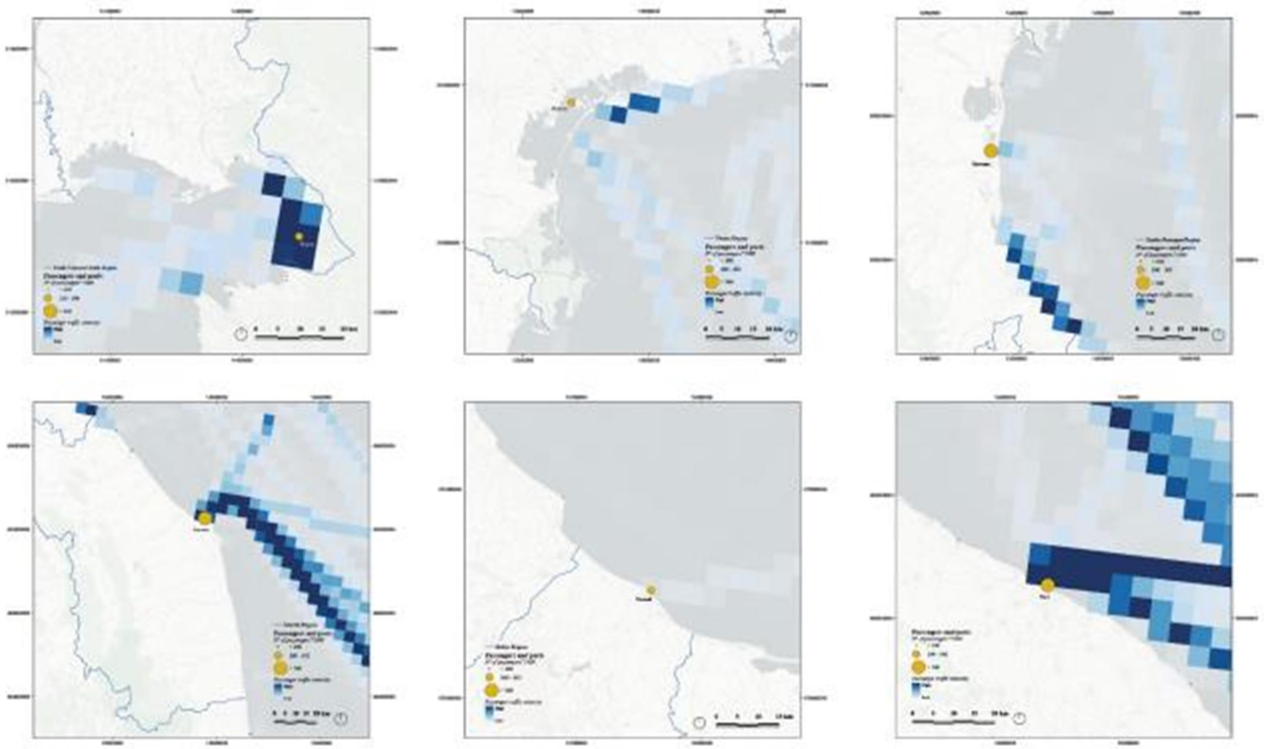


Figure 4. Example of processed data for 6 Adriatic LSI hotspot: maritime traffic (passengers and ports) indicator.

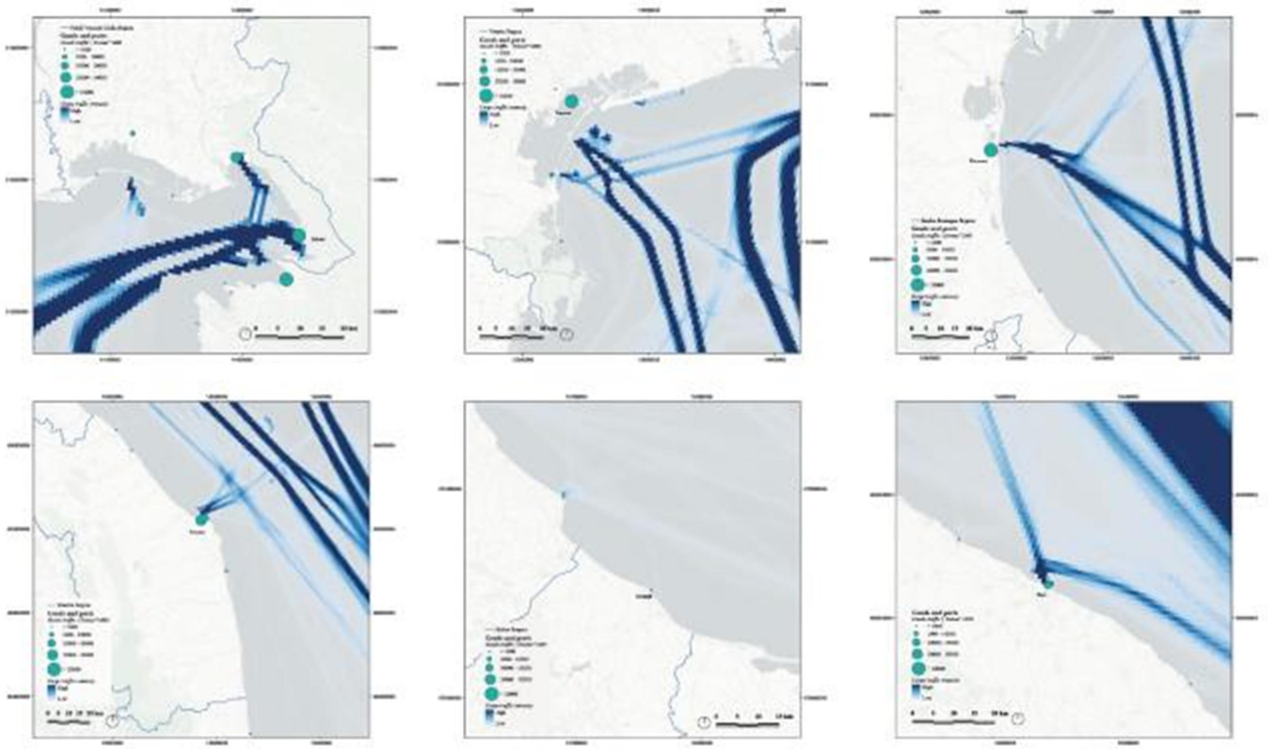


Figure 5. Example of processed data for 6 Adriatic LSI hotspot: maritime traffic (goods and ports) indicator.

Coastal tourism

To address coastal tourism, data were extracted from the Italian National Institute of Statistics (ISTAT)[45], which subdivide the intensity of tourism by county in five classes. Information on main cruise ports and marinas obtained from Tools4MSP data portal[67] were also considered: the number of cruise ships for the year 2016 was considered as indicator of the intensity of this sector in main ports, while the number of boats for each marina in the year 2014 was used to quantify the intensity of tourism specifically related to recreational boats.

[4] https://www.istat.it/it/archivio/247191
[5] https://www.istat.it/it/archivio/222527
[6] http://data.tools4msp.eu/layers/geonode%3Acruise_ports_it_2015
[7] http://data.tools4msp.eu/layers/geonode%3Amarina

Tourism intensity is ranked through the following five classes: S1=very low (1° quintile), S2=low (2° quintile), S3=medium (3° quintile), S4=high (4° quintile), S5=very high (5° quintile)

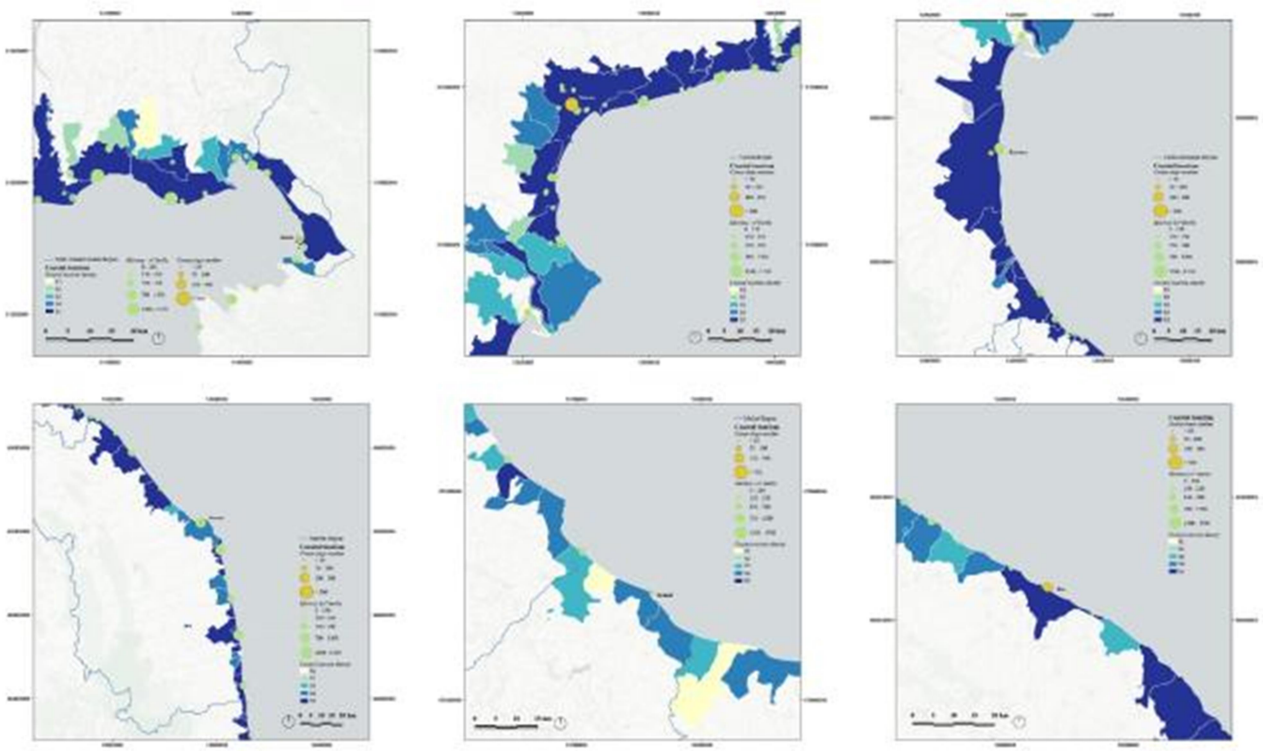


Figure 7. Example of processed data for 6 Adriatic LSI hotspot: coastal tourism indicator.

Coastal demography

In order to address the variability of the demography on the coastal area of the Veneto region, the number of resident population for each county was considered. Data were obtained from the Italian Institute of Statistics[8]. This information allows to define which coastal areas are more densely populated in the region.

[8] http://dati-censimentopopolazione.istat.it/Index.aspx?lang=it
http://demo.istat.it/popres/download.php?anno=2021&lingua=ita

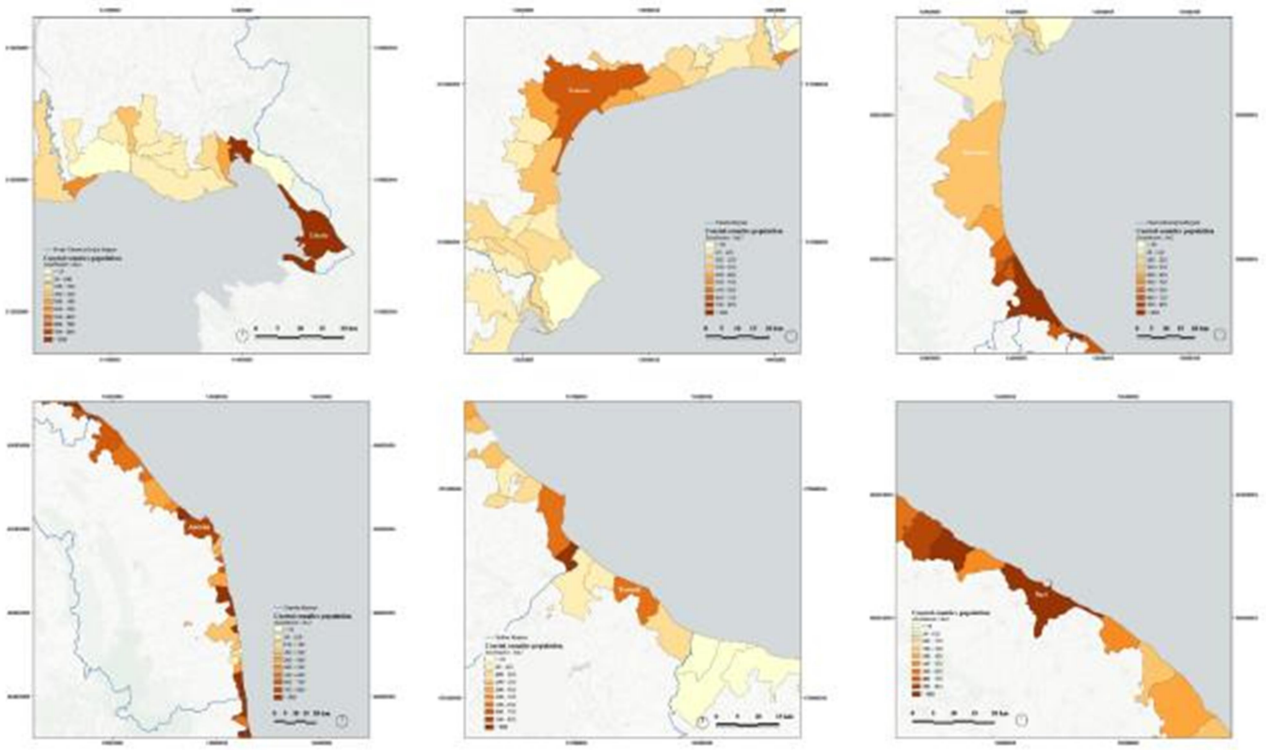


Figure 8. Example of processed data for 6 Adriatic LSI hotspot: coastal demography indicator.

Sea water turbidity

Water turbidity was considered as a relevant indicator of the nutrients and sediments, two factors that are strongly influenced by the coastal activities and dynamics (e.g. river input). A monthly series of the Diffuse attenuation coefficient for downwelling irradiance at 490 nm (Kd_490) obtained from E.U. Copernicus Marine Service Information[9], between 2017 and 2020, was analyzed to map sea water turbidity within the study area. The spatial information was analyzed at a resolution of 0.3 km2 and it was calculated both the median value and the 90°percentile for each 0.3km2 cell through the entire historical series.

9

https://resources.marine.copernicus.eu/?option=com_csw&view=details&product_id=OCEANCOLOUR_MED_OPTICS_L3_REP_OBSERVATIONS_009_095
DATASET: dataset-oc-med-opt-multi-l4-kd490_1km_monthly-rt-v02

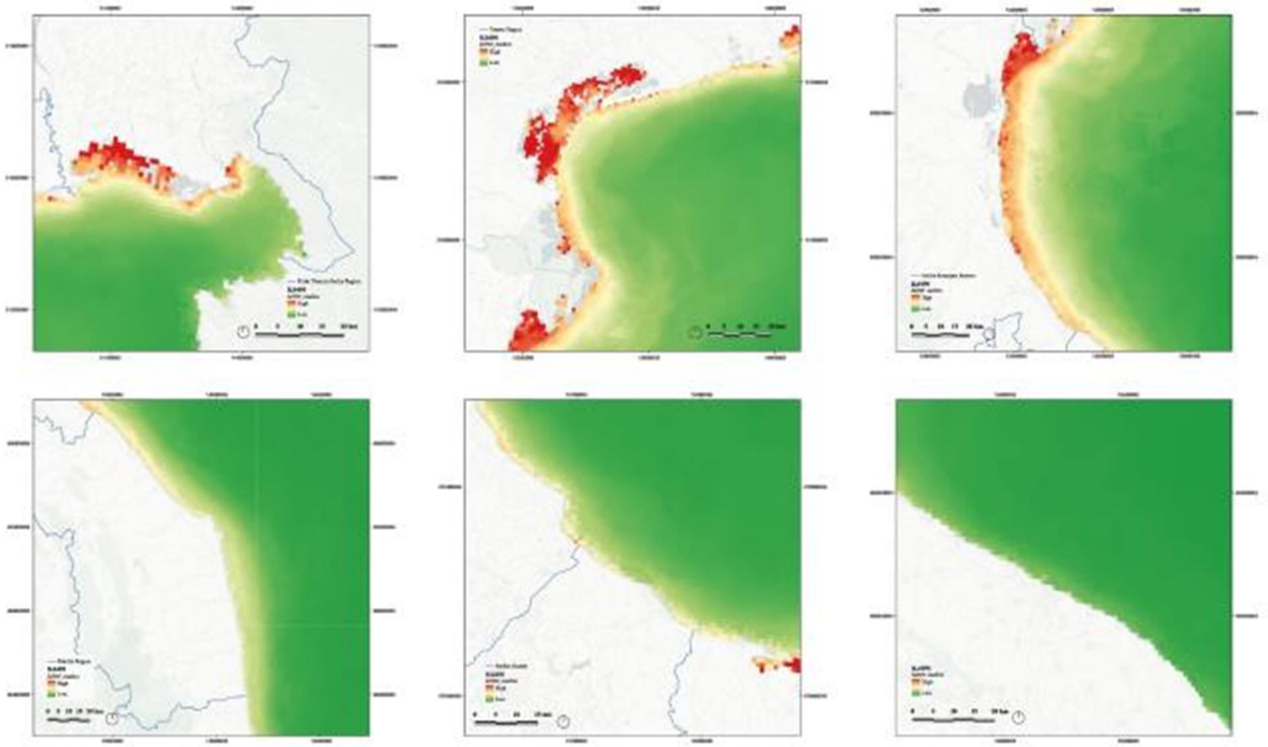


Figure 9. Example of processed data for 6 Adriatic LSI hotspot: sea water turbidity indicator.

4. References

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Smith H.D., Maes F., Stojanovic T.A. & Ballinger, R.C., 2011. The integration of land and marine spatial planning. Journal of Coastal Conservation, 15 (2): 291-303.

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