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Meeting of the Ecosystem Approach Correspondence Group on Marine Litter Monitoring (CORMON Marine Litter)

Videoconference, 30 March 2021

Agenda Item 3: Interrelation of Pressures Impacts of Marine Litter and the Status of Marine Ecosystem Components

Addressing Interrelation of Pressures-Impacts of Marine Litter and the Status of Marine Ecosystem Components

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Note by the Secretariat

At their 19th Ordinary Meeting (COP 19, Athens, Greece, 9-12 February 2016), the Contracting Parties to the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention) adopted a novel and ambitious Integrated Monitoring and Assessment Programme and related Assessment Criteria (IMAP).

The Regional Meeting on IMAP Implementation: Best Practices, Gaps and Common Challenges (IMAP Best Practices Meeting, Rome, Italy, 10-12 July 2018) welcomed the work undertaken by the Secretariat and MAP Components to support the implementation of IMAP at regional, sub-regional and national levels, including several cross-cutting issues, as provided in UNEP/MED WG.450/3. The Meeting further requested the Secretariat to present the following issues for further review and in-depth discussions in the upcoming CORMONs:

- The interlinkages between activities/pressure/impacts and clarification of definition of impacts noting that such a definition should primarily focus on biodiversity aspects;
- Updating Tables 1, 2 and 3 of document UNEP/MED WG.450/3, based on feedback and inputs received during the Meeting, for further review by the CORMONs; and
- Clarifying definitions of integration and aggregation rules opting for giving priority at this stage to the work for IMAP implementation on geographical aggregation and assessment scaling rather than integration.

During the 21st Ordinary Meeting (COP21, Naples, Italy, 2-5 December 2019), the Contracting Parties endorsed in Decision IG.24/4 the 2023 Mediterranean Quality Status Report (MED QSR) roadmap and needs assessment as contained in Annex V of this Decision and request the Secretariat to further define in 2020-2021, together with the Contracting Parties and CORMONs' concrete requirements and deadlines of output delivery at the level of common indicators per each Contracting Party in order to ensure effective data collection and to address knowledge gaps to enable the entire MAP system to successfully deliver the 2023 MED QSR.

In this context, UNEP/MAP and its MED POL programme furthermore elaborated in the present document the interrelation of pressures-impacts of marine litter and the status of marine ecosystem components which is submitted to the Ecosystem Approach Correspondence Group on Marine Litter Monitoring (CORMON Marine Litter) for their review and kind consideration.

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Annex I: Matrixes of Interactions Between Elements of the ICZM Protocol and Principal Activities Affecting Marine Litter Generation at Regional/Sub-Regional Levels

List of Abbreviations / Acronyms

AD Adriatic

BV Baseline Value
CI Common Indicators
CM Central Mediterranean

DPSIR Drivers, Pressures, State, Impact and Response

EM Eastern Mediterranean
EO Ecological Objectives
GES Good Environmental Status

ICZM Integrated Coastal Zone Management

IMAP Integrated Monitoring and Assessment Programme

MAP Mediterranean Action Plan

MED POL Mediterranean Pollution Assessment and Control

Programme

NEAT Nested Environmental Status Assessment Tool

TV Threshold Value UN United Nations

WM Western Mediterranean

1. Introduction

- 1. The evaluation of all IMAP EOs and its consideration as functional units of the marine ecosystem in its entity should allow the definition and assessment of achievement of Good Environmental Status (GES).
- 2. To progress towards integrated GES assessment further work is required on a number of issues including (i) the harmonization of monitoring and assessment methods; (ii) the definition of links between assessment scales, pressures and cumulative impacts on ecosystem components; (iii) the improvement of long time series of quality assured data to monitor the trends; and (iv) the improvement of data management and data accessibility through the MAP Info-System for all the IMAP Common Indicators (CIs).
- 3. The present paper elaborated these elements for IMAP E10 Marine Litter and its respective Common Indicators 22 and 23 based on the expert input received from several Contracting Parties.

2. Interaction of pressures, impacts and state of the marine and coastal environment in the Mediterranean

- 4. There are several approaches to support the integrated assessment where the predominant human-related pressures and their impacts on the marine and coastal environment are examined aiming to assess the state of the marine environment (i.e. DPSIR-based assessments); which subsequently produce and build policy responses (e.g. measures and priority actions) to address the main drivers (e.g. economic sectors and activities) causing the degradation of the marine ecosystem and its ecosystem services.
- 5. The following subsections explain some of the most commonly used GES-integrated assessments based on DPSIR approach that have been acknowledged and approved in principle:
 - <u>GRID/Table Approach</u>: aiming to cross-map all the anthropogenic activities with significant contribution to pressures linked with the respective IMAP Common Indicators used for monitoring and assessment. Expert judgment can/may better define/refine specific interactions, for those activities contributing to pressures at Common Indicator level considering sub-regions, or, if relevant and appropriate, sub-divisions or lower geographical units (using as appropriate the nested approach).
 - <u>Scoreboards Method:</u> aiming to quantify the interrelation between pressures and impacts following a risk-based approach which is particularly effective for Ecological Objectives that are spatially patchy and where the relevant pressures are local-specific. This method is similar to the GRID/Table approach; however, it uses numeric scores (i.e. assignment of a numeric value by categories) rather than stand-alone colours, which allow the estimation/calculation of quantitative information.
 - <u>Neat Approach:</u> The Nested Environmental Status Assessment Tool (NEAT)² is a pioneering tool developed specifically to assess the marine environment. It uses a combination of high-level integration of habitats and spatial units; therefore, allowing for specification on structural and spatial levels, applicable to any geographical scale.

¹ Reviewed and approved by the 2019 Meetings of the CorMon on Pollution Monitoring (Podgorica, Montenegro), the MED POL Focal Points (Istanbul, Turkey), and the 7th Meeting of the Ecosystem Approach Coordination Group (Athens, Greece).

² Borja A., M. Elliott, J. Andersen, T. Berg, J. Carstensen, S. Halpern (2016). Overview of integrative assessment of marine systems: the ecosystem approach in practice. Front.Mar.Sci. 3:20. doi:10.3389/fmars.2016.00020

- 6. For the case of marine litter (IMAP EO10) there is a need to ensure a better integration and interaction of pressures, impacts, and state elements in assessing and towards achieving the Good Environmental Status (GES). This is particularly important when we are entering into the specific IMAP EO10 Common Indicators (i.e. CI22 and CI23).
- 7. In order to carry out the interrelation of pressures and impacts for marine litter with the ecosystem's components state, using the correlation matrices agreed upon by the Contracting Parties (Tables 1 and 2), this document reflects the input received by 5 Contracting Parties to the Barcelona Convention (Bosnia and Herzegovina, Greece, Israel, Italy, Spain).
- 8. Two different approaches have been used to integrate the predominant pressures of marine litter and their impacts on the marine and coastal environment; the GRID/Table approach; and the Scoreboard approach which are described hereunder.

3. GRID/Table Approach

- 9. Pressures for marine litter can be considered in the two following ways: (i) at source, i.e. focusing on the primary and main activities generating the pressure; this aspect is relevant for setting environmental targets and defining measures aiming at reducing the pressures in order to achieve or maintain GES; and (ii) at sea, i.e. the level of pressure in the marine environment to which the different elements of the ecosystem are subjected; this aspect is particularly relevant for determining GES for both IMAP pressure-based and status-based Common Indicators.
- 10. In this regard, the inputs related to GRID tabular matrix interrelating pressures/impacts and state of marine ecosystem components received from the 5 Contracting Parties were compiled and integrated into a single-one according to the sub-region to which they belong, and the respective Common Indicator has been evaluated in relation to the pressure having the greatest impact (Tables 1 and 2) for each criterion (CI22 and CI23) in each sub-region.

11. Intensity of natural and anthropogenic pressures have been evaluated according to the following color code, grouped by sub-regions, and ordered by the worst result obtained:

3	Significant Contribution of the Activity to Pressure
2	Minor Contribution of the Activity to Pressure
1	No Activity but Possible Development of the Activity
0	No Contribution to Pressure

12. Tables 1 and 2 provides a tabular representation of interactions between pressures and impacts and IMAP EO10 respectively its Common Indicators 22 and 23. The introduced table cross-maps all the anthropogenic activities with significant contribution to pressures with the Common Indicators used for IMAP EO10 marine litter monitoring and assessment. Expert judgment, including inputs received from 6 Contracting Parties, contributed to better refine the specific interactions, for these activities contributing to pressures at Common Indicator level considering sub-regions, or, if relevant and appropriate, sub-divisions or lower geographical units (using as appropriate the nested approach). Certainly, additional expert input is required for a more accurate regional representation however Tables 1 and 2 already include a very useful analysis which could facilitate setting the scene for the way forward.

3.1 Pressure analysis for IMAP Common Indicator 22 (CI22):

- 13. Based on the input received, the assessed greatest pressure in all sub-areas is generated by the sector of tourism, followed by other sectors i.e. coastal urbanization, solid waste management, and agricultural and forestry practices (Table 1).
- 14. Renewable energy facilities are those that produce the less important pressure, followed by the extraction of genetic resources, research and activities, defense activities, and cables and pipes installation.
- 15. There are some differences between sub-regions: in the Western Mediterranean, tourism stands out as the greatest pressure in all its sub-areas. However, in the Adriatic, coastal construction, aquaculture, and solid waste management are also highlighted as important pressures.
- 16. As far as the Central and Eastern Mediterranean are concerned, the most important pressures coincide; i.e. agricultural and forestry activities, cruises, coastal urbanization, fishing (including recreational fishing), and solid waste management.
- 17. In general, the variations between the sub-regions are small, although resulting to be the same greatest pressures in all of them.

3.2 Pressure analysis for IMAP Common Indicator 23 (CI23):

- 18. The greatest pressure in all sub-areas is generated by the fishing sector, followed by aquaculture (Table 2).
- 19. Renewable energy facilities, energy extraction, research and education activities, and the extraction of genetic resources are the ones that produce the least pressure.
- 20. However, there are some differences between sub-regions. In Western Mediterranean, tourism, wastewater discharge, and fishing stand out as those that produce the most pressure; while in the Adriatic, fishing and aquaculture stand out as important pressures.

Table 1: Interrelation of natural and anthropogenic pressures (selected based on the main activities in terms of pressures as provided by ICZM Protocol and other Barcelona Convention's Protocols) affecting the marine ecosystems and the measurement IMAP Common Indicator 22.

Pressures vs. measures IMAP EO10 Common Indicator 22	Sub- Regions	Non-Construction Zone	Natural Hazards	Natural disasters	Climate Change	Agric. and forestry runoffs	Coastal Urbanization	Damming (demand on water)	Waste-water discharges	Industry	Tourism frequentation	Yachting	Marine mining	Dredging	Desalinization	Coastal artificialization.	Port operations	Offshore structures	Cables and pipelines	Shipping	Oil and gas extraction	Renewable energy	Fishing (incl. recreational)	Sea-based food harvesting	Extraction of genetic resources	Aquaculture	Solid waste disposal	Storage of gases	Research and education	Defense operations	Damping of munitions
	Western Med. Sea																														
22 10)	Adriatic Sea																														
Common Indicator 22 (Ecological Objective 10)	Central Med. Sea																														
Com (Ecolo)	Aegean and Levantine Sea																														
	Mediterranean Average																														

Table 2: Interrelation of natural and anthropogenic pressures (selected based on the main activities in terms of pressures as provided by ICZM Protocol and other Barcelona Convention's Protocols) affecting the marine ecosystems and the measurement IMAP Common Indicator 23.

Pressures vs. measures IMAP EO10 Common Indicator 23	Sub- Regions	Non-Construction Zone	Natural Hazards	Natural disasters	Climate Change	Agric. and forestry runoffs	Coastal Urbanization	Damming (demand on water)	Waste-water discharges	Industry	Tourism frequentation	Yachting	Marine mining	Dredging	Desalinization	Coastal artificialization.	Port operations	Offshore structures	Cables and pipelines	Shipping	Oil and gas extraction	Renewable energy	Fishing (incl. recreational)	Sea-based food harvesting	Extraction of genetic resources	Aquaculture	Solid waste disposal	Storage of gases	Research and education	Defense operations	Damping of munitions
	Western Med. Sea																														
10)	Adriatic Sea																														
Common Indicator 23 (Ecological Objective 10)	Central Med. Sea																														
Comm (Ecolog	Aegean and Levantine Sea																														
	Mediterranean 1																														

- 21. As far as the Central and Eastern Mediterranean are concerned, the most important pressures coincide; i.e. agricultural and forestry activities, cruises, coastal urbanization, fishing (including recreational fishing), and solid waste management. This is also the case for IMAP CI22 where the same types of pressured are highlighted as important.
- 22. In general, the fundamental and main pressures for IMAP EO10 CI22 and CI23 are not the same. While tourism and coastal construction are the most important for IMAP EO10 CI22; fisheries and aquaculture are those that fundamentally affect IMAP EO10 CI23.
- 23. Results for both indicators integrating the most significant contribution of the corresponding sectors/activity(ies) to pressure for the four Mediterranean Subregions (red colour; Tables 1 and 2) give us information on those that mostly contribute to generation of marine litter impacts in the Mediterranean Basin (Table 3).

Table 3: The most significant contribution of corresponding sectors/ activity(ies) to pressures on marine ecosystem from marine litter in the four Mediterranean Subregions

	CI22	CI23
Agricultural and forestry runoffs	~	~
Coastal Urbanization	~	~
Waste-Water discharges	~	~
Tourism frequentation	~	~
Yachting	~	~
Fishing	~	~
Aquiculture	~	~
Solid waste disposal	~	/
Damping of munitions	~	~

- 24. Further to the interrelation of IMAP EO10-Marine Litter and its respective Common Indicators 22 and 23 with the relevant natural and anthropogenic pressures, by applying GRID approach, as provide above in Tables 1 and 2, a Scoreboard method was applied in order to initially quantify the magnitude of impacts of the pressures with the most significant contribution over the ecosystem components.
- 25. The approach applied is provided in Annex I that is based on Excel tool used for an expert-based evaluation both of category of pressures and impact scores. It allows estimating (in %) how many categories of pressures have the potential to threat the marine ecosystem regarding marine litter. Experts involved in such evaluation provide an assessment for each pressure type through a 0/1 score: 1 indicating the presence of the potential risk and 0 its absence. The final score is than expressed in percentage, dividing the sum of all scores for the number of scored pressured (activity types).
- 26. The same Excel tool enables to estimate the magnitude of impacts (in %) by adapting its conceptual objective. Thus, for each category of pressures the experts involved in the evaluation are invited to express a 0 to 3 score: 0 indicating the absence of the impact, while 1, 2 and 3 respectively indicating the presence of an impact with low, moderate and high magnitude. Similarly, to the analysis on the occurrence of potential threats, the final score is expressed in percentage and is obtained by dividing the sum of all scores by the maximum theoretical score (equal to the number of scored items i.e. category of pressures multiplied by 3).

- 27. Regarding the impacts of marine litter on the marine and coastal environment, as a first approximation, the results obtained for IMAP EO10- Marine Litter Common Indicators 22 and 23 (Annex, Table II, III, IV and V) are presented in a summarized way under Table 4 hereunder.
- 28. The quantitative estimation of the overall impacts of pressures related to IMAP CI22 (Table 1) was provided for inland and coastal areas; while quantification of impacts of pressures of relevance for IMAP CI23 (Table 2) was provide in offshore areas (Annex, Table I).
- 29. The value of the % of total impact on the Mediterranean is considered as the current average situation (Table 4), the higher values for each subregion can be considered high (red; Figures 1 and 2) and the lower values as moderate (orange; Figures 1 and 2)

Table 4: Scoreboa	ard approach results
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	Overall of Pressure-Impact (%)	Inland % of total impact	Coastal Area % of total impact	Offshore % of total impact
WM	16	6	17	23
AD	32	24	30	41
CM	23	18	23	28
EM	23	13	25	28
Mediterranean	22	12	24	27
Sea				

30. Accordingly, it can be concluded that 22% of category of pressures recorded in Mediterranean against the list of main activities in terms of pressures as provided by ICZM Protocol and other Barcelona Convention's Protocols, contribute to generation of marine litter impacts on ecosystem components. The 24% and 27 % of all category of pressures related to marine litter generate impacts over ecosystems in coastal and offshore areas respectively (Table 4).-According to this it can be concluded that 24% respectively 27 % of all category of pressures related to marine litter generate impacts over ecosystems of coastal respectively offshore areas. Moreover, 12% of all category of pressures related to marine litter generate impacts over ecosystems from inland areas.

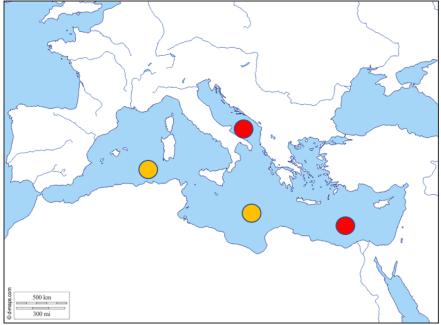


Figure 1: Results of overall pressures/impacts in coastal areas of the Mediterranean (Red:>24%; Orange <24%)

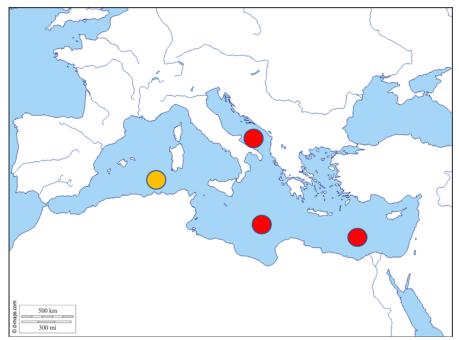


Figure 2: Results of overall pressures/impacts in offshore areas of the Mediterranean (Red: >27%; Orange: <27%)

4. An Example of Quantitative Approach for Beach Marine Litter (IMAP CI 22)

- 31. As a possible approach for the quantitative assessment of the GES considering the impacts of pressures related to IMAP EO10 Common Indicator CI22 (beach macro-litter), the following steps could be applied.
- 32. Based on the statistical analysis of the data provided by several Mediterranean countries (UNEP/MAP WG.482/24) the quantitative approach for IMAP Common Indicator 22 (CI22 Beach Marine Litter) is provided hereunder.
 - Mediterranean BV: 329 item/100m
 - Mediterranean TV:
 - \circ Q10= 59 item/100m
 - o Q20= 106 item/100m
- 33. In this respect, specific BV for the respective sub-region could be established; and thus comparing the Mediterranean TV (Q10-Q20) and BV by establishing three different colour ranges; for example:
 - o Sub-regional BV< TV: Green
 - o TV < Sub-regional BV < Mediterranean BV: Orange
 - Sub-regional BV > Mediterranean BV: Red
- 34. According to the results obtained though initial testing of the approach described, it will be possible to assess whether there is any link between the subregions (i.e. WM, CM, AD, EM) and any of the resulted 1st, 5th, 10th or other percentile (i.e. Q01, Q05 and Q10 etc.). This approach needs to be further tested in order to confirm its reliability.

35. In order to reach the GES, efforts should be focused for example on the activities identified as the most important marine litter generators (Table 3). This would allow the decrease of the total amount of beach marine litter found in the surveys. If the implementation of these measures is correctly developed, then the different subregions (i.e. WM, CM, AD, EM) would probably reach a medium colour status range, linked with decreasing effects and impacts on marine and coastal environment.

5. Conclusions

- 36. In order to reach the GES, efforts should be focused in decreasing the impact of the 3 specific activities as identified the most important on marine litter generation (Table 3). This would allow the decrease of the total amount of marine litter recorded in the surveys. If the implementation of key/selected reduction and prevention measures in the Mediterranean is applied in a coherent way across the region, there is an indication for WM, AD and CM reaching GES, while EM will reach a medium colour status range, decreasing the effects and impacts on marine and coastal environment (Table 4).
- 37. A number of measures can be proposed (listed hereunder) to be applied at national level, focusing on the activities that are contributing with a high level of interaction in the respective sub-regions (Tables 1 and 2): i.e. urbanization, tourism, fishing and agriculture. The other activities with high impact in the Mediterranean (Table 3) have an irregular relevance depending the subregion (Annex, Tables II, III, IV and V).

• Coastal Urbanization:

- o Control of new urban development and their proximity to the coastline.
- o Control of waste management in coastal urbanizations (litter bins distribution, collection schedule and location of final waste disposal).
- o Promotion of prevention policies against waste generation (limitation of the single-use items and containers sale).
- o Promotion of recycling projects that generate added value from the reutilization of waste as new materials (Circular Economy).

• Tourism:

- o Control of waste generation in hotels, commercial, and recreational facilities. Incentives for the prevention of waste generation.
- o Promoting the elimination of single-use products in hotels, commercial, and recreational activities sectors.
- o Incentives for the creation of practices related to collection and recycling of the waste generated by hotels and commercial facilities.

• Fishing:

- o Education and awareness of the fisheries sector regarding the environmental improvement (e.g. zero waste into seas).
- o Promotion of "Fishing for litter" activities among the fishing fleet.
- Education and awareness of the stakeholders regarding the benefits achieved by the removal of marine litter from the environment (practices improvements derived from the habitat improvements of the commercial target species, reduction of vessel accidents and breakdowns due to the presence of marine litter).
- o Promoting the implementation of storage areas for marine litter collection in ports.

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• Agriculture:

- o Education and awareness of the stakeholders about the benefits derived from proper waste management.
- o Promoting the creation of waste management systems derived from agricultural practices.

Annex I Matrixes of Interactions Between Elements of the ICZM Protocol and Principal Activities Affecting Marine Litter Generation at Regional/Sub-Regional Levels

Table I: Matrix of interactions between elements of the ICZM Protocol and Principal activities affecting marine litter generation, Mediterranean Sea.

Overall of Pressure-Impact (Ecosystem Services) at the ICZM (%) 22,0

		LANDWAR	D - INLAND		IMPACT SCORE	г	COAST	AL AREA		IMPACT SCORE	SE	AWARD - LAGOONS	- ISLANDS - OFFSH	ORE	IMPACT SCORE
Economic (Driver)		Pressure	State	Impact (Ecosystem))	% of total impact		Pressure	State	Impact (Ecosystem)	% of total impacts		Pressure	State	Impact (Ecosystem)	% of total impacts
	Activity type				11,9	Activity type				24,0	Activity type				26,7
1) Agriculture	Crops (any) Crops (any)	Hydrological alterations Geomorphological	River diversions Land alteration	Habitats deterioration Loss of	3	Crops (any) Crops (any)	Runoff/River (organochlorinate d and other chemicals) Runoff (river litter)	Coastal contamination/pol lution Costal litter	Habitats deterioration seafood contamination Species threaten	3	Crops (effects seaward) Crops (effects	Runoff/River (organochlorinate d and other chemicals) Runoff (river litter)	Coastal and offshore contamination/pol lution Costal litter	Ecosystems deterioration Seafood contamination Long-lived species	3
		changes		biodiversity/ Population (species) decreases				occurrence (beach, surface and seabed)	Natural resources affected Landscape visual impairment		seaward)		occurrence (surface, water column, seabed and deep-sea bed)	threaten Natural resources affected Marine ecosystems deterioration	
	Land crops	Land use	Land degradation	Soil degradation (contaminated, inert)		Crops (any)	Seaward sediment flux alterations	Coastal erosion	Coastal surface decrease (beaches, dunes, etc.)		Crops (effects seaward)	Seaward sediment flux alterations	Subsidence, unsustained costaline	Loss of coastline	
	Wetland crops	Wetlands use	Wetlands degradation	Flooding vulnerability / Clean water provision		Deltaic crops	Delta use	Delta degradation (contaminated, inert)	Exploited resources affected		Crops (harvesting)	Coastal micro- and macro algae harvesting	Habitat alterations	Natural resources affected	
2) Industry (land- based sources)	Diverse Industruial Activities	Land use	Land occupation/ loss	Habitats deterioration	2	Diverse Industruial Activities	Industrial wastewater (treated and untreated)	Transitional and coastal water pollution	Chemical and emerging contamination of habitats and species (water column and	2	Diverse Industruial Activities	Diffuse contamination	Coastal and offshore contamination	Pelagic and benthic ecosytem deterioration Seafood contamination	2
		Landfills	Contaminated and littered land	Habitats loss			Litter increase	Riverine and coastal litter occurrence (surface, baech)	Species threaten Natural resources affected Coastal visual impairment			Litter pollution (spread)	Coastal and offshore contamination (surface, water column, seabed, deep-sea bed)	Long-lived species threaten Natural resources affected Marine ecosystems deterioration	
		Residues (industrial effluents)	Contaminated land and rivers	Soil and water pollution			Industrial effluents (ocasional inputs, acute events)	Transitional and coastal water pollution	Natural resources loss			Sea disposal sites (auhtorized dumping)	Sea-floor habitats affected (integrity impaired)	Benthic ecosystem loss	
3) Aquaculture	Nurseries, inland aquaculture	Land use	Land alteration	Habitats deterioration biodiversity impaired		Costal aquaculture (shellfish farming, Fish farming)	Water column ans seabed habitats impacted by substances	Eutrophication	Habitats deterioration biodiversity impaired	3	Coastal, offshore farming	Pelagic ecosystem impacted by substances	Eutrophication	Habitats deterioration biodiversity impaired	3
4) Fisheries		Port operations	Altered coastal area	Contamination/ Pollution (hotspot)	2	Fishing vessels (artisanal, trawling, etc.)	Pressures on fish stocks and benthic ecosystems	Marine fisheries decline (over- fishing)	Decrease on fish species of comercial importance	2	Fishing vessels (medium power, trawling, etc.)	Pressures on fish stocks and benthic ecosystems	Marine habitats decline	Decrease on fish species of ecological importance	2
						Extraction of genetic resources	Pressures on fish stocks and benthic ecosystems	Populations diversity impaired	Decrease on fisheries ecological function	0	Extraction of genetic resources	Pressures on fish stocks and benthic ecosystems	Populations diversity impaired	Decrease on fisheries ecological function	0

5) Tourism,	Urban	Waste generation	Degradation of	Soil, habitats and	3	Urban/Real-state	Waste generation	Degradation of	Soil, habitats and	3	Urban/Real-state	Waste generation	Degradation of	Soil, habitats and	
sporting, recreational activities	development	(litter, wastewater treatment plants) Urban effluents Microbiological pollution	land, air and water sources Occurrence of pathogens	coastal forestry loss Bathing water quality detriment		development	(litter, wastewater treatment plants) Urban effluents Microbiological pollution	land, air and water sources Occurrence of pathogens	coastal forestry loss Bathing water quality detriment		development (only lagoons, islands, etc.)	(litter, wastewater treatment plants) Urban effluents Microbiological pollution	land, air and water sources	coastal forestry loss Bathing water quality detriment	
		Landfills	Contaminated and littered land	Degradation of natural resources			Landfills	Contaminated and littered land	Degradation of natural resources Landscape visual impairment			Landfills	Contaminated and littered land	Degradation of natural resources Landscape visual impairment	
		Land urban expansion	Land degradation	Habitat loss Biodiversity loss Physical loss			Coastal urban expansion	Coastal degradation	Land-sea interface habitat loss and biodiversity loss			Coastal urban expansion	Coastal degradation	Land-sea interface habitat loss and biodiversity loss	
		Increased nutrients	Eutrophication	Habitats deterioration biodiversity impaired			Increased nutrients	Eutrophication	Habitats deterioration biodiversity impaired			Increased nutrients	Eutrophication	Habitats deterioration biodiversity impaired	
				IMBAILED		Scuba-diving activities	Pressures on habitats and functions maintenance (extraction of fish and shellfish)	Sea-foor habitats decline	Alteration on habitats and species of economical ecological importance		Scuba-diving activities (only lagoons, islands, etc.)	Pressures on habitats and functions maintenance (extraction of fish and shellfish)	Sea-foor habitats decline	Alteration on habitats and species of economical ecological importance	
						Fishing vessels (recreational)	Pressures on fish stocks	Water column habitats (species) decline	Decrease on fish species of ecological and commercial		Fishing vessels (recreational)	Pressures on fish stocks	Water column habitats (species) decline	Decrease on fish species of ecological and commercial	
						Tourism frequentation	Pressures on coastline (beaches, natural areas, etc.)	Increased pollution	Coastal areas degradation Habitats alteration Physical loss	3	Tourism frequentation (only lagoons, islands, etc.)	Pressures on coastline (beaches, natural areas, etc.)	Increased pollution	Coastal areas degradation Habitats alteration	3
						Yatching	Coastal areas navigation, contamiantion,	Increased pollution (biological, chemical litter)	Coastal areas degradation Habitats alteration	3	Yatching	Coastal areas navigation, contamiantion,	Increased pollution (biological, chemical litter)	Coastal areas degradation Habitats alteration	3
	Tourism facilities	Land changes	Land alteration	Loss of biodiversity/ Population (species)		Tourism facilities	Coastal changes	Land alteration	Loss of biodiversity/ Population (species) decreases		Tourism facilities (only lagoons, islands, etc.)	Coastal changes	Land alteration	Loss of biodiversity/ Population (species)	
	Other small scale activities	Waste generation (litter, waste treatment plants, effluents)	Degradation of coastal environments	Coastal resources integrity impaired		Other small scale activities	Waste generation (litter, waste treatment plants, effluents)	Degradation of coastal environments	Coastal resources integrity impaired Physical loss		Other small scale activities	Waste generation (litter, waste treatment plants, effluents)	Degradation of coastal environments	Coastal resources integrity impaired	
6) Utilization of specific natural resources						Seabed mining	Extraction of seabed substrate	Habitats deterioration	Integrity of sea- floor impaired	1	Seabed mining	Extraction of seabed substrate	Habitats and deep- habitats deterioration	Integrity of sea- floor impaired	1
						Desalinization	Uptake of seawater /release of brine and brackish waters	Habitats deterioration	Integrity of sea- floor and water column impaired	1	Desalinization	Uptake of seawater /release of brine and brackish waters	Habitats deterioration	Integrity of sea- floor and water column impaired	1
7) Infrastructure, energy facilities, ports and maritime works and structures	Transport (roads, highways	Atmospheric emissions (gases and particles, COx, NOx, VOCs, dust)	Degradation of air quality	Land/Soil use (irreversible loss)		Port/Harbour developments	Land/coastal changes	Degradation of coastal vegetation	Loss of coastal integrity (by erosion)						
		Soil contamination	Degradation of land	Ecological fragmentation of the territory			Waste generation (litter, waste port facilities, effluents)	Coastal fragmentation	Biodiversity (natural) impaired Ecological conectivity loss						

		Noise	Degradation of	Habitats loss			Risk of acute	Water column and	Natural resources						
			vegetation and				pollution	seabed habitats	loss Endemic						
			forestry				events/accidents	decline	species treathened						
			, ,				(hazardous	Biodiversity loss							
							substances oil)			l					
		Hydrological	River diversions	Habitats			Inputs of nutrients	Loss of endemic	resources loss						
		alterations		deterioration			and organic	species/habitats							
							matter enrichment								
		Geomorphological	Land alteration	Loss of			Microbiological	Occurrence of	Degraded bathing						
		changes		biodiversity/			pollution	pathogens	water quality	l					
		-		Population											
				(species)											
				decreases											
	Transport (railway	Soil contamination	Degradation of	Land/Soil use		Port/Marinas	Land/coastal	Degradation of	Loss of coastal area						
			land	(irreversible loss)		developments	change (roads,	coastal vegetation	integrity (by	l					
							real-state		erosion)						
		Noise	Degradation of air	Ecological			Waste generation	Coastal	Biodiversity	l					
			quality	fragmentation of			(litter, waste port	fragmentation	(natural) impaired						
				the territory	1	1	facilities, effluents		Ecological	I	1				
									conectivity loss						
	I	Hydrological	Degradation of	Habitats loss	1	I	Risk of acute	Water column and	Natural resources	I	1				
		changes	vegetation			1	pollution	seabed habitats	loss Endemic	1	1				
					1	1	events/accidents	decline	species treathened	I	1				
						1	(hazardous	Biodiversity loss		1	1				
							substances nil)								
		Geomorphologic	Fragmentation of	Natural resources			Inputs of nutrients		resources loss						
		alterations	territory	loss			and organic	species/habitats							
							matter enrichment			l					
	_														
				Altered ecosystem			Microbiological	Occurrence of	Degraded bathing						
				functions			pollution	pathogens	water quality						
	Land	Land changes	Land loss	Contract		Underwater cables	sadding committee	Habitats decline	Loss of habitats and		Hadamaka sabia		Habitana danlina	Loss of habitats	
		Land changes	Land loss	Ecological				Habitats decline		0	Underwater cables	Wiring operations	Habitats decline		1
	artifisialization			fragmentation of		and pipelines	disturbance		species			disturbance		and species	
				the territory and											
	Marker demonies	Land shanes	Factories House	forestry loss		Oil and and	Funlamitan	Water calumn	l are of energies		Oil and and	Funlasation	Mater column	Lass of sassies	2
	Water damming	Land changes,	Ecological flows	forestry loss Coastal regresion		Oil and gas	Exploraiton	Water column	Loss of species,	2	Oil and gas	Exploration	Water column	Loss of species,	2
	Water damming	downward flow	Ecological flows impaired	forestry loss		Oil and gas exploration	disturbances	Water column habitats decline	stranding of long-	2	Oil and gas exploration	disturbances	Water column habitats decline	stranding of long-	2
		downward flow interrupted	impaired	forestry loss Coastal regresion and habitats loss						2	exploration	disturbances (airguns)	habitats decline	stranding of long- lived species	2
	Water damming River ports	downward flow interrupted Land changes,	impaired Ecological flows	forestry loss Coastal regresion and habitats loss Coastal regresion			disturbances		stranding of long-	2	exploration Islands, lagoon	disturbances (airguns) Coastal changes,	habitats decline Degradation of	stranding of long- lived species Physical loss and	2
		downward flow interrupted Land changes, downward flow	impaired	forestry loss Coastal regresion and habitats loss			disturbances		stranding of long-	2	exploration	disturbances (airguns) Coastal changes, downward flows	habitats decline Degradation of coastal	stranding of long- lived species	2
Cl Maritima		downward flow interrupted Land changes,	impaired Ecological flows	forestry loss Coastal regresion and habitats loss Coastal regresion		exploration	disturbances (airguns)	habitats decline	stranding of long- lived species	2	exploration Islands, lagoon ports/marinas	disturbances (airguns) Coastal changes, downward flows interrupted	habitats decline Degradation of coastal environments	stranding of long- lived species Physical loss and habitats loss	2
8) Maritime		downward flow interrupted Land changes, downward flow	impaired Ecological flows	forestry loss Coastal regresion and habitats loss Coastal regresion		exploration Awaiting-	disturbances (airguns)	habitats decline Water column	stranding of long- lived species Healthy coastal	2	exploration Islands, lagoon ports/marinas Awaiting areas (oil	disturbances (airguns) Coastal changes, downward flows interrupted Introduction of	habitats decline Degradation of coastal environments Water column	stranding of long- lived species Physical loss and habitats loss Healthy coastal	2
8) Maritime activities		downward flow interrupted Land changes, downward flow	impaired Ecological flows	forestry loss Coastal regresion and habitats loss Coastal regresion		exploration Awaiting- anchoring areas	disturbances (airguns) Introduction of pollutants (oil	habitats decline	stranding of long- lived species Healthy coastal water and habitats	2	exploration Islands, lagoon ports/marinas Awaiting areas (oil tankers, cargo	disturbances (airguns) Coastal changes, downward flows interrupted Introduction of pollutants (oil	habitats decline Degradation of coastal environments	stranding of long- lived species Physical loss and habitats loss Healthy coastal water and habitats	2
		downward flow interrupted Land changes, downward flow	impaired Ecological flows	forestry loss Coastal regresion and habitats loss Coastal regresion		exploration Awaiting- anchoring areas (oil tankers, cargo	disturbances (airguns) Introduction of pollutants (oil hydrocarbons and	habitats decline Water column	stranding of long- lived species Healthy coastal	2	exploration Islands, lagoon ports/marinas Awaiting areas (oil tankers, cargo transport,	disturbances (airguns) Coastal changes, downward flows interrupted Introduction of pollutants (oil hydrocarbons and	habitats decline Degradation of coastal environments Water column	stranding of long- lived species Physical loss and habitats loss Healthy coastal	2
		downward flow interrupted Land changes, downward flow	impaired Ecological flows	forestry loss Coastal regresion and habitats loss Coastal regresion		Awaiting- anchoring areas (oil tankers, cargo transport,	disturbances (airguns) Introduction of pollutants (oil hydrocarbons and related organic	habitats decline Water column	stranding of long- lived species Healthy coastal water and habitats	2	exploration Islands, lagoon ports/marinas Awaiting areas (oil tankers, cargo transport, hazardous	disturbances (airguns) Coastal changes, downward flows interrupted Introduction of pollutants (oil hydrocarbons and related organic	habitats decline Degradation of coastal environments Water column	stranding of long- lived species Physical loss and habitats loss Healthy coastal water and habitats	2
		downward flow interrupted Land changes, downward flow	impaired Ecological flows	forestry loss Coastal regresion and habitats loss Coastal regresion		exploration Awaiting- anchoring areas (oil tankers, cargo transport, hazardous	disturbances (airguns) Introduction of pollutants (oil hydrocarbons and	habitats decline Water column	stranding of long- lived species Healthy coastal water and habitats	2	exploration Islands, lagoon ports/marinas Awaiting areas (oil tankers, cargo transport, hazardous substances	disturbances (airguns) Coastal changes, downward flows interrupted Introduction of pollutants (oil hydrocarbons and	habitats decline Degradation of coastal environments Water column	stranding of long- lived species Physical loss and habitats loss Healthy coastal water and habitats	2
		downward flow interrupted Land changes, downward flow	impaired Ecological flows	forestry loss Coastal regresion and habitats loss Coastal regresion		Awaiting- anchoring areas (oil tankers, cargo transport,	disturbances (airguns) Introduction of pollutants (oil hydrocarbons and related organic	habitats decline Water column	stranding of long- lived species Healthy coastal water and habitats	2	exploration Islands, lagoon ports/marinas Awaiting areas (oil tankers, cargo transport, hazardous	disturbances (airguns) Coastal changes, downward flows interrupted Introduction of pollutants (oil hydrocarbons and related organic	habitats decline Degradation of coastal environments Water column	stranding of long- lived species Physical loss and habitats loss Healthy coastal water and habitats	2
		downward flow interrupted Land changes, downward flow	impaired Ecological flows	forestry loss Coastal regresion and habitats loss Coastal regresion		exploration Awaiting- anchoring areas (oil tankers, cargo transport, hazardous	disturbances (aireuns) Introduction of pollutants (oil hydrocarbons and related organic compounds)	water column	stranding of long- lived species Healthy coastal water and habitats decline	2	exploration Islands, lagoon ports/marinas Awaiting areas (oil tankers, cargo transport, hazardous substances	disturbances (airguns) Coastal changes, downward flows interrupted Introduction of pollutants (oil hydrocarbons and related organic compounds)	habitats decline Degradation of coastal environments Water column habitats decline	stranding of long- lived species Physical loss and habitats loss Healthy coastal water and habitats decline	2
		downward flow interrupted Land changes, downward flow	impaired Ecological flows	forestry loss Coastal regresion and habitats loss Coastal regresion		exploration Awaiting- anchoring areas (oil tankers, cargo transport, hazardous	disturbances (airguns) Introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents	water column habitats decline	stranding of long- lived species Healthy coastal water and habitats decline Coastal	2	exploration Islands, lagoon ports/marinas Awaiting areas (oil tankers, cargo transport, hazardous substances	disturbances (airguns) Coastal changes, downward flows interrupted Introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents	habitats decline Degradation of coastal environments Water column habitats decline Water quality	stranding of long- lived species Physical loss and habitats loss Healthy coastal water and habitats decline	2
		downward flow interrupted Land changes, downward flow	impaired Ecological flows	forestry loss Coastal regresion and habitats loss Coastal regresion		exploration Awaiting- anchoring areas (oil tankers, cargo transport, hazardous	disturbances (aireuns) Introduction of pollutants (oil hydrocarbons and related organic compounds)	water column	stranding of long- lived species Healthy coastal water and habitats decline Coastal environment	2	exploration Islands, lagoon ports/marinas Awaiting areas (oil tankers, cargo transport, hazardous substances	disturbances (airguns) Coastal changes, downward flows interrupted Introduction of pollutants (oil hydrocarbons and related organic compounds)	habitats decline Degradation of coastal environments Water column habitats decline	stranding of long- lived species Physical loss and habitats loss Healthy coastal water and habitats decline	2
		downward flow interrupted Land changes, downward flow	impaired Ecological flows	forestry loss Coastal regresion and habitats loss Coastal regresion		exploration Awaiting- anchoring areas (oil tankers, cargo transport, hazardous	disturbances (airguns) Introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents	water column habitats decline	stranding of long- lived species Healthy coastal water and habitats decline Coastal	2	exploration Islands, lagoon ports/marinas Awaiting areas (oil tankers, cargo transport, hazardous substances	disturbances (airguns) Coastal changes, downward flows interrupted Introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents	habitats decline Degradation of coastal environments Water column habitats decline Water quality	stranding of long- lived species Physical loss and habitats loss Healthy coastal water and habitats decline	2
		downward flow interrupted Land changes, downward flow	impaired Ecological flows	forestry loss Coastal regresion and habitats loss Coastal regresion		Awaiting- anchoring areas (oil tankers, cargo transport, hazardous substances	disturbances (airzuns) introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills	water column habitats decline Water quality degradation	stranding of long- lived species Healthy coastal water and habitats decline Coastal environment impacted	2	exploration islands, lagoon ports/marinas Awaiting areas (oil tankers, cargo transport, hazardous substances vessels)	disturbances Jaireruns! Coastal changes, downward flows interrupted introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills	habitats decline Degradation of coastal environments Water column habitats decline Water quality degradation	stranding of long- lined species Physical loss and habitats loss Healthy coastal water and habitats decline Coastal and marine environment impacted	2
		downward flow interrupted Land changes, downward flow	impaired Ecological flows	forestry loss Coastal regresion and habitats loss Coastal regresion		exploration Awaiting- anchoring areas (oil tankers, cargo transport, hazardous	disturbances (airzuns) Introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills Introduction of	habitats decline Water column habitats decline Water quality degradation Water column	stranding of long- lived species Healthy coastal water and habitats decline Coastal environment impacted Healthy coastal	2	exploration Islands, lagoon ports/marinas Awaiting areas (oil tankers, cargo transport, hazardous substances	disturbances [aircuns] Coastal changes, downward flows interrunted Introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills Introduction of	habitats decline Degradation of coastal environments water column habitats decline Water quality degradation Water column	stranding of long- lived species Physical loss and habitats loss Healthy coastal water and habitats decline Coastal and marine environment innacted Healthy coastal	2
		downward flow interrupted Land changes, downward flow	impaired Ecological flows	forestry loss Coastal regresion and habitats loss Coastal regresion		Awaiting- anchoring areas (oil tankers, cargo transport, hazardous substances	disturbances [airzuns] Introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills Introduction of pollutants (oil	water column habitats decline Water quality degradation	stranding of long- lived species Healthy coastal water and habitats decline Coastal environment impacted Healthy coastal water and habitats	2	exploration islands, lagoon ports/marinas Awaiting areas (oil tankers, cargo transport, hazardous substances vessels)	disturbances laircums! Coastal changes, downward flows interrunted introduction of polydrocarbons and related organic compounds) Risk of accidents and spills introduction of pollutants (oil	habitats decline Degradation of coastal environments Water column habitats decline Water quality degradation	stranding of long- lined species Physical loss and habitats loss Healthy coastal water and habitats decline Coastal and marine environment imparted Healthy coastal water and habitats	2
		downward flow interrupted Land changes, downward flow	impaired Ecological flows	forestry loss Coastal regresion and habitats loss Coastal regresion		Awaiting- anchoring areas (oil tankers, cargo transport, hazardous substances	disturbances (airzuns) Introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills Introduction of pollutants (oil hydrocarbons and	habitats decline Water column habitats decline Water quality degradation Water column	stranding of long- lived species Healthy coastal water and habitats decline Coastal environment impacted Healthy coastal	2	exploration islands, lagoon ports/marinas Awaiting areas (oil tankers, cargo transport, hazardous substances vessels)	disturbances laircuns! Coastal changes, downward flows interrupted introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills introduction of pollutants (oil hydrocarbons and	habitats decline Degradation of coastal environments water column habitats decline Water quality degradation Water column	stranding of long- lived species Physical loss and habitats loss Healthy coastal water and habitats decline Coastal and marine environment innacted Healthy coastal	2
		downward flow interrupted Land changes, downward flow	impaired Ecological flows	forestry loss Coastal regresion and habitats loss Coastal regresion		Awaiting- anchoring areas (oil tankers, cargo transport, hazardous substances	disturbances (airzuns) Introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills Introduction of pollutants (oil hydrocarbons and related organic	habitats decline Water column habitats decline Water quality degradation Water column	stranding of long- lived species Healthy coastal water and habitats decline Coastal environment impacted Healthy coastal water and habitats	2	exploration islands, lagoon ports/marinas Awaiting areas (oil tankers, cargo transport, hazardous substances vessels)	disturbances Jaircuns! Coastal changes, downward flows interrunted Introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills Introduction of pollutants (oil hydrocarbons and related organic and spills	habitats decline Degradation of coastal environments water column habitats decline Water quality degradation Water column	stranding of long- lined species Physical loss and habitats loss Healthy coastal water and habitats decline Coastal and marine environment imparted Healthy coastal water and habitats	2
		downward flow interrupted Land changes, downward flow	impaired Ecological flows	forestry loss Coastal regresion and habitats loss Coastal regresion		Awaiting- anchoring areas (oil tankers, cargo transport, hazardous substances	disturbances (airzuns) Introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills Introduction of pollutants (oil hydrocarbons and	habitats decline Water column habitats decline Water quality degradation Water column	stranding of long- lived species Healthy coastal water and habitats decline Coastal environment impacted Healthy coastal water and habitats	2	exploration islands, lagoon ports/marinas Awaiting areas (oil tankers, cargo transport, hazardous substances vessels)	disturbances laircuns! Coastal changes, downward flows interrupted introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills introduction of pollutants (oil hydrocarbons and	habitats decline Degradation of coastal environments water column habitats decline Water quality degradation Water column	stranding of long- lined species Physical loss and habitats loss Healthy coastal water and habitats decline Coastal and marine environment imparted Healthy coastal water and habitats	2
		downward flow interrupted Land changes, downward flow	impaired Ecological flows	forestry loss Coastal regresion and habitats loss Coastal regresion		Awaiting- anchoring areas (oil tankers, cargo transport, hazardous substances	disturbances (airzuns) Introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills Introduction of pollutants (oil hydrocarbons and related organic	habitats decline Water column habitats decline Water quality degradation Water column	stranding of long- lived species Healthy coastal water and habitats decline Coastal environment impacted Healthy coastal water and habitats	2	exploration islands, lagoon ports/marinas Awaiting areas (oil tankers, cargo transport, hazardous substances vessels)	disturbances Jaircuns! Coastal changes, downward flows interrunted Introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills Introduction of pollutants (oil hydrocarbons and related organic and spills	habitats decline Degradation of coastal environments water column habitats decline Water quality degradation Water column	stranding of long- lined species Physical loss and habitats loss Healthy coastal water and habitats decline Coastal and marine environment imparted Healthy coastal water and habitats	2
		downward flow interrupted Land changes, downward flow	impaired Ecological flows	forestry loss Coastal regresion and habitats loss Coastal regresion		Awaiting- anchoring areas (oil tankers, cargo transport, hazardous substances	disturbances [airzuns] Introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills Introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents	habitats decline Water column habitats decline Water quality degradation Water column habitats decline	stranding of long- lived species Healthy coastal water and habitats decline Coastal environment impacted Healthy coastal water and habitats	2	exploration islands, lagoon ports/marinas Awaiting areas (oil tankers, cargo transport, hazardous substances vessels)	disturbances laircums! Coastal changes, downward flows interrunted introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills introduction of pollutants (oil hydrocarbons and related organic compounds)	habitats decline Degradation of coastal environments Water column habitats decline Water quality degradation Water column habitats decline	stranding of long- lined species Physical loss and habitats loss Healthy coastal water and habitats decline Coastal and marine environment imparted Healthy coastal water and habitats	2
		downward flow interrupted Land changes, downward flow	impaired Ecological flows	forestry loss Coastal regresion and habitats loss Coastal regresion		Awaiting- anchoring areas (oil tankers, cargo transport, hazardous substances	disturbances (airzuns) Introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills Introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills	habitats decline Water column habitats decline Water quality degradation Water column habitats decline	stranding of long- lived species Healthy coastal water and habitats decline Coastal environment impacted Healthy coastal water and habitats	2	exploration islands, lagoon ports/marinas Awaiting areas (oil tankers, cargo transport, hazardous substances vessels)	disturbances laircuns! Coastal changes, downward flows interrupted introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills Risk of accidents and and spills	habitats decline Degradation of coastal environments Water column habitats decline Water quality degradation Water column habitats decline	stranding of long- lined species Physical loss and habitats loss Healthy coastal water and habitats decline Coastal and marine environment imparted Healthy coastal water and habitats	2
		downward flow interrupted Land changes, downward flow	impaired Ecological flows	forestry loss Coastal regresion and habitats loss Coastal regresion		Awaiting- anchoring areas (oil tankers, cargo transport, hazardous substances	disturbances (airzuns) Introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills Introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills	habitats decline Water column habitats decline Water quality degradation Water column habitats decline	stranding of long- lived species Healthy coastal water and habitats decline Coastal environment impacted Healthy coastal water and habitats decline	2	exploration Islands, lagoon ports/marinas Awaiting areas (oil tankers, cargo transport, hazardous substances vessels) Bunkering	disturbances laircuns! Coastal changes, downward flows interrupted introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills Risk of accidents and and spills	habitats decline Degradation of coastal environments Water column habitats decline Water quality degradation Water column habitats decline Water quality degradation Water quality degradation	stranding of long- lined species Physical loss and habitats loss Healthy coastal water and habitats decline Coastal and marine environment impacted Healthy coastal water and habitats decline	2
		downward flow interrupted Land changes, downward flow	impaired Ecological flows	forestry loss Coastal regresion and habitats loss Coastal regresion		exploration Awaiting- anchoring areas (oil tankers, cargo transport, hazardous substances substances Bunkering Offshore platforms	disturbances [airzuns] Introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills Introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills Introduction of	Mater column habitats decline Water quality degradation Water column habitats decline Water column Water quality degradation Water quality degradation Water column	stranding of long- lived species Healthy coastal water and habitats decline Coastal environment impacted Healthy coastal water and habitats decline	2	exploration Islands, lagoon ports/marinas Awaiting areas (oil tankers, cargo transport, hazardous substances vessels) Bunkering Offshore platforms	disturbances laircuns! Coastal changes, downward flows interrunted introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills Risk of accidents and spills introduction of	habitats decline Degradation of coastal environments Water column habitats decline Water quality degradation Water column habitats decline Water quality degradation Water quality degradation water column habitats decline	stranding of long- lived species Physical loss and habitats loss Healthy coastal water and habitats decline Coastal and marine environment impacted Healthy coastal water and habitats decline	2
		downward flow interrupted Land changes, downward flow	impaired Ecological flows	forestry loss Coastal regresion and habitats loss Coastal regresion		Awaiting- anchoring areas (oil tankers, cargo transport, hazardous substances wessels) Bunkering Offshore platforms (oil and gas	disturbances [airzuns] Introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills Introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills introduction of pollutants (oil hydrocarbons and spills introduction of pollutants (oil hydrocarbons and spills introduction of pollutants (oil hydrocarbons and	Mater column habitats decline Water quality degradation Water column habitats decline Water column Water quality degradation Water quality degradation Water column	stranding of long- lived species Healthy coastal water and habitats decline Coastal environment impacted Healthy coastal water and habitats decline	2	exploration Islands, lagoon ports/marinas Awaiting areas (oil tankers, cargo transport, hazardous substances vessels) Bunkering Offshore platforms (oil and gas	disturbances laircuns! Coastal changes, downward flows interrupted introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills introduction of pollutants (oil hydrocarbons and	habitats decline Degradation of coastal environments Water column habitats decline Water quality degradation Water column habitats decline Water quality degradation Water quality degradation water column habitats decline	stranding of long- lived species Physical loss and habitats loss Healthy coastal water and habitats decline Coastal and marine environment immacted Healthy coastal water and habitats decline	2
		downward flow interrupted Land changes, downward flow	impaired Ecological flows	forestry loss Coastal regresion and habitats loss Coastal regresion		Awaiting- anchoring areas (oil tankers, cargo transport, hazardous substances wessels) Bunkering Offshore platforms (oil and gas	disturbances [airzuns] Introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills Introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills Introduction of pollutants (oil hydrocarbons and related organic compounds)	Mater column habitats decline Water quality degradation Water column habitats decline Water column Water quality degradation Water quality degradation Water column	stranding of long- lived species Healthy coastal water and habitats decline Coastal environment impacted Healthy coastal water and habitats decline	2	exploration Islands, lagoon ports/marinas Awaiting areas (oil tankers, cargo transport, hazardous substances vessels) Bunkering Offshore platforms (oil and gas	disturbances laircums! Coastal changes, downward flows interrupted introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills introduction of pollutants (oil hydrocarbons and related organic compounds)	habitats decline Degradation of coastal environments Water column habitats decline Water quality degradation Water column habitats decline Water quality degradation Water quality degradation water column habitats decline	stranding of long- lived species Physical loss and habitats loss Healthy coastal water and habitats decline Coastal and marine environment immacted Healthy coastal water and habitats decline	2
		downward flow interrupted Land changes, downward flow	impaired Ecological flows	forestry loss Coastal regresion and habitats loss Coastal regresion		Awaiting- anchoring areas (oil tankers, cargo transport, hazardous substances wessels) Bunkering Offshore platforms (oil and gas	disturbances [airzuns] Introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills Introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills introduction of pollutants (oil hydrocarbons and spills introduction of pollutants (oil hydrocarbons and spills introduction of pollutants (oil hydrocarbons and	Mater column habitats decline Water quality degradation Water column habitats decline Water column Water quality degradation Water quality degradation Water column	stranding of long- lived species Healthy coastal water and habitats decline Coastal environment impacted Healthy coastal water and habitats decline	2	exploration Islands, lagoon ports/marinas Awaiting areas (oil tankers, cargo transport, hazardous substances vessels) Bunkering Offshore platforms (oil and gas	disturbances laircuns! Coastal changes, downward flows interrupted introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills introduction of pollutants (oil hydrocarbons and	habitats decline Degradation of coastal environments Water column habitats decline Water quality degradation Water column habitats decline Water quality degradation Water quality degradation water column habitats decline	stranding of long- lived species Physical loss and habitats loss Healthy coastal water and habitats decline Coastal and marine environment immacted Healthy coastal water and habitats decline	2

	 0 0000000000000000000000000000000000000	· ········											
					Risk of accidents	Water quality	Healthy coastal	I	1	Risk of accidents	Water quality		
					and spills	degradation	water and habitats	I		and spills	degradation		
						0	decline				6		
				Shipping traffic	Introduction of	Water column	Healthy coastal	2	Shipping traffic	Introduction of	Water column	Healthy coastal	2
								2					2
				(commercial,	pollutants and	habitats decline	water and habitats		(commercial,			water and habitats	
	1			ferries, military,	noise, litter		decline		ferries, military,	noise, litter		decline	
				cruise liners)					cruise liners)				
					Risk of accidents	Water quality	Healthy coastal			Risk of accidents	Water quality	Healthy coastal	
					or acute spills	degradation	water and habitats	I				water and habitats	
					or acute spills	uegrauation		I		or acute spills	uegrauation		
							decline					decline	
					Introduction of	Biodiversity and	Healthy coastal	I		Introduction of		Healthy coastal	
	1				NIS (ballastwater)	functions	water and habitats	I		NIS (ballastwater)	functions	water and habitats	
						alteration	decline				alteration	decline	
				Dredging (natural	Extration of soil		Benthic species and	1	Dredging (natural	Extration of soil	Disturbance of sea-		1
	1			9			habitats					and habitats	
				environments)	substrates	floor integrity			environments)				
						impaired	deterioration				impaired	deterioration	
				Offshore energy	Ocupation of	Surface and	Healthy coastal	0	Offshore energy	Ocupation of	Surface and	Healthy coastal	0
				(renewable)	coastal marine	pelagic	water and habitats		(renewable)	coastal marine	pelagic	water and habitats	
				,	space		decline		, ,			decline	
					space		decime			space		decline	
						altered		_			altered		
				Solid waste	Asfixiation of	Habitats and	Healthy coastal	3	Solid waste			Healthy coastal	5
				disposal	benthic habitats	species loss	benthic habitats		disposal	benthic habitats	species loss	benthic habitats	
							decline					decline	
				Storage of gases	Subsubstrate	Disturbance of sea-		1	Storage of gases	Subsubstrate	Disturbance of sea-		0
	1				storage (seismic	floor integrity	benthic habitats					benthic habitats	
											• .		
					risks)	impaired	decline			risks)	impaired	decline	
				Defence	Noise,	Coastal and	Healthy coastal	1	Defence	Noise,	Coastal and	Healthy coastal	0
				operations	contamiantion	marine	water and habitats		operations	contamiantion	marine	water and habitats	
	1				and waste	environment	decline		-	and waste	environment	decline	
					material	threatened				material	threatened		
				Disposal of	Dumping of	Disturbance of sea-	Hoolthy coastal		Disposal of		Disturbance of sea-	Hoalthy coastal	2
				9 .				-					•
				munition	munitions	floor integrity	benthic habitats		munition			benthic habitats	
					(including	impaired	decline			(including	impaired	decline	
					bacteriological)					bacteriological)			
		TOTAL	10				TOTAL	36				TOTAL	32
								1					-
		INLAND					COASTAL					SEAWARD	
		IMAPCT					IMPACT					IMPACT	
		(Ecosystem					(Ecosystem					(Ecosystem	
		Services)					services)					services)	
		ocrances					ocratices _j					oci vicesj	

Table II: Matrix of interactions between elements of the ICZM Protocol and Principal activities affecting marine litter generation on Western Mediterranean

Overall of Pressure-Impact (Ecosystem Services) at the ICZM (%) 16,4

		LANDWARD	INLAND		IMPACT SCORE		COAS	STAL AREA		IMPACT		SEAWARD - LAGOON	IC ICLANDS OFFCH	OBE	IMPACT
		LANDWARE) - INLAND		IIVIPACI SCORE		COAS	STAL AREA		SCORE		SEAWARD - LAGOON	13 - ISLANDS - OFFSH	ORE	SCORE
Economic (Driver)		Pressure	State	Impact (Ecosystem))	% of total impact		Pressure	State	Impact (Ecosystem)	% of total impacts		Pressure	State	Impact (Ecosystem)	% of total impacts
	Activity type				6,0	Activity type				17,3	Activity type				22,5
1) Agriculture	Crops (any)	Hydrological alterations	River diversions	Habitats deterioration		Crops (any)	Runoff/River (organochlorinate d and other chemicals)	Coastal contamination/poli ution	Habitats deterioration seafood contamination		Crops (effects seaward)	Runoff/River (organochlorinated and other chemicals)	Coastal and offshore contamination/poll ution	Ecosystems deterioration Seafood contamination	
	Crops (any)	Geomorphological changes	Land alteration	Loss of biodiversity/ Population (species) decreases		Crops (any)	Runoff (river litter)	Costal litter occurrence (beach, surface and seabed)	Species threaten Natural resources affected Landscape visual impairment	3	Crops (effects seaward)	Runoff (river litter)	Costal litter occurrence (surface, water column, seabed and deep-sea bed)	Long-lived species threaten Natural resources affected Marine ecosystems deterioration	3
	Land crops	Land use	Land degradation	Soil degradation (contaminated, inert)		Crops (any)	Seaward sediment flux alterations	Coastal erosion	Coastal surface decrease (beaches, dunes, etc.)		Crops (effects seaward)	Seaward sediment flux alterations	Subsidence, unsustained costaline	Loss of coastline	
	Wetland crops	Wetlands use	Wetlands degradation	Flooding vulnerability / Clean water provision		Deltaic crops	Delta use	Delta degradation (contaminated, inert)	Exploited resources affected		Crops (harvesting)	Coastal micro- and macro algae harvesting	Habitat alterations	Natural resources affected	
2) Industry (land- based sources)	Diverse Industruial Activities	Land use	Land occupation/ loss	Habitats deterioration		Diverse Industruial Activities	Industrial wastewater (treated and untreated)	Transitional and coastal water pollution	Chemical and emerging contamination of habitats and species (water column and seafloor)	2	Diverse Industrial Activities	Diffuse contamination	Coastal and offshore contamination	Pelagic and benthic ecosytem deterioration Seafood contamination	3
		Landfills	Contaminated and littered land	Habitats loss	2		Litter increase	Riverine and coastal litter occurrence (surface, baech)	Species threaten Natural resources affected Coastal visual impairment	2		Litter pollution (spread)	Coastal and offshore contamination (surface, water column, seabed, deep-sea bed)	Long-lived species threaten Natural resources affected Marine ecosystems deterioration	2
		Residues (industrial effluents)	Contaminated land and rivers	Soil and water pollution			Industrial effluents (ocasional inputs, acute events)	Transitional and coastal water pollution	Natural resources loss			Sea disposal sites (auhtorized dumping)	Sea-floor habitats affected (integrity impaired)	Benthic ecosystem loss	
3) Aquaculture	Nurseries, inland aquaculture	Land use	Land alteration	Habitats deterioration biodiversity impaired		Costal aquaculture (shellfish farming, Fish farming)	Water column ans seabed habitats impacted by substances	Eutrophication	Habitats deterioration biodiversity impaired		Coastal, offshore farming	Pelagic ecosystem impacted by substances	Eutrophication	Habitats deterioration biodiversity impaired	
4) Fisheries		Port operations	Altered coastal area	Contamination/ Pollution (hotspot)		Fishing vessels (artisanal, trawling, etc.)	Pressures on fish stocks and benthic ecosystems	Marine fisheries decline (over- fishing)	Decrease on fish species of comercial importance	2	Fishing vessels (medium power, trawling, etc.)	Pressures on fish stocks and benthic ecosystems	Marine habitats decline	Decrease on fish species of ecological importance	3

						Extraction of genetic resources	Pressures on fish stocks and benthic ecosystems	Populations diversity impaired	Decrease on fisheries ecological function		Extraction of genetic resources	Pressures on fish stocks and benthic ecosystems	Populations diversity impaired	Decrease on fisheries ecological function	
5) Tourism, sporting, recreational activities	Urban development	Waste generation (litter, wastewater treatment plants) Urban effluents Microbiological pollution	Degradation of land, air and water sources Occurrence of pathogens	Soil, habitats and coastal forestry loss Bathing water quality detriment	3	Urban/Real-state development	Waste generation (litter, wastewater treatment plants) Urban effluents Microbiological pollution	Degradation of land, air and water sources Occurrence of pathogens	Soil, habitats and coastal forestry loss Bathing water quality detriment	3	Urban/Real-state development (only lagoons, islands, etc.)	Waste generation (litter, wastewater treatment plants) Urban effluents Microbiological pollution	Degradation of land, air and water sources Occurrence of pathogens	Soil, habitats and coastal forestry loss Bathing water quality detriment	3
		Landfills	Contaminated and littered land	Degradation of natural resources			Landfills	Contaminated and littered land	Degradation of natural resources Landscape visual impairment	3		Landfills	Contaminated and littered land	Degradation of natural resources Landscape visual impairment	3
		Land urban expansion	Land degradation	Habitat loss Biodiversity loss Physical loss			Coastal urban expansion	Coastal degradation	Land-sea interface habitat loss and biodiversity loss	3		Coastal urban expansion	Coastal degradation	Land-sea interface habitat loss and biodiversity loss	3
		Increased nutrients	Eutrophication	Habitats deterioration biodiversity impaired			Increased nutrients	Eutrophication	Habitats deterioration biodiversity impaired			Increased nutrients	Eutrophication	Habitats deterioration biodiversity impaired	
						Scuba-diving activities	Pressures on habitats and functions maintenance (extraction of fish and shellfish)	Sea-foor habitats decline	Alteration on habitats and species of economical ecological importance		Scuba-diving activities (only lagoons, islands, etc.)	Pressures on habitats and functions maintenance (extraction of fish and shellfish)	Sea-foor habitats decline	Alteration on habitats and species of economical ecological importance	
						Fishing vessels (recreational)	Pressures on fish stocks	Water column habitats (species) decline	Decrease on fish species of ecological and commercial importance		Fishing vessels (recreational)	Pressures on fish stocks	Water column habitats (species) decline	Decrease on fish species of ecological and commercial importance	
						Tourism frequentation	Pressures on coastline (beaches, natural areas, etc.)	Increased pollution	Coastal areas degradation Habitats alteration Physical loss	3	Tourism frequentation (only lagoons, islands, etc.)	Pressures on coastline (beaches, natural areas, etc.)	Increased pollution	Coastal areas degradation Habitats alteration	3
						Yatching	Coastal areas navigation, contamiantion, noise	Increased pollution (biological, chemical, litter)	Coastal areas degradation Habitats alteration		Yatching	Coastal areas navigation, contamiantion, noise	Increased pollution (biological, chemical, litter)	Coastal areas degradation Habitats alteration	
	Tourism facilities	Land changes	Land alteration	Loss of biodiversity/ Population (species) decreases		Tourism facilities	Coastal changes	Land alteration	Loss of biodiversity/ Population (species) decreases		Tourism facilities (only lagoons, islands, etc.)	Coastal changes	Land alteration	Loss of biodiversity/ Population (species) decreases	
	Other small scale activities	Waste generation (litter, waste treatment plants, effluents)	Degradation of coastal environments	Coastal resources integrity impaired		Other small scale activities	Waste generation (litter, waste treatment plants, effluents)	Degradation of coastal environments	Coastal resources integrity impaired Physical loss		Other small scale activities	Waste generation (litter, waste treatment plants, effluents)	Degradation of coastal environments	Coastal resources integrity impaired	_
6) Utilization of specific natural resources						Seabed mining	Extraction of seabed substrate	Habitats deterioration	Integrity of sea-floor impaired		Seabed mining	Extraction of seabed substrate	Habitats and deep- habitats deterioration	Integrity of sea-floor impaired	

					Desalinization	Uptake of seawater /release of brine and	Habitats deterioration	Integrity of sea-floor and water column impaired		Desalinization	Uptake of seawater /release of brine and brackish waters	Habitats deterioration	Integrity of sea-floor and water column impaired	
						brackish waters		impaired			and brackish waters		impaired	
7) Infrastructure, energy facilities, ports and maritime works and structures	Transport (roads, highways	Atmospheric emissions (gases and particles, COx, NOx, VOCs, dust)	Degradation of air quality	Land/Soil use (irreversible loss)	Port/Harbour developments	Land/coastal changes	Degradation of coastal vegetation	Loss of coastal integrity (by erosion)						
		Soil contamination	Degradation of land	Ecological fragmentation of the territory		Waste generation (litter, waste port facilities, effluents)	Coastal fragmentation	Biodiversity (natural) impaired Ecological conectivity loss						
		Noise	Degradation of vegetation and forestry	Habitats loss		Risk of acute pollution events/accidents (hazardous substances, oil)	Water column and seabed habitats decline Biodiversity loss	Natural resources loss Endemic species treathened						
		Hydrological alterations	River diversions	Habitats deterioration		Inputs of nutrients and organic matter enrichment	Loss of endemic species/habitats	resources loss						
		Geomorphological changes	Land alteration	Loss of biodiversity/ Population (species) decreases		Microbiological pollution	Occurrence of pathogens	Degraded bathing water quality						
	Transport (railway)	Soil contamination	Degradation of land	Land/Soil use (irreversible loss)	Port/Marinas developments	Land/coastal change (roads, real state	Degradation of coastal vegetation	Loss of coastal area integrity (by erosion)						
		Noise	Degradation of air quality	Ecological fragmentation of the territory		Waste generation (litter, waste port facilities, effluents)	Coastal fragmentation	Biodiversity (natural) impaired Ecological conectivity loss						
		Hydrological changes	Degradation of vegetation	Habitats loss		Risk of acute pollution events/accidents (hazardous substances, oil)	Water column and seabed habitats decline Biodiversity loss	Natural resources loss Endemic species treathened						
		Geomorphologic alterations	Fragmentation of territory	Natural resources loss		Inputs of nutrients and organic matter enrichment	Loss of endemic species/habitats	resources loss						
				Altered ecosystem functions		Microbiological pollution	Occurrence of pathogens	Degraded bathing water quality						
	Land artifisialization	Land changes	Land loss	Ecological fragmentation of the territory and forestry loss	Underwater cables and pipelines	Wiring operations disturbance	Habitats decline	Loss of habitats and species		Underwater cables	Wiring operations disturbance	Habitats decline	Loss of habitats and species	
	Water damming	Land changes, downward flow interrupted	Ecological flows impaired	Coastal regresion and habitats loss	Oil and gas exploration	Exploraiton disturbances (airguns)	Water column habitats decline	Loss of species, stranding of long-lived species		exploration	Exploration disturbances (airguns)	Water column habitats decline	Loss of species, stranding of long- lived species	
	River ports	Land changes, downward flow interrupted	Ecological flows impaired	Coastal regresion and habitats loss					· ·	Islands, lagoon ports/marinas	Coastal changes, downward flows interrupted	Degradation of coastal environments	Physical loss and habitats loss	

8) Maritime activities			Awaiting- anchoring areas (oil tankers, cargo transport, hazardous substances vessels)	Introduction of pollutants (oil hydrocarbons and related organic compounds)	Water column habitats decline	Healthy coastal water and habitats decline		Awaiting areas (oil tankers, cargo transport, hazardous substances vessels)	hydrocarbons and related organic compounds)	Water column habitats decline	Healthy coastal water and habitats decline	
				Risk of accidents and spills	Water quality degradation	Coastal environment impacted			Risk of accidents and spills	Water quality degradation	Coastal and marine environment impacted	
			Bunkering	Introduction of pollutants (oil hydrocarbons and related organic compounds)	Water column habitats decline	Healthy coastal water and habitats decline		Bunkering	Introduction of pollutants (oil hydrocarbons and related organic compounds)	Water column habitats decline	Healthy coastal water and habitats decline	
				Risk of accidents and spills	Water quality degradation				Risk of accidents and spills	Water quality degradation		
			(oil and gas	Introduction of pollutants (oil hydrocarbons and related organic compounds)	Water column habitats decline	Healthy coastal water and habitats decline		Offshore platforms (oil and gas explotation)	Introduction of pollutants (oil hydrocarbons and related organic compounds)	Water column habitats decline	Healthy coastal water and habitats decline	
				Risk of accidents and spills	Water quality degradation	Healthy coastal water and habitats decline			Risk of accidents and spills	Water quality degradation		
			Shipping traffic (commercial, ferries, military, cruise liners)	Introduction of pollutants and noise, litter	Water column habitats decline	Healthy coastal water and habitats decline	3	Shipping traffic (commercial, ferries, military, cruise liners)	Introduction of pollutants and noise, litter	Water column habitats decline	Healthy coastal water and habitats decline	2
				Risk of accidents or acute spills	Water quality degradation	Healthy coastal water and habitats decline			Risk of accidents or acute spills	Water quality degradation	Healthy coastal water and habitats decline	
				(ballastwater)	Biodiversity and functions alteration	Healthy coastal water and habitats decline			Introduction of NIS (ballastwater)		Healthy coastal water and habitats decline	
			Dredging (natural environments)	Extration of soil substrates	Disturbance of sea- floor integrity impaired	Benthic species and habitats deterioration		Dredging (natural environments)	Extration of soil substrates	Disturbance of sea- floor integrity impaired	Benthic species and habitats deterioration	
			Offshore energy (renewable)	Ocupation of coastal marine space	ecosystems altered	Healthy coastal water and habitats decline		Offshore energy (renewable)	Ocupation of coastal marine space	ecosystems altered	water and habitats decline	
			Solid waste disposal	Asfixiation of benthic habitats	Habitats and species loss	Healthy coastal benthic habitats decline	2	Solid waste disposal	Asfixiation of benthic habitats	Habitats and species loss	Healthy coastal benthic habitats decline	2
			Storage of gases	Subsubstrate storage (seismic risks)	Disturbance of sea- floor integrity impaired	Healthy coastal benthic habitats decline		Storage of gases	Subsubstrate storage (seismic risks)	Disturbance of sea- floor integrity impaired	benthic habitats decline	
			Defence operations	Noise, contamiantion and waste material	Coastal and marine environment threatened	Healthy coastal water and habitats decline		Defence operations	Noise, contamiantion and waste material	Coastal and marine environment threatened	Healthy coastal water and habitats decline	

				munitions	Disturbance of sea- floor integrity impaired	Healthy coastal benthic habitats decline		Disposal of munition	Dumping of munitions (including bacteriological)	Disturbance of sea- floor integrity impaired	Healthy coastal benthic habitats decline	
		TOTAL INLAND IMAPCT (Ecosystem Services)	5			TOTAL COASTAL IMPACT (Ecosystem services)	26				TOTAL SEAWARD IMPACT (Ecosystem services)	27

Table III: Matrix of interactions between elements of the ICZM Protocol and Principal activities affecting marine litter generation, Adriatic Sea.

Overall of Pressure-Impact (Ecosystem Services) at the ICZM (%) 32,2

		LANDWAR	D - INLAND		IMPACT SCORE		COAST	AL AREA		IMPACT SCORE	SE	AWARD - LAGOONS	- ISLANDS - OFFSHO	ORE	IMPACT SCORE
Economic (Driver)		Pressure	State	Impact (Ecosystem))	% of total impact		Pressure	State	Impact (Ecosystem)	% of total impacts		Pressure	State	Impact (Ecosystem)	% of total impacts
	Activity type				23,8	Activity type				30,0	Activity type				40,8
1) Agriculture	Crops (any) Crops (any)	Hydrological alterations Geomorphological	River diversions	Habitats deterioration Loss of	3	Crops (any) Crops (any)	Runoff/River (organochlorinate d and other chemicals) Runoff (river litter)	Coastal contamination/pol lution Costal litter	Habitats deterioration seafood contamination Species threaten	3	Crops (effects seaward) Crops (effects	Runoff/River (organochlorinate d and other chemicals) Runoff (river litter)	Coastal and offshore contamination/pol lution Costal litter	Ecosystems deterioration Seafood contamination Long-lived species	3
		changes		biodiversity/ Population (species) decreases				occurrence (beach, surface and seabed)	Natural resources affected Landscape visual impairment		beaward)		occurrence (surface, water column, seabed and deep-sea bed)	threaten Natural resources affected Marine ecosystems deterioration	
	Land crops	Land use	Land degradation	Soil degradation (contaminated, inert)	3	Crops (any)	Seaward sediment flux alterations	Coastal erosion	Coastal surface decrease (beaches, dunes, etc.)	3	Crops (effects seaward)	Seaward sediment flux alterations	Subsidence, unsustained costaline	Loss of coastline	3
	Wetland crops	Wetlands use	Wetlands degradation	Flooding vulnerability / Clean water provision	3	Deltaic crops	Delta use	Delta degradation (contaminated, inert)	Exploited resources affected	3	Crops (harvesting)	Coastal micro- and macro algae harvesting	Habitat alterations	Natural resources affected	3
2) Industry (land- based sources)	Diverse Industruial Activities	Land use	Land occupation/ loss	Habitats deterioration	3	Diverse Industruial Activities	Industrial wastewater (treated and untreated)	Transitional and coastal water pollution	Chemical and emerging contamination of habitats and species (water column and	3	Diverse Industruial Activities	Diffuse contamination	Coastal and offshore contamination	Pelagic and benthic ecosytem deterioration Seafood contamination	3
		Landfills	Contaminated and littered land	Habitats loss	3		Litter increase	Riverine and coastal litter occurrence (surface, baech)	Species threaten Natural resources affected Coastal visual impairment	3		Litter pollution (spread)	Coastal and offshore contamination (surface, water column, seabed, deep-sea bed)	Long-lived species threaten Natural resources affected Marine ecosystems deterioration	
		Residues (industrial effluents)	Contaminated land and rivers	Soil and water pollution			Industrial effluents (ocasional inputs, acute events)	Transitional and coastal water pollution	Natural resources loss			Sea disposal sites (auhtorized dumping)	Sea-floor habitats affected (integrity impaired)	Benthic ecosystem loss	
3) Aquaculture	Nurseries, inland aquaculture	Land use	Land alteration	Habitats deterioration biodiversity impaired		Costal aquaculture (shellfish farming, Fish farming)	Water column ans seabed habitats impacted by substances	Eutrophication	Habitats deterioration biodiversity impaired	3	Coastal, offshore farming	Pelagic ecosystem impacted by substances	Eutrophication	Habitats deterioration biodiversity impaired	3
4) Fisheries		Port operations	Altered coastal area	Contamination/ Pollution (hotspot)	2	Fishing vessels (artisanal, trawling, etc.)	Pressures on fish stocks and benthic ecosystems	Marine fisheries decline (over- fishing)	Decrease on fish species of comercial importance	3	Fishing vessels (medium power, trawling, etc.)	Pressures on fish stocks and benthic ecosystems	Marine habitats decline	Decrease on fish species of ecological importance	3
						Extraction of genetic resources	Pressures on fish stocks and benthic ecosystems	Populations diversity impaired	Decrease on fisheries ecological function	0	Extraction of genetic resources	Pressures on fish stocks and benthic ecosystems	Populations diversity impaired	Decrease on fisheries ecological function	0

5) Tourism, sporting, recreational activities	Urban development	Waste generation (litter, wastewater treatment plants) Urban effluents Microbiological pollution	Degradation of land, air and water sources Occurrence of pathogens	Soil, habitats and r coastal forestry loss Bathing water quality detriment	3	Urban/Real-state development	Waste generation (litter, wastewater treatment plants) Urban effluents Microbiological pollution	Degradation of land, air and water sources Occurrence of pathogens	Soil, habitats and coastal forestry loss Bathing water quality detriment	3	Urban/Real-state development (only lagoons, islands, etc.)	Waste generation (litter, wastewater treatment plants) Urban effluents Microbiological pollution	Degradation of land, air and water sources Occurrence of pathogens	Soil, habitats and coastal forestry loss Bathing water quality detriment	3
		Landfills	Contaminated and littered land	Degradation of natural resources			Landfills	Contaminated and littered land	Degradation of natural resources Landscape visual impairment			Landfills	Contaminated and littered land	Degradation of natural resources Landscape visual impairment	
		Land urban expansion	Land degradation	Habitat loss Biodiversity loss Physical loss			Coastal urban expansion	Coastal degradation	Land-sea interface habitat loss and biodiversity loss	3		Coastal urban expansion	Coastal degradation	Land-sea interface habitat loss and biodiversity loss	3
		Increased nutrients	Eutrophication	Habitats deterioration biodiversity impaired			Increased nutrients	Eutrophication	Habitats deterioration biodiversity impaired			Increased nutrients	Eutrophication	Habitats deterioration biodiversity impaired	
						Scuba-diving activities	Pressures on habitats and functions maintenance (extraction of fish and shellfish)	Sea-foor habitats decline	Alteration on habitats and species of economical ecological importance		Scuba-diving activities (only lagoons, islands, etc.)	Pressures on habitats and functions maintenance (extraction of fish and shellfish)	Sea-foor habitats decline	Alteration on habitats and species of economical ecological importance	
						Fishing vessels (recreational)	Pressures on fish stocks	Water column habitats (species) decline	Decrease on fish species of ecological and commercial		Fishing vessels (recreational)	Pressures on fish stocks	Water column habitats (species) decline	Decrease on fish species of ecological and commercial	
						Tourism frequentation	Pressures on coastline (beaches, natural areas, etc.)	Increased pollution	Coastal areas degradation Habitats alteration Physical loss	3	Tourism frequentation (only lagoons, islands, etc.)	Pressures on coastline (beaches, natural areas, etc.)	Increased pollution	Coastal areas degradation Habitats alteration	3
						Yatching	Coastal areas navigation, contamiantion,	Increased pollution (biological, chemical litter)	Coastal areas degradation Habitats alteration	3	Yatching	Coastal areas navigation, contamiantion,	Increased pollution (biological, chemical litter)	Coastal areas degradation Habitats alteration	3
	Tourism facilities	Land changes	Land alteration	Loss of biodiversity/ Population (species)		Tourism facilities	Coastal changes	Land alteration	Loss of biodiversity/ Population (species) decreases		Tourism facilities (only lagoons, islands, etc.)	Coastal changes	Land alteration	Loss of biodiversity/ Population (species)	
	Other small scale activities	Waste generation (litter, waste treatment plants, effluents)	Degradation of coastal environments	Coastal resources integrity impaired		Other small scale activities	Waste generation (litter, waste treatment plants, effluents)	Degradation of coastal environments	Coastal resources integrity impaired Physical loss		Other small scale activities	Waste generation (litter, waste treatment plants, effluents)	Degradation of coastal environments	Coastal resources integrity impaired	
6) Utilization of specific natural resources						Seabed mining	Extraction of seabed substrate	Habitats deterioration	Integrity of sea- floor impaired	1	Seabed mining	Extraction of seabed substrate	Habitats and deep- habitats deterioration	Integrity of sea- floor impaired	1
						Desalinization	Uptake of seawater /release of brine and brackish waters	Habitats deterioration	Integrity of sea- floor and water column impaired	0	Desalinization	Uptake of seawater /release of brine and brackish waters	Habitats deterioration	Integrity of sea- floor and water column impaired	1
7) Infrastructure, energy facilities, ports and maritime works and structures	Transport (roads, highways	Atmospheric emissions (gases and particles, COx, NOx, VOCs, dust)	Degradation of air quality	(irreversible loss)		Port/Harbour developments	Land/coastal changes	Degradation of coastal vegetation	Loss of coastal integrity (by erosion)						
		Soil contamination	Degradation of land	Ecological fragmentation of the territory			Waste generation (litter, waste port facilities, effluents)	Coastal fragmentation	Biodiversity (natural) impaired Ecological conectivity loss						

Mode Programme																
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Interrunted Land changes, downward flow impaired Land changes, downward flow interrunted Land changes Land change		Water damming	Land changes,	Ecological flows			Oil and gas	Exploraiton	Water column	Loss of species,	1	Oil and gas	Exploration	Water column	Loss of species,	1
Silver ports Land changes, downward flow interrupted Awaiting areas (oil transport, hazardous substances Marker organic compounds)			downward flow	impaired	and habitats loss		exploration	disturbances	habitats decline	stranding of long-		exploration	disturbances	habitats decline	stranding of long-	
B) Maritime activities B) Maritime Awaiting activities B) Maritime activities Compounds Coastal activities Compounds Coastal activities Coastal Awaiting areas Coli Introduction of hydrocarbons and related organic Compounds Coastal Awaiting areas Coli Maritime Coastal Awaiting areas Coli Maritime Compounds Coastal Awaiting activities Coastal Coastal Awaiting areas Coli Maritime Compounds Coastal Coast			interrupted				-	(aireuns)		lived species		-	(airguns)		lived species	
Signatrime Signature Sig		River ports	Land changes,	Ecological flows	Coastal regresion							Islands, lagoon	Coastal changes,	Degradation of	Physical loss and	
Awaiting achoring areas (oil tankers, cargo (o			downward flow	impaired	and habitats loss							ports/marinas	downward flows	coastal	habitats loss	
activities anchoring areas (oil tankers, cargo (oil tankers, oil tankers, cargo (oil tankers, oil tankers, cargo (oil tankers, oil tankers, ocons			interrupted										interrupted	environments		
decline transport, hazardous and related organic compounds) decline transport, hazardous and spills and spills decline transport, hazardous and related organic compounds) decline transport, hazardous and spills transport, hazardous and spills transport, hazardous and spills transport, hazardous and spills transport, haza	8) Maritime						Awaiting-	Introduction of	Water column	Healthy coastal		Awaiting areas (oil	Introduction of	Water column	Healthy coastal	
transport, hazardous substances compounds) substances Risk of accidents and spills Risk of accidents and spills Bunkering introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills Bunkering introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills degradation impacted Bunkering introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills decline decline Water column habitats decline decline Water column habitats decline decline Water column habitats decline degradation Risk of accidents and spills degradation Offshore platforms introduction of (oil and gas explotation) Poffshore platforms introduction of (oil and gas explotation)	activities						anchoring areas	pollutants (oil	habitats decline	water and habitats		tankers, cargo	pollutants (oil	habitats decline	water and habitats	
hazardous substances Risk of accidents and spills Risk of accidents and abilitats decline and abilitats decline Risk of accidents and spills Risk of acc								hydrocarbons and		decline			hydrocarbons and		decline	
hazardous substances Compounds) Substances Compounds) Risk of accidents and spills Risk of accidents and spills Bunkering Introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills Water column habitats decline Water and habitats Water and habitats Bunkering Introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills Bunkering Introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills Water and habitats decline Water quality degradation Risk of accidents and spills Risk of accidents and spills Water quality degradation Risk of accidents and spills Risk of acc											I					
Substances Risk of accidents and spills Risk of accidents and spills Bunkering Introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents Water quality degradation Water column habitats decline Healthy coastal water and habitats decline Water quality degradation Healthy coastal water and habitats decline Water column habitats decline hydrocarbons and related organic compounds) Risk of accidents and spills Water quality degradation Water column habitats decline water and habitats decline Water quality degradation Water column habitats decline water and habitats decline Water quality degradation Water column habitats decline water and habitats decline Water quality degradation Water column habitats decline water and habitats decline Water quality degradation Water quality degradation Water column habitats decline water and habitats decline Water quality degradation Healthy coastal water and habitats decline Water quality degradation Water quality degradation Water column habitats decline Water quality degradation Healthy coastal water and habitats decline Water quality degradation Water column habitats decline Water quality degradation Water quality degradation Healthy coastal water and habitats decline Water quality degradation Healthy coastal water and habitats decline Water quality degradation Healthy coastal water and habitats decline Water column habitats decline Water quality degradation Healthy coastal water and habitats decline Water column habitats decline Water quality degrad																
Risk of accidents and spills Bunkering Introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills Bunkering Introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills Risk of acci								,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					, , , , , , , , , , , , , , , , , , ,			
and spills degradation degrada							worsols)					,				
Bunkering Introduction of pollutants (oil hydrocarbons and related organic compounds) Water quality and spills Offshore platforms: Introduction of (oil and gas explotation) by hydrocarbons and related organic compounds Offshore platforms: Introduction of (oil and gas explotation) by hydrocarbons and related organic compounds Impacted water column habitats decline water and habitats decline wa										Coastal						
Bunkering introduction of pollutants (oil hydrocarbons and related organic compounds) Water column abitats decline water and habitats decline water and hab								and spills	degradation	environment			and spills	degradation	marine	
Bunkering Introduction of pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills Offshore platforms Introduction of (oil and gas explotation) by hydrocarbons and related organic compounds of the pollutants (oil and gas explotation) by hydrocarbons and related organic compounds of the pollutants (oil and gas explotation) by hydrocarbons and related organic compounds) Water quality and spills Offshore platforms Introduction of (oil and gas explotation) by hydrocarbons and related organic compounds of the pollutants (oil and gas explotation) by hydrocarbons and related organic compounds of the pollutants (oil and gas explotation) by hydrocarbons and related organic compounds of the pollutants (oil and gas explotation) by hydrocarbons and related organic compounds of the pollutants (oil and gas explotation) by hydrocarbons and related organic compounds of the pollutants (oil and gas explotation) by hydrocarbons and related organic compounds of the pollutants (oil and gas explotation) by hydrocarbons and related organic compounds of the pollutants (oil and gas explotation) by hydrocarbons and related organic compounds of the pollutants (oil and pas of the pollutants (oil by hydrocarbons and related organic compounds) by hydrocarbons and related organic compounds of the pollutants (oil and pas of the pollutants (oil and pas of the pollutants (oil by hydrocarbons and related organic compounds) by hydrocarbons and related organic compounds of the pollutants (oil by hydrocarbons and related organic compounds) by hydrocarbons and related organic compounds of the pollutants (oil by hydrocarbons and related organic compounds) by hydrocarbons and related organic compounds of the pollutants (oil by hydrocarbons and related organic compounds) by hydrocarbons and related organic compounds of the pollutants (oil by hydrocarbons and related organic compounds) by hydrocarbons and related organic compounds of the pollutants (oil by hydrocarbons and related organic compounds) by hydrocarbons an										impacted					environment	
pollutants (oil hydrocarbons and related organic compounds) Risk of accidents and spills Offshore platforms introduction of (oil and gas explotation) hydrocarbons and related organic decine Water quality degradation Offshore platforms introduction of (oil and gas explotation) hydrocarbons and related organic and spills Exploration of the pollutants (oil hydrocarbons and related organic compounds) Water quality degradation (oil and gas pollutants (oil habitats decline water and habitats decline wa																
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related organic compounds) Water quality and spills degradation Offshore platforms introduction of (oil and gas explotation) by drocarbons and explotation or related organic compounds; Water quality and spills degradation Water column abitats decline									habitats decline					habitats decline		
compounds) Risk of accidents and spills Offshore platforms introduction of [oil and gas explotation] by hydrocarbons and explotation of related organic rela										decline					decline	
Risk of accidents and spills degradation Offshore platforms Introduction of (oil and gas pollutants (oil explotation) hydrocarbons and related organic related organic Platforms (oil exploration) hydrocarbons and platforms (oil exploration) hydrocarbons (oil exploration) hyd								related organic					related organic			
and spills degradation Offshore platforms Introduction of (oil and gas pollutants (oil explotation) hydrocarbons and related organic and spills degradation Mater column habitats decline explotation) hydrocarbons and related organic								compounds)					compounds)			
and spills degradation																
Offshore platforms Introduction of (oil and gas pollutants (oil and gas explotation) Mater column habitats decline explotation Mater and habitats decline Mater column habitats decline Mater co																
(oil and gas pollutants (oil explotation) hydrocarbons and related organic																
explotation) hydrocarbons and related organic decline explotation) hydrocarbons and related organic explotation) hydrocarbons and related organic											1					1
related organic related organic									habitats decline					habitats decline		
							explotation)			decline		explotation)			decline	
compounds) compounds)								related organic					related organic			
								compounds)					compounds)			
							l									

					Risk of accidents	Water quality	Healthy coastal			Risk of accidents	Water quality		
					and spills	degradation	water and habitats	l		and spills	degradation		
						_	decline	l			ŭ		
				Shipping traffic	Introduction of	Water column	Healthy coastal	2	Shipping traffic	Introduction of	Water column	Healthy coastal	3
				(commercial,	pollutants and	habitats decline	water and habitats		(commercial,	pollutants and	habitats decline	water and habitats	
				ferries, military,	noise, litter		decline		ferries, military.	noise, litter		decline	
				cruise liners)					cruise liners)				
					Risk of accidents	Water quality	Healthy coastal			Risk of accidents	Water quality	Healthy coastal	
					or acute spills	degradation	water and habitats	l		or acute spills		water and habitats	
							decline	l			· ·	decline	
					Introduction of	Biodiversity and	Healthy coastal			Introduction of	Biodiversity and	Healthy coastal	
					NIS (ballastwater)	functions	water and habitats	l		NIS (ballastwater)	functions	water and habitats	
					, , , , , , , , , , , , , , , , , , , ,	alteration	decline	l		, , , , , , , , , , , , , , , , , , , ,	alteration	decline	
				Dredging (natural	Extration of soil		Benthic species and	1	Dredging (natural	Extration of soil	Disturbance of sea-	Benthic species	2
				environments)	substrates	floor integrity	habitats		environments)	substrates		and habitats	
				,		impaired	deterioration		,		impaired	deterioration	
				Offshore energy	Ocupation of	Surface and	Healthy coastal	0	Offshore energy	Ocupation of	Surface and	Healthy coastal	0
				(renewable)	coastal marine	pelagic	water and habitats		(renewable)	coastal marine	pelagic	water and habitats	
					space	ecosystems	decline		, ,	space	ecosystems	decline	
					5,500	altered				-pace	altered		
				Solid waste	Asfixiation of	Habitats and	Healthy coastal	3	Solid waste	Asfixiation of		Healthy coastal	3
				disposal	benthic habitats	species loss	benthic habitats		disposal	benthic habitats	species loss	benthic habitats	
							decline					decline	
				Storage of gases	Subsubstrate	Disturbance of sea	Healthy coastal	0	Storage of gases	Subsubstrate	Disturbance of sea-		0
					storage (seismic	floor integrity	benthic habitats			storage (seismic	floor integrity	benthic habitats	
					risks)	impaired	decline			risks)	impaired	decline	
	 				,					,			
				Defence	Noise,	Coastal and	Healthy coastal	0	Defence	Noise,	Coastal and	Healthy coastal	0
				operations	contamiantion	marine	water and habitats		operations	contamiantion	marine	water and habitats	
					and waste	environment	decline		1	and waste	environment	decline	
					material	threatened				material	threatened		
				Disposal of	Dumping of	Disturbance of sea	Healthy coastal	3	Disposal of	Dumping of	Disturbance of sea-	Healthy coastal	3
				munition	munitions	floor integrity	benthic habitats		munition	munitions	floor integrity	benthic habitats	
					(including	impaired	decline			(including		decline	
					bacteriological)					bacteriological)			
		TOTAL	20				TOTAL	45				TOTAL	49
		INLAND					COASTAL					SEAWARD	
		IMAPCT					IMPACT					IMPACT	
		(Ecosystem					(Ecosystem					(Ecosystem	
		Services)					services)					services)	
		Services)					services)					services)	

Table IV.- Matrix of interactions between elements of the ICZM Protocol and Principal activities affecting marine litter generation, Central Mediterranean.

Overall of Pressure-Impact (Ecosystem Services) at the ICZM (%) 23,4

		LANDWAR	D - INLAND		IMPACT SCORE		COAST	AL AREA		IMPACT SCORE	SE	AWARD - LAGOONS	- ISLANDS - OFFSHO	ORE	IMPACT SCORE
Economic (Driver)		Pressure	State	Impact (Ecosystem))	% of total impact		Pressure	State	Impact (Ecosystem)	% of total impacts		Pressure	State	Impact (Ecosystem)	% of total impacts
	Activity type				17,9	Activity type				23,3	Activity type				27,5
1) Agriculture	Crops (any) Crops (any)	Hydrological alterations Geomorphological changes	River diversions Land alteration	Habitats deterioration Loss of biodiversity/ Population (species) decreases	3	Crops (any) Crops (any)	Runoff/River (organochlorinate d and other chemicals) Runoff (river litter)	Coastal contamination/pol lution Costal litter occurrence (beach, surface and seabed)	Habitats deterioration seafood contamination Species threaten Natural resources affected Landscape visual impairment	3	Crops (effects seaward) Crops (effects seaward)	Runoff/River (organochlorinate d and other chemicals) Runoff (river litter)	Coastal and offshore contamination/pol lution Costal litter occurrence (surface, water column, seabed and deep-sea bed)	contamination Long-lived species threaten Natural resources affected Marine	3
	Land crops	Land use	Land degradation	Soil degradation (contaminated, inert)	3	Crops (any)	Seaward sediment flux alterations	Coastal erosion	Coastal surface decrease (beaches, dunes, etc.)	3	Crops (effects seaward)	Seaward sediment flux alterations	Subsidence, unsustained costaline	Loss of coastline	3
	Wetland crops	Wetlands use	Wetlands degradation	Flooding vulnerability / Clean water provision	3	Deltaic crops	Delta use	Delta degradation (contaminated, inert)	Exploited resources affected	3	Crops (harvesting)	Coastal micro- and macro algae harvesting	Habitat alterations	Natural resources affected	3
2) Industry (land- based sources)	Diverse Industruial Activities	Land use	Land occupation/ loss	Habitats deterioration	2	Diverse Industruial Activities	Industrial wastewater (treated and untreated)	Transitional and coastal water pollution	Chemical and emerging contamination of habitats and species (water column and	2	Diverse Industruial Activities	Diffuse contamination	Coastal and offshore contamination	Pelagic and benthic ecosytem deterioration Seafood contamination	2
		Landfills	Contaminated and littered land	Habitats loss			Litter increase	Riverine and coastal litter occurrence (surface, baech)	Species threaten Natural resources affected Coastal visual impairment			Litter pollution (spread)	Coastal and offshore contamination (surface, water column, seabed, deep-sea bed)	Long-lived species threaten Natural resources affected Marine ecosystems deterioration	
		Residues (industrial effluents)	Contaminated land and rivers	Soil and water pollution			Industrial effluents (ocasional inputs, acute events)	Transitional and coastal water pollution	Natural resources loss			Sea disposal sites (auhtorized dumping)	Sea-floor habitats affected (integrity impaired)	Benthic ecosystem loss	
3) Aquaculture	Nurseries, inland aquaculture	Land use	Land alteration	Habitats deterioration biodiversity impaired		Costal aquaculture (shellfish farming, Fish farming)	Water column ans seabed habitats impacted by substances	Eutrophication	Habitats deterioration biodiversity impaired	0	Coastal, offshore farming	Pelagic ecosystem impacted by substances	Eutrophication	Habitats deterioration biodiversity impaired	0
4) Fisheries		Port operations	Altered coastal area	Contamination/ Pollution (hotspot)	2	Fishing vessels (artisanal, trawling, etc.) Extraction of genetic resources	Pressures on fish stocks and benthic ecosystems Pressures on fish stocks and benthic	Marine fisheries decline (over- fishing) Populations diversity impaired	Decrease on fish species of comercial importance Decrease on fisheries ecological	0	Fishing vessels (medium power, trawling, etc.) Extraction of genetic resources	Pressures on fish stocks and benthic ecosystems Pressures on fish	Marine habitats decline Populations diversity impaired	Decrease on fish species of ecological importance Decrease on	0
						genetic resources	ecosystems	uiversity impaired	function		genetic resources	ecosystems	diversity impaired	function	

5) Tourism, sporting, recreational activities		Urban effluents Microbiological pollution		Soil, habitats and coastal forestry loss Bathing water quality detriment	2	Urban/Real-state development	Waste generation (litter, wastewater treatment plants) Urban effluents Microbiological pollution	land, air and water	Soil, habitats and coastal forestry loss Bathing water quality detriment	2	Urban/Real-state development (only lagoons, islands, etc.)	Waste generation (litter, wastewater treatment plants) Urban effluents Microbiological pollution	Degradation of land, air and water sources Occurrence of pathogens	Soil, habitats and coastal forestry loss Bathing water quality detriment	2
		Landfills	Contaminated and littered land	Degradation of natural resources			Landfills	Contaminated and littered land	Degradation of natural resources Landscape visual impairment			Landfills	Contaminated and littered land	Degradation of natural resources Landscape visual impairment	
		Land urban expansion	Land degradation	Habitat loss Biodiversity loss Physical loss			Coastal urban expansion	Coastal degradation	Land-sea interface habitat loss and biodiversity loss			Coastal urban expansion	Coastal degradation	Land-sea interface habitat loss and biodiversity loss	
		Increased nutrients	Eutrophication	Habitats deterioration biodiversity impaired			Increased nutrients	Eutrophication	Habitats deterioration biodiversity impaired			Increased nutrients	Eutrophication	Habitats deterioration biodiversity impaired	
						Scuba-diving activities	Pressures on habitats and functions maintenance (extraction of fish and shellfish)	Sea-foor habitats decline	Alteration on habitats and species of economical ecological importance		Scuba-diving activities (only lagoons, islands, etc.)	Pressures on habitats and functions maintenance (extraction of fish and shellfish)	Sea-foor habitats decline	Alteration on habitats and species of economical ecological importance	
						Fishing vessels (recreational)	Pressures on fish stocks	Water column habitats (species) decline	Decrease on fish species of ecological and commercial		Fishing vessels (recreational)	Pressures on fish stocks	Water column habitats (species) decline	Decrease on fish species of ecological and commercial	
						Tourism frequentation	Pressures on coastline (beaches, natural areas, etc.)	Increased pollution	Coastal areas degradation Habitats alteration Physical loss	3	Tourism frequentation (only lagoons, islands, etc.)	Pressures on coastline (beaches, natural areas, etc.)	Increased pollution	Coastal areas degradation Habitats alteration	3
						Yatching	Coastal areas navigation, contamiantion, noise	Increased pollution (biological, chemical litter)	Coastal areas degradation Habitats alteration	3	Yatching	Coastal areas navigation, contamiantion, noise	Increased pollution (biological, chemical litter)	Coastal areas degradation Habitats alteration	un
	Tourism facilities	Land changes	Land alteration	Loss of biodiversity/ Population (species)		Tourism facilities	Coastal changes	Land alteration	Loss of biodiversity/ Population (species) decreases		Tourism facilities (only lagoons, islands, etc.)	Coastal changes	Land alteration	Loss of biodiversity/ Population (species)	
	activities	Waste generation (litter, waste treatment plants, effluents)	Degradation of coastal environments	Coastal resources integrity impaired		Other small scale activities	Waste generation (litter, waste treatment plants, effluents)	Degradation of coastal environments	Coastal resources integrity impaired Physical loss		Other small scale activities	Waste generation (litter, waste treatment plants, effluents)	Degradation of coastal environments	Coastal resources integrity impaired	
6) Utilization of specific natural resources						Seabed mining	Extraction of seabed substrate	Habitats deterioration	Integrity of sea- floor impaired	1	Seabed mining	Extraction of seabed substrate	Habitats and deep- habitats deterioration	Integrity of sea- floor impaired	1
						Desalinization	Uptake of seawater /release of brine and brackish waters	Habitats deterioration	Integrity of sea- floor and water column impaired	1	Desalinization	Uptake of seawater /release of brine and brackish waters	Habitats deterioration	Integrity of sea- floor and water column impaired	1
7) Infrastructure, energy facilities, ports and maritime works	Transport (roads, highways	Atmospheric emissions (gases and particles, COx, NOx, VOCs, dust)	Degradation of air quality	Land/Soil use (irreversible loss)		Port/Harbour developments	Land/coastal changes	Degradation of coastal vegetation	Loss of coastal integrity (by erosion)						
ALL MIRITIFY		Soil contamination	Degradation of land	Ecological fragmentation of the territory			Waste generation (litter, waste port facilities, effluents)	Coastal fragmentation	Biodiversity (natural) impaired Ecological conectivity loss						

		Noise	Degradation of	Habitats loss			Risk of acute	Water column and	Natural resources						
			vegetation and				pollution	seabed habitats	loss Endemic						
			forestry				events/accidents	decline	species treathened						
							(hazardous	Biodiversity loss							
							substances nill								
		Hydrological	River diversions	Habitats			Inputs of nutrients	Loss of endemic	resources loss						
		alterations		deterioration			and organic	species/habitats							
							matter enrichment								
		Geomorphological	Land alteration	Loss of			Microbiological	Occurrence of	Degraded bathing						
		changes		biodiversity/			pollution	pathogens	water quality						
				Population				P=g=							
				(species)											
				decreases											
	Transport (railway)	Soil contamination	Degradation of	Land/Soil use		Port/Marinas	Land/coastal	Degradation of	Loss of coastal area						
			land	(irreversible loss)		developments	change (roads,	coastal vegetation	integrity (by						
	_						real-state		erosion)						
		Noise	Degradation of air				Waste generation	Coastal	Biodiversity						
			quality	fragmentation of			(litter, waste port	fragmentation	(natural) impaired						
				the territory			facilities, effluents)		Ecological	1	1				
		Hydrological	Degradation of	Habitats loss			Risk of acute	Water column and	conectivity loss Natural resources						
		changes	vegetation				pollution	seabed habitats	loss Endemic	1	1				
							events/accidents	decline	species treathened	1	1				
							(hazardous	Biodiversity loss		1	1				
							substances oil)								
		Geomorphologic	Fragmentation of				Inputs of nutrients	Loss of endemic	resources loss						
		alterations	territory	loss			and organic	species/habitats							
							matter enrichment								
	_			Albarrad arrangement			s element of the stand		manufact backing						
				Altered ecosystem			Microbiological	Occurrence of	Degraded bathing						
				functions			pollution	pathogens	water quality						
	Land	Land changes	Land loss	Ecological		Underwater cables	Wiring operations	Habitats decline	Loss of habitats and	0	Underwater cables	Wiring operations	Habitats decline	Loss of habitats	0
	artifisialization			fragmentation of		and pipelines	disturbance		species			disturbance		and species	
				the territory and											
				forestry loss											
	Water damming	Land changes,	Ecological flows	Coastal regresion		Oil and gas	Exploraiton	Water column	Loss of species,	2	Oil and gas	Exploration	Water column	Loss of species,	1
		downward flow	impaired	and habitats loss		exploration	disturbances	habitats decline	stranding of long-		exploration	disturbances	habitats decline	stranding of long-	
		interrupted					(airguns)		lived species			(aireuns)		lived species	
	River ports	Land changes,	Ecological flows	Coastal regresion							Islands, lagoon	Coastal changes,	Degradation of	Physical loss and	
		downward flow	impaired	and habitats loss							ports/marinas	downward flows	coastal	habitats loss	
8) Maritime		interrupted				Awaiting-	Introduction of	Water column	Healthy coastal		Awaiting areas (oil	interrupted Introduction of	environments Water column	Healthy coastal	
activities						anchoring areas	pollutants (oil	habitats decline	water and habitats		tankers, cargo	pollutants (oil	habitats decline	water and habitats	
						(oil tankers, cargo	hydrocarbons and		decline		transport,	hydrocarbons and		decline	
						transport,	related organic			1	hazardous	related organic			
						hazardous	compounds)			1	substances	compounds)			
						substances	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			1	vessels)	,			
						voccole)					,				
							Risk of accidents	Water quality	Coastal	1	1	Risk of accidents	Water quality	Coastal and	
							and spills	degradation	environment	1	1	and spills	degradation	marine	
									impacted	1	1			environment	
				 		Bunkering	Introduction of	Water column	Healthy coastal		Bunkering	Introduction of	Water column	impacted Healthy coastal	
						Dunkering	pollutants (oil	habitats decline	water and habitats	1	Dankeing	pollutants (oil	habitats decline	water and habitats	
				l .			hydrocarbons and	montats decime	decline	1	[hydrocarbons and	nobitats decime	decline	
							related organic				1	related organic			
				I			compounds)					compounds)			
							Risk of accidents	Water quality				Risk of accidents	Water quality		
							and spills	degradation				and spills	degradation		
						Offshore platforms		Water column	Healthy coastal	2	Offshore platforms		Water column	Healthy coastal	1
					I	(oil and gas	pollutants (oil	habitats decline	water and habitats		(oil and gas	pollutants (oil	habitats decline	water and habitats	
						explotation)	hydrocarbons and		decline		explotation)	hydrocarbons and		decline	
						explotation)	related organic		decline		explotation)	related organic		decline	
						explotation)			decline		explotation)			decline	

					Risk of accidents	Water quality	Healthy coastal			Risk of accidents	Water quality		
					and spills	degradation	water and habitats			and spills	degradation		
							decline						
				Shipping traffic	Introduction of	Water column	Healthy coastal	2	Shipping traffic	Introduction of	Water column	Healthy coastal	2
				(commercial.	pollutants and	habitats decline	water and habitats		(commercial,	pollutants and	habitats decline	water and habitats	
				ferries, military,	noise, litter		decline		ferries, military,	noise, litter		decline	
				cruise liners)	noise, neter		decime		cruise liners)	noise, neter		decime	
				THISP IMPTS!	Risk of accidents	Water quality	Healthy coastal		Cruise liners	Risk of accidents	Water quality	Healthy coastal	
					or acute spills	degradation	water and habitats					water and habitats	
					or acate spins	degradation	decline			or acute spins	acgradation	decline	
					Introduction of	Biodiversity and	Healthy coastal			Introduction of	Biodiversity and	Healthy coastal	
					NIS (ballastwater)	functions	water and habitats			NIS (ballastwater)	functions	water and habitats	
					INIS (Dallastwater)	alteration	decline			INIS (DallastWater)	alteration	decline	
				Dredging (natural	Extration of soil		Benthic species and	0	Dredging (natural	Extration of soil	Disturbance of sea-		0
				environments)	substrates	floor integrity	habitats			substrates		and habitats	
				environments)	Substrates		deterioration		environments)	substrates		deterioration	
						impaired	deterioration				impaired	deterioration	
				Offshore energy	Ocupation of	Surface and	Healthy coastal	0	Offshore energy	Ocupation of	Surface and	Healthy coastal	0
				(renewable)			water and habitats	0	(renewable)			water and habitats	٥
				(renewable)	coastal marine	pelagic			(renewable)				
					space	ecosystems	decline			space		decline	
				Solid waste	Asfixiation of	altered Habitats and	Healthy coastal	-	Solid waste	Asfixiation of	altered Habitats and	translation annual	,
								3	l			Healthy coastal	3
				disposal	benthic habitats	species loss	benthic habitats		disposal	benthic habitats	species loss	benthic habitats	
	 	 	 		Subsubstrate	Disturbance of sea-	decline	_		Subsubstrate	mineral and of any	decline	
				Storage of gases				0	Storage of gases		Disturbance of sea-		0
					storage (seismic	floor integrity	benthic habitats			storage (seismic		benthic habitats	
					risks)	impaired	decline			risks)	impaired	decline	
				_					_				
				Defence	Noise,	Coastal and	Healthy coastal	0	Defence	Noise,		Healthy coastal	0
				operations	contamiantion	marine	water and habitats		operations	contamiantion		water and habitats	
					and waste	environment	decline					decline	
					material	threatened				material	threatened		
				Disposal of	Dumping of	Disturbance of sea		3	Disposal of		Disturbance of sea-		3
				munition	munitions	floor integrity	benthic habitats		munition	munitions		benthic habitats	
					(including	impaired	decline			(including	impaired	decline	
					bacteriological)					bacteriological)			
		TOTAL	15				TOTAL	35				TOTAL	33
		INLAND					COASTAL					SEAWARD	
		IMAPCT					IMPACT					IMPACT	
		(Ecosystem					(Ecosystem					(Ecosystem	
		Services)					services)					services)	
												,	

Table V: Matrix of interactions between elements of the ICZM Protocol and Principal activities affecting marine litter generation, Eastern Mediterranean.

Overall of Pressure-Impact (Ecosystem Services) at the ICZM (%) 23,2

		LANDWAR	D - INLAND		IMPACT SCORE		COAST	AL AREA		IMPACT SCORE SEAWARD - LAGOONS - ISLANDS - OFFSHORE					IMPACT SCORE
Economic (Driver)		Pressure	State	Impact (Ecosystem))	% of total impact		Pressure	State	Impact (Ecosystem)	% of total impacts		Pressure	State	Impact (Ecosystem)	% of total impacts
	Activity type				13,1	Activity type				24,7	Activity type				28,3
1) Agriculture	Crops (any)	alterations	River diversions Land alteration	Habitats deterioration Loss of biodiversity/ Population (species) decreases	3	Crops (any) Crops (any)	Runoff/River (organochlorinate d and other chemicals) Runoff (river litter)	Coastal contamination/pol lution Costal litter occurrence (beach, surface and seabed)	Habitats deterioration seafood contamination Species threaten Natural resources affected Landscape visual impairment	3	Crops (effects seaward) Crops (effects seaward)	d and other chemicals)	Coastal and offshore contamination/pol lution Costal litter occurrence (surface, water column, seabed and deep-sea bed)	contamination Long-lived species threaten Natural resources affected Marine	3
	Land crops	Land use	Land degradation	Soil degradation (contaminated, inert)		Crops (any)	Seaward sediment flux alterations	Coastal erosion	Coastal surface decrease (beaches, dunes, etc.)		Crops (effects seaward)	Seaward sediment flux alterations	Subsidence, unsustained costaline	Loss of coastline	
	Wetland crops	Wetlands use	Wetlands degradation	Flooding vulnerability / Clean water provision		Deltaic crops	Delta use	Delta degradation (contaminated, inert)	Exploited resources affected		Crops (harvesting)	Coastal micro- and macro algae harvesting	Habitat alterations	Natural resources affected	
2) Industry (land- based sources)	Diverse Industruial Activities		Land occupation/ loss	Habitats deterioration	3	Diverse Industruial Activities	Industrial wastewater (treated and untreated)	Transitional and coastal water pollution	Chemical and emerging contamination of habitats and species (water column and	3	Diverse Industruial Activities	Diffuse contamination	Coastal and offshore contamination	Pelagic and benthic ecosytem deterioration Seafood contamination	3
		Landfills	Contaminated and littered land	Habitats loss			Litter increase	Riverine and coastal litter occurrence (surface, baech)	Species threaten Natural resources affected Coastal visual impairment			Litter pollution (spread)	Coastal and offshore contamination (surface, water column, seabed, deep-sea bed)	Long-lived species threaten Natural resources affected Marine ecosystems deterioration	
			Contaminated land and rivers	Soil and water pollution			Industrial effluents (ocasional inputs, acute events)	Transitional and coastal water pollution	Natural resources loss			Sea disposal sites (auhtorized dumping)	Sea-floor habitats affected (integrity impaired)		
3) Aquaculture	Nurseries, inland aquaculture	Land use	Land alteration	Habitats deterioration biodiversity impaired		Costal aquaculture (shellfish farming, Fish farming)	Water column ans seabed habitats impacted by substances	Eutrophication	Habitats deterioration biodiversity impaired	0	Coastal, offshore farming	Pelagic ecosystem impacted by substances	Eutrophication	Habitats deterioration biodiversity impaired	0
4) Fisheries		Port operations	Altered coastal area	Contamination/ Pollution (hotspot)	2	Fishing vessels (artisanal, trawling, etc.) Extraction of genetic resources	Pressures on fish stocks and benthic ecosystems Pressures on fish stocks and benthic ecosystems	Marine fisheries decline (over- fishing) Populations diversity impaired	Decrease on fish species of comercial importance Decrease on fisheries ecological function	0	Fishing vessels (medium power, trawling, etc.) Extraction of genetic resources	ecosystems Pressures on fish	Marine habitats decline Populations diversity impaired	Decrease on fish species of ecological importance Decrease on fisheries ecological function	0

5) Tourism, U	Urban	Waste generation	Degradation of	Soil, habitats and	3	Urban/Real-state	Waste generation	Degradation of	Soil, habitats and	3	Urban/Real-state	Waste generation	Degradation of	Soil, habitats and	
sporting, de	development	(litter, wastewater	land, air and water	coastal forestry		development	(litter, wastewater	land, air and water	coastal forestry loss		development (only	(litter, wastewater	land, air and water	coastal forestry	
recreational		treatment plants)	sources	loss Bathing water			treatment plants)	sources	Bathing water		lagoons, islands,	treatment plants)	sources	loss Bathing water	
activities		Urban effluents	Occurrence of	quality detriment			Urban effluents	Occurrence of	quality detriment		etc.)	Urban effluents	Occurrence of	quality detriment	
			pathogens	4			Microbiological	pathogens	4		-11.,	Microbiological	pathogens	quanty automatic	
		pollution	patriogens				pollution	patriogens				pollution	patriogens		
		political					political					ponution			
		Landfills	Contaminated and	Degradation of			Landfills	Contaminated and	Degradation of			Landfills	Contaminated and	Degradation of	
			littered land	natural resources				littered land	natural resources				littered land	natural resources	
									Landscape visual					Landscape visual	
									impairment					impairment	
		Land urban	Land degradation	Habitat loss			Coastal urban	Coastal	Land-sea interface			Coastal urban	Coastal	Land-sea interface	
		expansion		Biodiversity loss			expansion	degradation	habitat loss and			expansion	degradation	habitat loss and	
				Physical loss					biodiversity loss					biodiversity loss	
		Increased	Eutrophication	Habitats			Increased	Eutrophication	Habitats			Increased	Eutrophication	Habitats	
		nutrients		deterioration			nutrients		deterioration			nutrients		deterioration	
				biodiversity					biodiversity					biodiversity	
				impaired					impaired					imnaired	
						Scuba-diving	Pressures on	Sea-foor habitats	Alteration on		Scuba-diving	Pressures on	Sea-foor habitats	Alteration on	
						activities	habitats and	decline	habitats and		activities (only	habitats and	decline	habitats and	
							functions		species of		lagoons, islands,	functions		species of	
							maintenance		economical		etc.)	maintenance		economical	
							(extraction of fish		ecological			(extraction of fish		ecological	
							and shellfish)		importance			and shellfish)		importance	
						Fishing vessels	Pressures on fish	Water column	Decrease on fish		Fishing vessels	Pressures on fish	Water column	Decrease on fish	
						(recreational)	stocks	habitats (species)	species of		(recreational)	stocks	habitats (species)	species of	
								decline	ecological and				decline	ecological and	
									commercial					commercial	
						Tourism	Pressures on	Increased	Coastal areas	3	Tourism	Pressures on	Increased	Coastal areas	7
						frequentation	coastline	pollution	degradation	-	frequentation	coastline	pollution	degradation	
						requentation	(beaches, natural	polition	Habitats alteration		(only lagoons,	(beaches, natural	poliution	Habitats alteration	
									Physical loss		islands, etc.)	areas, etc.)		nabitats afteration	
							areas, etc.)		PHYSICAL IOSS		isiands, etc.)	areas, etc.)			
						Yatching	Coastal areas	Increased	Coastal areas	3	Yatching	Coastal areas	Increased	Coastal areas	3
							navigation,	pollution	degradation		Ĭ	navigation,	pollution	degradation	
							contamiantion,	(biological,	Habitats alteration			contamiantion,	(biological,	Habitats alteration	
							noise	chemical litter)				noise	chemical litter)		
T/	Tourism facilities	Land changes	Land alteration	Loss of		Tourism facilities	Coastal changes	Land alteration	Loss of biodiversity/		Tourism facilities	Coastal changes	Land alteration	Loss of	
				biodiversity/					Population		(only lagoons,			biodiversity/	
				Population					(species) decreases		islands, etc.)			Population	
				(species)										(species)	
				decreases										decreases	
			Degradation of	Coastal resources		Other small scale	Waste generation	Degradation of	Coastal resources		Other small scale	Waste generation	Degradation of	Coastal resources	
ar	activities	(litter, waste	coastal	integrity impaired		activities	(litter, waste	coastal	integrity impaired		activities	(litter, waste	coastal	integrity impaired	
			environments				treatment plants,	environments	Physical loss			treatment plants,	environments		
et corre		effluents)					effluents)					effluents)			_
6) Utilization of						Seabed mining	Extraction of	Habitats	Integrity of sea-	2	Seabed mining	Extraction of	Habitats and deep-		2
specific natural							seabed substrate	deterioration	floor impaired			seabed substrate	habitats	floor impaired	
resources						Decalinization	Hataka of	Unhitesta	Intervity of sea		Deceliaination	Hataka of	deterioration Habitats	Interests of con	,
						Desalinization	Uptake of	Habitats	Integrity of sea-	4	Desalinization	Uptake of	deterioration	Integrity of sea-	2
							seawater /release	deterioration	floor and water			seawater /release	deterioration	floor and water	
							of brine and brackish waters		column impaired			of brine and brackish waters		column impaired	
							brackish waters					brackish waters			
7) Infrastructure, Tr	Transport (roads,	Atmospheric	Degradation of air	Land/Soil use		Port/Harbour	Land/coastal	Degradation of	Loss of coastal						
	highways	emissions (gases	quality	(irreversible loss)		developments	changes	_	integrity (by						
ports and		and particles, COx,	,,	,					erosion)						
F		NOx, VOCs, dust)													
		, vocs, dust)													
maritime works															
maritime works		Soil contamination	Degradation of	Ecological			Waste generation	Coastal	Biodiversity						
maritime works		Soil contamination	Degradation of land	Ecological fragmentation of			Waste generation (litter, waste port	Coastal fragmentation	Biodiversity (natural) impaired						
maritime works		Soil contamination	land	_											

		Noise	Degradation of	Habitats loss		Risk of acute	Water column and							
			vegetation and			pollution	seabed habitats	loss Endemic						
			forestry			events/accidents	decline	species treathened						
						(hazardous	Biodiversity loss							
	_	Hydrological	River diversions	Habitats		Inputs of nutrients	Loss of endemic	resources loss						
		alterations	kiver diversions	deterioration		and organic	species/habitats	resources ioss						
		arterations		deterioration		matter enrichment	species/ilabitats							
						matter emitimient								
		Geomorphological	Land alteration	Loss of		Microbiological	Occurrence of	Degraded bathing						
		changes		biodiversity/		pollution	pathogens	water quality						
		_		Population										
				(species)										
				decreases										
	Transport (railway)	Soil contamination		Land/Soil use	Port/Marinas	Land/coastal	Degradation of	Loss of coastal area						
			land	(irreversible loss)	developments	change (roads,	coastal vegetation	integrity (by						
		Noise	Degradation of air	Ecological		real-state Waste generation	Coastal	erosion) Biodiversity						
			quality	fragmentation of		(litter, waste port	fragmentation	(natural) impaired						
			quanty	the territory		facilities, effluents)	iraginentation	Ecological						
				the territory		racinties, emuents)		conectivity loss	I					
		Hydrological	Degradation of	Habitats loss		Risk of acute	Water column and	Natural resources						
			vegetation			pollution	seabed habitats	loss Endemic	I					
		-	_			events/accidents	decline	species treathened						
						(hazardous	Biodiversity loss		I					
						substances oil)								
			Fragmentation of	Natural resources		Inputs of nutrients		resources loss						
		alterations	territory	loss		and organic	species/habitats							
						matter enrichment								
				Altered ecosystem		* * in a bit of a size !	Occurrence of	December of the string						
						Microbiological		Degraded bathing						
				functions		pollution	pathogens	water quality						
	Land	Land changes	Land loss	Ecological	Underwater cables	Wiring operations	Habitats decline	Loss of habitats and	1	Underwater cables	Wiring operations	Habitats decline	Loss of habitats	1
	artifisialization			fragmentation of	and pipelines	disturbance		species			disturbance		and species	_
				the territory and				,					,	
				forestry loss										
	Water damming	Land changes,	Ecological flows	Coastal regresion	Oil and gas	Exploraiton	Water column	Loss of species,	2	Oil and gas	Exploration	Water column	Loss of species,	2
		downward flow	impaired	and habitats loss	exploration	disturbances	habitats decline	stranding of long-		exploration	disturbances	habitats decline	stranding of long-	
		interrupted				(aireuns)		lived species			(aireuns)		lived species	
	River ports		Ecological flows	Coastal regresion						Islands, lagoon	Coastal changes,	Degradation of	Physical loss and	
		downward flow	impaired	and habitats loss						ports/marinas	downward flows	coastal	habitats loss	
-1		interrupted									interrupted	environments		
8) Maritime					Awaiting-	Introduction of	Water column	Healthy coastal		Awaiting areas (oil	Introduction of	Water column	Healthy coastal	
activities					anchoring areas	pollutants (oil	habitats decline	water and habitats	I	tankers, cargo	pollutants (oil	habitats decline	water and habitats	
					(oil tankers, cargo	hydrocarbons and		decline	I	transport,	hydrocarbons and		decline	
					transport,	related organic			I	hazardous	related organic			
			l .		hazardous	compounds)			I	substances	compounds)			
					substances				I	vessels)				
					- AIF	Risk of accidents	Water quality	Coastal			Risk of accidents	Water quality	Coastal and	
						and spills	degradation	environment	I		and spills	degradation	marine	
								impacted	I				environment	
													impacted	
					Bunkering	Introduction of	Water column	Healthy coastal		Bunkering	Introduction of	Water column	Healthy coastal	
						pollutants (oil	habitats decline	water and habitats	I		pollutants (oil	habitats decline	water and habitats	
						hydrocarbons and		decline	I		hydrocarbons and		decline	
						related organic			I		related organic			
						compounds)			I		compounds)			
						Risk of accidents	uraaa aualia.		-		Risk of accidents	Marana avalitus		
							Water quality		I			Water quality		
					Offshore platforms	and spills Introduction of	degradation Water column	Healthy coastal	,	Offshore platforms	and spills Introduction of	degradation Water column	Healthy coastal	,
					(oil and gas	pollutants (oil	habitats decline	water and habitats	2	(oil and gas	pollutants (oil	habitats decline	water and habitats	-
					explotation)	hydrocarbons and	mauriais decime	decline		explotation)	hydrocarbons and	mapitals decime	decline	
					explotation	related organic		uecine		explotations	related organic		decime	
						compounds)					compounds)			
						compounds)					compounds)			
	-									•				

					Risk of accidents	Water quality	Healthy coastal				Water quality		
					and spills	degradation	water and habitats			and spills	degradation		
							decline						
				Shipping traffic	Introduction of	Water column	Healthy coastal	2	Shipping traffic	Introduction of	Water column	Healthy coastal	2
				(commercial,	pollutants and	habitats decline	water and habitats		(commercial,	•	habitats decline	water and habitats	
				ferries, military,	noise, litter		decline		ferries, military,	noise, litter		decline	
				cruise liners)					cruise liners)				
					Risk of accidents	Water quality	Healthy coastal				Water quality	Healthy coastal	
					or acute spills	degradation	water and habitats			or acute spills	degradation	water and habitats	
						#1 - 45	decline			to to a distribution of	-111111	decline	
					Introduction of	Biodiversity and	Healthy coastal					Healthy coastal	
					NIS (ballastwater)	functions	water and habitats			NIS (ballastwater)	functions	water and habitats	
				Dredging (natural	Extration of soil	alteration	decline Benthic species and	2	Dredging (natural	Extration of soil	alteration Disturbance of sea-	decline Ronthic coories	2
				3			habitats	2				and habitats	-
				environments)	substrates	floor integrity impaired	deterioration		environments)		floor integrity impaired	deterioration	
						impaired	deterioration				impaired	deterioration	
				Offshore energy	Ocupation of	Surface and	Healthy coastal	0	Offshore energy	Ocupation of	Surface and	Healthy coastal	0
				(renewable)	coastal marine	pelagic	water and habitats		(renewable)		pelagic	water and habitats	
				(renewabie)	space	ecosystems	decline		(renewabie)			decline	
					space	altered	decime			Space	altered	decime	
				Solid waste	Asfixiation of	Habitats and	Healthy coastal	3	Solid waste	Asfixiation of	Habitats and	Healthy coastal	3
				disposal	benthic habitats	species loss	benthic habitats		disposal	benthic habitats	species loss	benthic habitats	
							decline					decline	
				Storage of gases	Subsubstrate	Disturbance of sea-	Healthy coastal	0	Storage of gases	Subsubstrate	Disturbance of sea-	Healthy coastal	0
					storage (seismic	floor integrity	benthic habitats			storage (seismic	floor integrity	benthic habitats	
					risks)	impaired	decline			risks)	impaired	decline	
				Defence	Noise,	Coastal and	Healthy coastal	1	Defence			Healthy coastal	1
				operations	contamiantion	marine	water and habitats		operations		marine	water and habitats	
					and waste	environment	decline					decline	
					material	threatened			=:	material	threatened	treath and the	
				Disposal of	Dumping of	Disturbance of sea	Healthy coastal	3	Disposal of		Disturbance of sea-		5
				munition	munitions	floor integrity	benthic habitats		munition		floor integrity	benthic habitats	
					(including	impaired	decline				impaired	decline	
		TOTAL	4.4		bacteriological)		TOTAL	27		bacteriological)		TOTAL	24
		TOTAL	11				TOTAL	37					34
		INLAND					COASTAL					SEAWARD	
		IMAPCT					IMPACT					IMPACT	
		(Ecosystem					(Ecosystem					(Ecosystem	
		Services)					services)					services)	