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Réunion du groupe de correspondance de l'approche écosystémique sur la surveillance des déchets marins

Vidéoconférence, 30 mars 2021

Point 6 de l'ordre du jour : Additif à la liste des déchets marins des plages du MED POL et à leurs modèles de données et dictionnaires de données visant à inclure deux nouveaux éléments liés à la COVID-19

Examen de la corrélation entre les impacts des pressions exercées par les déchets marins et l'état des composantes de l'écosystème marin

PNUE/PAM
Athènes, 2021

Note du Secrétariat

Lors de leur 19e réunion ordinaire (19e Conférence des parties (COP 19), Athènes, Grèce, 9-12 février 2016), les parties contractantes à la Convention pour la protection du milieu marin et du littoral de la Méditerranée (Convention de Barcelone) ont adopté un nouveau Programme de surveillance et d'évaluation intégrées (IMAP) ambitieux ainsi que les critères d'évaluation correspondants.

Lors de la Réunion régionale sur la mise en œuvre de l'IMAP : meilleures pratiques, lacunes et difficultés communes (Réunion sur les meilleures pratiques de l'IMAP, Rome, Italie, 10-12 juillet 2018) le travail entrepris par le Secrétariat et les composantes du Plan d'action pour la Méditerranée (PAM) visant à soutenir la mise en œuvre de l'IMAP aux niveaux régional, sous-régional et national a été salué, y compris plusieurs questions transversales, comme le prévoit le document UNEP/MED WG.450/3. En outre, le Secrétariat a été invité lors de cette Réunion à présenter les points suivants pour examen et discussions approfondies lors des prochaines réunions des Groupes de correspondance de l'approche écosystémique sur la surveillance (CORMON) :

- Les liens entre les activités/pressions/impacts et la clarification de la définition des impacts en prenant acte du fait que celle-ci devrait essentiellement porter sur les aspects de la biodiversité ;
- La mise à jour des tableaux 1, 2 et 3 du document UNEP/MED WG.450/3, sur la base des commentaires et des contributions reçues pendant la réunion, pour un examen plus approfondi par les CORMON ;
- La clarification des définitions des règles d'intégration et d'agrégation en choisissant d'accorder, à ce stade, la priorité aux travaux de mise en œuvre de l'IMAP sur l'agrégation géographique et l'échelle d'évaluation plutôt que sur l'intégration.

Au cours de la 21e réunion ordinaire (COP21, Naples, Italie, 2-5 décembre 2019), les Parties contractantes ont approuvé dans la décision IG.24/4 la feuille de route et l'évaluation des besoins du Rapport sur l'état de la qualité de la Méditerranée (QSR MED) de 2023, telles qu'elles figurent à l'annexe V de cette décision, et ont demandé au Secrétariat de définir plus précisément en 2020-2021 les exigences concrètes et les délais de livraison des résultats au niveau des indicateurs communs pour chaque Partie contractante, en concertation avec les Parties contractantes et les CORMON, afin de garantir une collecte efficace des données et de combler les lacunes en matière de connaissances et de permettre ainsi à l'ensemble du système du PAM de livrer avec succès le QSR MED de 2023.

Dans ce contexte, le PNUE/PAM et son Programme coordonné de surveillance continue et de recherche en matière de pollution dans la Méditerranée (MED POL) ont en outre expliqué en détails dans le présent document la relation entre les pressions et les impacts des déchets marins et l'état des composantes de l'écosystème marin, qui est présentée au Groupe de correspondance de l'approche écosystémique sur la surveillance des déchets marins (CORMON sur les déchets marins) pour l'inviter à bien vouloir l'examiner.

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Liste des abréviations / acronymes

AD	Adriatique
BV	Valeur de référence
CI	Indicateur Commun
CM	Méditérannée Centrale
DPSIR	Moteurs, pressions, état, impact et modèle de réponse
EM	Méditerranée orientale
EO	Objectif Ecologique
GES	Bon état environnemental
ICZM	Gestion intégrée des zones côtières
IMAP	Programme intégré de surveillance et d'évaluation
MAP	Plan d'action pour la Méditerranée
MED POL	Programme d'évaluation et de contrôle de la pollution en Méditerranée
NEAT	Outil d'évaluation de l'état environnemental imbriqué
TV	Valeur seuil
UN	Nations Unies
WM	Méditerranée occidentale

1. Introduction

1. L'évaluation de tous les objectifs écologiques (OE) de l'IMAP et leur prise en compte en tant qu'unités fonctionnelles de l'écosystème marin dans son entité devraient permettre de définir le bon état écologique et d'évaluer la progression vers cet état.

2. Pour progresser vers une évaluation intégrée du bon état écologique, il convient de poursuivre les travaux sur un certain nombre de questions, notamment (i) l'harmonisation des méthodes de surveillance et d'évaluation ; (ii) la définition des liens entre les échelles d'évaluation, les pressions et les impacts cumulés sur les composantes des écosystèmes ; (iii) l'amélioration des longues séries chronologiques de données de qualité garantie visant à suivre les tendances ; (iv) l'amélioration de la gestion et de l'accessibilité des données par l'intermédiaire du système d'information du PAM pour tous les indicateurs communs (IC) de l'IMAP.

3. Le présent document expose ces éléments pour l'OE10 de l'IMAP - Déchets marins et ses indicateurs communs respectifs 22 et 23 sur la base des contributions d'experts reçues de plusieurs Parties contractantes.

2. Relations entre pressions, impacts et état du milieu marin et côtier dans la Méditerranée

4. Il existe plusieurs approches utiles pour l'évaluation intégrée qui examinent les principales pressions d'origine humaine et leurs effets sur le milieu marin et côtier afin d'évaluer l'état du milieu marin (c'est-à-dire des évaluations basées sur la méthode DPSIR - moteurs, pression, état, effets, réponse). Ces approches permettent ensuite de créer et de mettre au point des réponses stratégiques (par exemple, des mesures et des actions prioritaires) visant à s'attaquer aux principaux facteurs (par exemple, des secteurs et activités économiques) à l'origine de la dégradation de l'écosystème marin et de ses services écosystémiques.

5. Les sous-sections suivantes expliquent certaines des évaluations intégrées du bon état écologique les plus couramment utilisées, basées sur l'approche DPSIR, qui ont été reconnues et approuvées[1] en principe :

- Approche GRID/tableaux : elle vise à comparer toutes les activités anthropiques qui contribuent nettement aux pressions liées aux indicateurs communs respectifs de l'IMAP utilisés pour la surveillance et l'évaluation. L'avis des experts peut mieux définir/affiner les interactions spécifiques, pour les activités contribuant aux pressions au niveau de l'indicateur commun en considérant les sous-régions, ou, si cela est pertinent et approprié, les subdivisions ou les unités géographiques plus petites (en utilisant selon le cas l'approche emboîtée).
- Méthode des tableaux : elle vise à quantifier les relations entre pressions et impacts selon une approche fondée sur les risques, particulièrement efficace pour les objectifs écologiques qui sont spatialement inégaux et où les pressions pertinentes sont localement spécifiques Cette méthode est semblable à l'approche GRILLE/Tableaux, cependant, elle utilise des résultats numériques (désignation d'une valeur numérique par catégories) plutôt que seulement des couleurs, qui permettent d'estimer/de calculer des informations quantitatives.

[1] Révisées et approuvées lors des réunions du CorMon sur la surveillance de la pollution de 2019 (Podgorica, Monténégro), les points focaux MED POL (Istanbul, Turquie), et la 7e réunion du Groupe de coordination de l'approche écosystémique (Athènes, Grèce).

- Approche NEAT : L'Outil d'évaluation imbriquée de l'état environnemental (NEAT)[2] est un outil innovant développé spécifiquement pour évaluer l'environnement marin. Il utilise une combinaison d'intégration de haut niveau d'habitats et d'unités spatiales, permettant ainsi de spécifier les niveaux structurels et spatiaux applicables à toute échelle géographique.

6. En ce qui concerne les déchets marins (OE10 de l'IMAP), il est nécessaire d'assurer une meilleure intégration et relation des pressions, impacts et éléments de l'état dans l'évaluation et la réalisation du bon état écologique (BEE). Ce point est particulièrement important lorsqu'il s'agit des indicateurs communs propres à l'OE10 de l'IMAP (IC22 et IC23).

7. En vue d'appliquer la relation entre les pressions et les impacts des déchets marins avec l'état des composantes de l'écosystème, en utilisant les matrices de corrélation convenues par les Parties contractantes (tableaux 1 et 2), le présent document met en évidence les contributions reçues par cinq Parties contractantes à la Convention de Barcelone (Bosnie-Herzégovine, Espagne, Grèce, Israël, Italie).

8. Deux approches différentes ont été utilisées pour intégrer les pressions prédominantes des déchets marins et leurs impacts sur le milieu marin et côtier : l'approche GRID/Tableaux et la méthode des Tableaux, qui sont décrites ci-dessous.

3. Approche GRID/Tableaux

9. Les pressions exercées sur les déchets marins peuvent être prises en compte de deux manières : (i) à la source, c'est-à-dire en s'axant sur les activités primaires et principales qui génèrent des pressions ; cet aspect est adapté à la mise en place d'objectifs environnementaux et à la définition de mesures visant à réduire les pressions afin d'atteindre ou de maintenir le BEE ; (ii) en mer, c'est-à-dire le niveau de pression dans l'environnement marin auquel sont soumis les différents éléments de l'écosystème ; cet aspect est particulièrement adapté à la détermination du BEE pour les indicateurs communs de l'IMAP axés sur la pression, mais également pour ceux axés sur l'état.

10. À cet égard, les contributions relatives à la matrice de tableaux GRID mettant en relation les pressions et les impacts avec l'état des composantes de l'écosystème marin reçues des cinq Parties contractantes ont été compilées et intégrées dans une seule matrice en fonction de la sous-région à laquelle elles appartiennent, et l'indicateur commun respectif a été évalué en fonction de la pression ayant le plus grand impact (tableaux 1 et 2) pour chaque critère (IC22 et IC23) dans chaque sous-région.

11. L'intensité des pressions naturelles et anthropiques a été évaluée selon le code couleur suivant, regroupé par sous-régions, et classée selon le pire résultat obtenu :

3	Contribution significative de l'activité à la pression
2	Contribution mineure de l'activité à la pression
1	Pas d'activité mais développement possible de l'activité
0	Aucune contribution à la pression

12. Les tableaux 1 et 2 fournissent une représentation tabulaire des relations entre les pressions et les impacts et des indicateurs communs 22 et 23, respectivement, de l'OE10 de l'IMAP. Le tableau présenté permet de comparer toutes les activités anthropiques qui

[2]. Overview of integrative assessment of marine systems: the ecosystem approach in practice. (Aperçu de l'évaluation intégrée des systèmes marins : l'approche écosystémique en pratique). Front.Mar.Sci

contribuent de manière significative aux pressions avec les indicateurs communs utilisés pour la surveillance et l'évaluation de l'OE10 de l'IMAP sur les déchets marins. L'avis des experts, y compris les contributions reçues de six Parties contractantes, permet d'affiner davantage les interactions spécifiques, pour les activités contribuant aux pressions au niveau de l'indicateur commun en considérant les sous-régions, ou, si cela est pertinent et approprié, les subdivisions ou les unités géographiques plus petites (en utilisant selon le cas l'approche emboîtée). Il est certain que d'autres avis d'experts sont nécessaires pour une représentation régionale plus précise, mais les tableaux 1 et 2 comportent déjà une analyse très utile qui pourrait faciliter la mise en place du cadre des mesures à prendre.

3.1 Analyse des pressions pour l'indicateur commun 22 (IC22) de l'IMAP :

13. Sur la base des informations reçues, la pression la plus forte évaluée parmi toutes les sous-régions est générée par le secteur du tourisme, suivi par d'autres secteurs, tels que l'urbanisation côtière, la gestion des déchets solides et les pratiques agricoles et forestières (tableau 1).

14. Les installations liées aux énergies renouvelables sont celles qui exercent le moins de pression la moins, suivies par l'extraction des ressources génétiques, la recherche et les activités, les opérations de défense, et l'installation de câbles et de canalisations.

15. Il y a quelques différences entre les sous-régions : en Méditerranée occidentale, le tourisme ressort comme la pression la plus importante dans toutes ses sous-zones. Toutefois, dans la Mer Adriatique, la construction côtière, l'aquaculture et la gestion des déchets solides s'avèrent également exercer d'importantes pressions.

16. En ce qui concerne la Méditerranée centrale et orientale, les pressions les plus importantes coïncident : à savoir les activités agricoles et forestières, les croisières, l'urbanisation côtière, la pêche (y compris la pêche de loisirs) et la gestion des déchets solides.

17. En général, les variations entre les sous-régions sont faibles, bien qu'elles se traduisent par les mêmes grandes pressions dans toutes les régions.

3.2 Analyse des pressions pour l'indicateur commun 23 (IC23) de l'IMAP :

18. Dans toutes les sous-régions, la pression al plus importante est générée par le secteur de la pêche, suivi par l'aquaculture (tableau 2).

19. Les installations liées aux énergies renouvelables, l'extraction d'énergie, la recherche et la formation, ainsi que l'extraction de ressources génétiques sont celles qui exercent le moins de pression.

20. Toutefois, il existe certaines différences entre les sous-régions. En Méditerranée occidentale, le tourisme, l'évacuation d'eaux usées et la pêche sont les secteurs qui exercent la plus forte pression, tandis qu'en Mer Adriatique, la pêche et l'aquaculture sont des secteurs qui exercent d'importantes pressions.

Tableau1 : Relation entre les pressions naturelles et anthropiques (choisies sur la base des principales activités en termes de pressions telles que prévues par le Protocole relatif à la gestion intégrée des zones côtières de la Méditerranée (Protocole GISC) et les autres protocoles de la convention de Barcelone) affectant les écosystèmes marins et la mesure de l'indicateur commun 22 de l'IMAP.

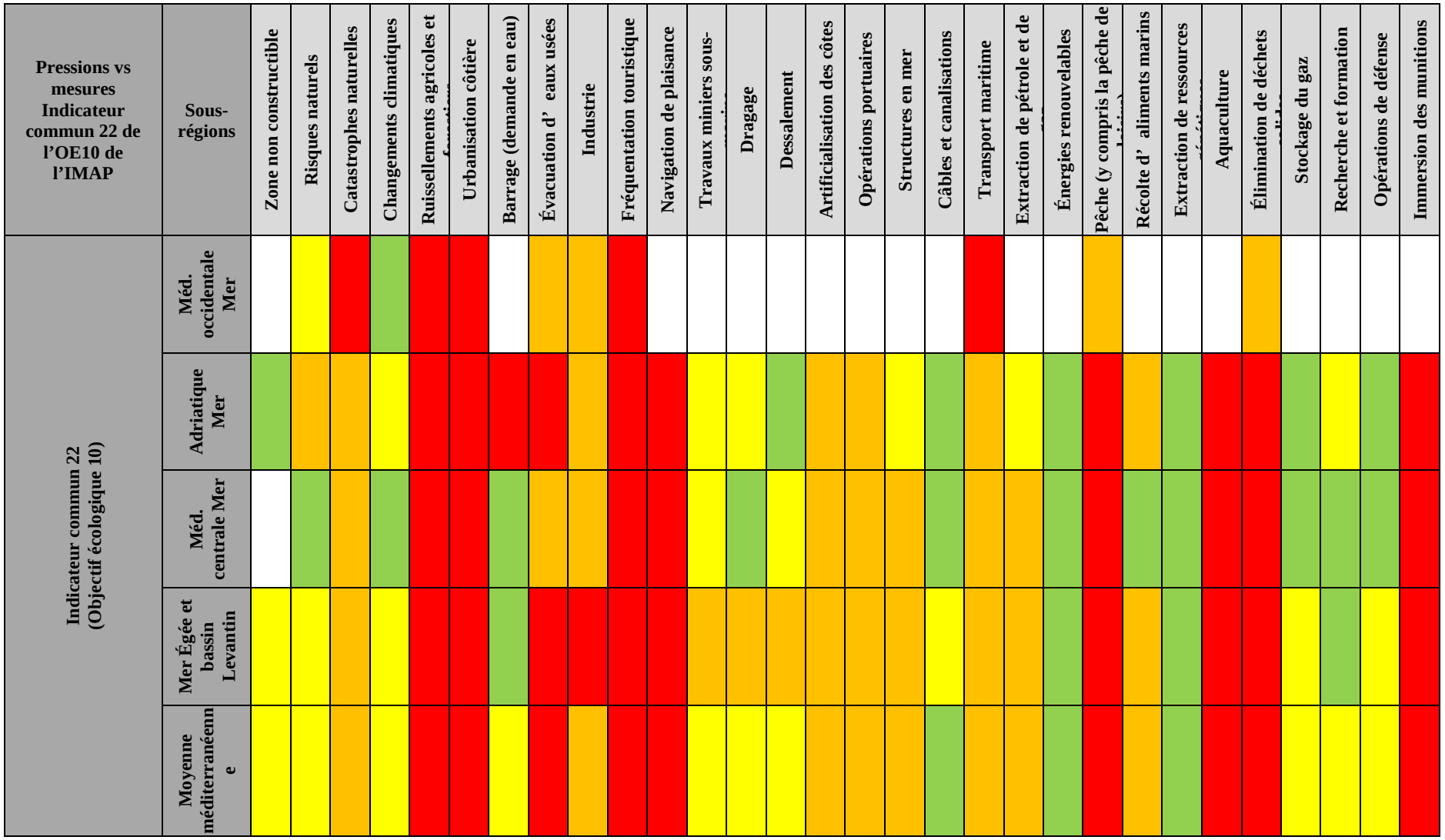

Tableau 2: Interrelation of natural and anthropogenic pressures (selected based on the main activities in terms of pressures as provided by ICZM Protocol and other Barcelona Convention`s Protocols) affecting the marine ecosystems and the measurement IMAP Common Indicator 23.

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
Common Indicator 23 (Ecological Objective 10)	Western Med. Sea																														
	Adriatic Sea																														
	Central Med. Sea																														
	Aegean and Levantine Sea																														
	Mediterranean																														

21. En ce qui concerne la Méditerranée centrale et orientale, les pressions les plus importantes coïncident : à savoir les activités agricoles et forestières, les croisières, l'urbanisation côtière, la pêche (y compris la pêche de loisirs) et la gestion des déchets solides. Il en va de même pour l'IC22 de l'IMAP où les mêmes types de pression sont mis en évidence comme étant importants.

22. En général, les pressions fondamentales et principales des IC22 et IC23 de l'OE10 de l'IMAP ne sont pas les mêmes. Le tourisme et la construction côtière sont les plus importantes pour l'IC22 de l'OE10 de l'IMAP, tandis que la pêche et l'aquaculture sont celles qui affectent fondamentalement l'IC23 de l'OE10 de l'IMAP.

23. Les résultats pour les deux indicateurs intégrant la contribution la plus significative des secteurs/activités correspondants à la pression pour les quatre sous-régions méditerranéennes (couleur rouge ; tableaux 1 et 2) nous révèlent des informations sur ceux qui contribuent le plus à la création d'impacts des déchets marins dans le bassin méditerranéen (tableau 3).

Tableau 3 : La contribution la plus significative des secteurs/activités correspondants aux pressions issues des déchets marins exercées sur l'écosystème marin dans les quatre sous-régions méditerranéennes

	IC22	IC23
Ruissellements agricoles et forestiers	✓	✓
Urbanisation côtière	✓	✓
Évacuation d'eaux usées	✓	✓
Fréquentation touristique	✓	✓
Navigation de plaisance	✓	✓
Pêche	✓	✓
Aquiculture	✓	✓
Élimination de déchets solides	✓	✓
Immersion des munitions	✓	✓

24. Après l'analyse des relations entre l'OE10 de l'IMAP - Déchets marins et ses indicateurs communs 22 et 23 respectifs avec les pressions naturelles et anthropiques correspondantes, en appliquant l'approche GRID, comme présenté ci-dessus dans les tableaux 1 et 2, une méthode des tableaux a été appliquée afin de quantifier l'ampleur initiale des impacts des pressions dont la contribution est la plus importante sur les composantes de l'écosystème.

25. L'approche appliquée est présentée à l'annexe I qui est basée sur un outil Excel utilisé pour une évaluation axée sur l'expertise à la fois des catégories de pressions et des résultats d'impact. Elle permet d'estimer (en %) combien de catégories de pressions sont susceptibles de menacer l'écosystème marin en ce qui concerne les déchets marins. Les experts qui ont participé à cette évaluation fournissent une appréciation pour chaque type de pression en attribuant une note de 0 ou 1 : 1 indiquant la présence du risque potentiel et 0 son absence. La note finale est ensuite exprimée en pourcentage, en divisant la somme de toutes les notes par le nombre de pressions notées (types d'activités).

26. Le même outil Excel permet d'estimer l'ampleur des impacts (en %) en adaptant son objectif conceptuel. Ainsi, pour chaque catégorie de pressions, les experts impliqués dans l'évaluation sont invités à exprimer une note de 0 à 3 : 0 indiquant l'absence de l'impact, tandis

que 1, 2 et 3 indiquent respectivement la présence d'un impact d'ampleur faible, modérée et élevée. De même, pour l'analyse relative à l'occurrence de menaces potentielles, la note finale est exprimée en pourcentage et est obtenue en divisant la somme de toutes les notes par la note théorique maximale (égale au nombre d'éléments notés, c'est-à-dire la catégorie de pressions multipliée par 3).

27. En ce qui concerne la première approximation des impacts des déchets marins sur le milieu marin et côtier, une synthèse des résultats obtenus pour les indicateurs communs 22 et 23 de l'OE10 de l'IMAP - Déchets marins (annexe, tableau II, III, IV et V)est présentée dans le tableau 4 ci-dessous.

28. L'estimation quantitative des impacts globaux des pressions liées à l'IC22 de l'IMAP (tableau 1) a été fournie pour les zones intérieures et côtières, tandis que la quantification des impacts des pressions correspondants à l'IC23 de l'IMAP (tableau 2) a été fournie pour les zones en mer (annexe, tableau I).

29. La valeur du % de l'impact total sur la Méditerranée est considérée comme la situation moyenne actuelle (tableau 4), les valeurs les plus élevées pour chaque sous-région peuvent être considérées comme élevées (rouge ; figures 1 et 2) et les valeurs les plus faibles comme modérées (orange ; figures 1 et 2)

Tableau4 : Résultats de la méthode des tableaux

	Total Pression-Impact (%)	**Eaux intérieures % de l'impact total**	**Zone côtière % de l'impact total**	**En mer % de l'impact total**
WM	16	6	17	23
AD	32	24	30	41
CM	23	18	23	28
EM	23	13	25	28
Mer Méditerranée	22	12	24	27

30. En conséquence, on peut conclure que 22 % des catégories de pressions enregistrées en Méditerranée par rapport à la liste des principales activités en termes de pressions prévue par le Protocole GISC et les autres protocoles de la Convention de Barcelone, contribuent à la création d'impacts issus des déchets marins sur les composantes de l'écosystème. Les 24 % et 27 % de toutes les catégories de pressions liées aux déchets marins ont des impacts sur les écosystèmes dans les zones côtières et en mer respectivement (tableau 4). Ces informations permettent de conclure que 24 % et 27 %, respectivement, de toutes les catégories de pressions liées aux déchets marins ont un impact sur, respectivement, les écosystèmes des zones côtières et en mer. En outre, 12 % de toutes les catégories de pressions liées aux déchets marins ont des impacts sur les écosystèmes des zones intérieures.

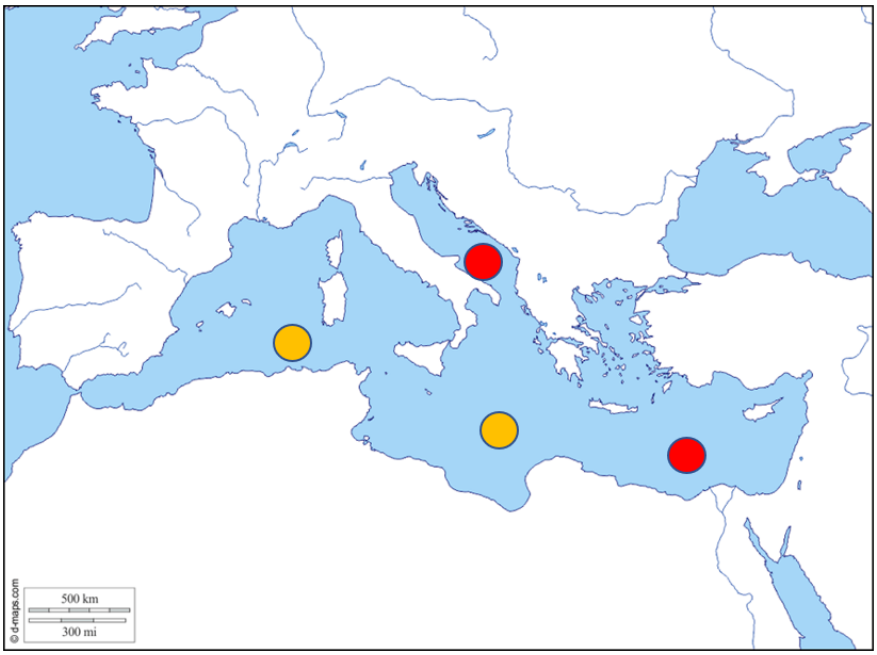

Figure 1 : Résultats des pressions/impacts totaux dans les zones côtières de la Méditerranée (Rouge :> 24 % ; Orange < 24 %)

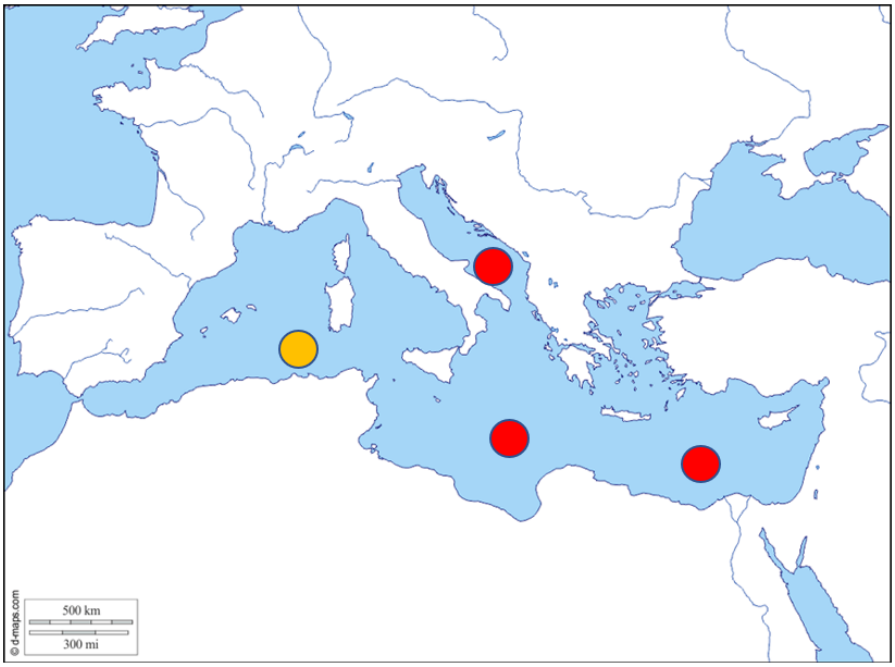

Figure 2 : Résultats des pressions/impacts totaux dans les zones en mer de la Méditerranée (Rouge :> 27 % ; Orange < 27 %)

4. Exemple d'approche quantitative pour les déchets marins des plages (IC22 de l'IMAP)

31. Pour l'évaluation quantitative du bon état écologique en tenant des impacts des pressions liées à l'indicateur commun IC22 (macro-déchets de plage) de l'OE10 de l'IMAP, il est possible d'appliquer les étapes suivantes.

32. Sur la base de l'analyse statistique des données fournies par plusieurs pays méditerranéens (UNEP/MAP WG.482/24), l'approche quantitative de l'indicateur commun 22 de l'IMAP (IC22 - déchets marins de plage) est présentée ci-dessous.

- Valeur de référence de la Méditerranée : 329 éléments/100 m
- Valeur seuil de la Méditerranée :
  - Q10 = 59 éléments/100 m
  - Q20 = 106 éléments/100 m

33. À cet égard, on pourrait établir une valeur de référence propre à la sous-région respective, et ainsi comparer la valeur seuil méditerranéenne (Q10-Q20) et la valeur de référence en établissant trois gammes de couleurs différentes ; par exemple :

  - Valeur de référence sous-régionale < valeur seuil : Vert
  - valeur seuil < valeur de référence sous-régionale < valeur de référence méditerranéenne : Orange
  - valeur de référence sous-régionale > valeur de référence méditerranéenne : Rouge

34. Selon les résultats obtenus lors des premiers essais de l'approche décrite, il sera possible d'évaluer s'il existe un lien entre les sous-régions (WM, CM, AD, EM) et l'un parmi le 1er, le 5^{e}, le 10^{e} ou un autre centile (Q01, Q05 et Q10, etc.). Cette approche doit être testée de manière plus approfondie afin de confirmer sa fiabilité.

35. Afin d'atteindre le bon état écologique, il convient notamment de concentrer les efforts sur les activités qui créent le plus de déchets marins (tableau 3). Ces mesures permettront ainsi de diminuer la quantité totale de déchets marins de plage trouvés dans les enquêtes. Si la mise en œuvre de ces mesures est correctement effectuée, alors les différentes sous-régions (WM, CM, AD, EM) devraient pouvoir atteindre un état de gamme de couleurs moyenne, grâce à une diminution des effets et des impacts sur le milieu marin et côtier.

5. Conclusions

36. En vue d'atteindre le bon état écologique, il convient d'axer les mesures prises sur la réduction de l'impact des trois activités spécifiques définies comme les plus importantes en matière de production de déchets marins (tableau 3). Ces mesures permettront ainsi de diminuer la quantité totale de déchets marins enregistrés dans les enquêtes. Si la mise en œuvre des mesures de réduction et de prévention clés/sélectionnées en Méditerranée est appliquée de manière cohérente dans l'ensemble de la région, il est probable que la Méditerranée occidentale (WM), la Mer Adriatique (AD) et la Méditerranée centrale (CM) atteignent le bon état écologique, tandis que la Méditerranée orientale (EM) devrait atteindre un état de gamme de couleurs moyenne,en diminuant les effets et les impacts sur le milieu marin et côtier (tableau 4).

37. Un certain nombre de mesures (énumérées ci-dessous) peuvent être appliquées à l'échelle nationale, en privilégiant les activités qui contribuent avec un niveau élevé d'interaction dans les sous-régions respectives (tableaux 1 et 2) : c'est-à-dire l'urbanisation, le

tourisme, la pêche et l'agriculture. Les autres activités à fort impact en Méditerranée (tableau 3) ont une pertinence variable selon la sous-région (annexe, tableaux II, III, IV et V).

- Urbanisation côtière :
    - Contrôle des nouveaux aménagements urbains et de leur proximité avec le littoral.
    - Contrôle de la gestion des déchets dans les urbanisations côtières (répartition des poubelles, calendrier de collecte et lieu d'élimination finale des déchets).
    - Promotion de politiques de prévention contre la production de déchets (limitation de la vente d'articles à usage unique et de contenants).
    - Promotion de projets de recyclage qui génèrent de la valeur ajoutée grâce à la réutilisation de déchets sous forme de nouveaux matériaux (économie circulaire).

- Tourisme :
    - Contrôle de la production de déchets dans les hôtels, les commerces et les installations de loisirs. Mesures d'incitation en faveur de la prévention de la production de déchets.
    - Promotion de l'élimination des produits à usage unique dans les secteurs de l'hôtellerie, du commerce et des activités de loisirs.
    - Mesures d'incitation à la création de pratiques liées à la collecte et au recyclage des déchets générés par les hôtels et les installations commerciales.

- Pêche :
    - Éducation et sensibilisation du secteur de la pêche à l'amélioration de l'environnement (par exemple, zéro déchet dans les mers).
    - Promotion des activités de « Pêche aux déchets » au sein de la flotte de pêche.
    - L'éducation et la sensibilisation des parties prenantes concernant les avantages obtenus par l'élimination des déchets marins de l'environnement (amélioration des pratiques découlant de l'amélioration de l'habitat des espèces commerciales cibles, réduction des accidents et des pannes de navires dus à la présence de déchets marins).
    - Promotion de la mise en place de zones de stockage pour la collecte des déchets marins dans les ports.

- Agriculture :
    - Éducation et sensibilisation des parties prenantes aux avantages découlant d'une bonne gestion des déchets.
    - Promotion de la création de systèmes de gestion des déchets dérivés des pratiques agricoles.

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

	LANDWARD - INLAND				IMPACT SCORE	COASTAL AREA				IMPACT SCORE	SEAWARD - LAGOONS - ISLANDS - OFFSHORE				IMPACT SCORE
Economic (Driver)		Pressure	State	Impact (Ecosystem))	% de l'impact total		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)	Hydrological alterations	River diversions	Habitats deterioration		Crops (any)	Runoff/River (organochlorinated and other chemicals)	Coastal contamination/pollution	Habitats deterioration seafood contamination		Crops (effects seaward)	Runoff/River (organochlorinated and other chemicals)	Coastal and offshore contamination/pollution	Ecosystems deterioration Seafood contamination	
	Crops (any)	Geomorphological changes	Land alteration	Loss of biodiversity/ Population (species) decreases	3	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	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, 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	
		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 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	3	Yatching	Coastal areas navigation, contamiantion, noise	Increased pollution (biological, chemical, litter)	Coastal areas degradation Habitats alteration	3
	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	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 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	0	Underwater cables	Wiring operations disturbance	Habitats decline	Loss of habitats and species	1
	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	2	Oil and gas exploration	Exploration disturbances (airguns)	Water column habitats decline	Loss of species, stranding of long-lived species	2
	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)	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	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		
						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	2	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	2

							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	2	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	
							Introduction of NIS (ballastwater)	Biodiversity and functions alteration	Healthy coastal water and habitats decline			Introduction of NIS (ballastwater)	Biodiversity and functions alteration	Healthy coastal water and habitats decline	
						Dredging (natural environments)	Extration of soil substrates	Disturbance of sea-floor integrity impaired	Benthic species and habitats deterioration	1	Dredging (natural environments)	Extration of soil substrates	Disturbance of sea-floor integrity impaired	Benthic species and habitats deterioration	1
						Offshore energy (renewable)	Ocupation of coastal marine space	Surface and pelagic ecosystems altered	Healthy coastal water and habitats decline	0	Offshore energy (renewable)	Ocupation of coastal marine space	Surface and pelagic ecosystems altered	Healthy coastal water and habitats decline	0
						Solid waste disposal	Asfixiation of benthic habitats	Habitats and species loss	Healthy coastal benthic habitats decline	3	Solid waste disposal	Asfixiation of benthic habitats	Habitats and species loss	Healthy coastal benthic habitats decline	3
						Storage of gases	Subsubstrate storage (seismic risks)	Disturbance of sea-floor integrity impaired	Healthy coastal benthic habitats decline	1	Storage of gases	Subsubstrate storage (seismic risks)	Disturbance of sea-floor integrity impaired	Healthy coastal benthic habitats decline	0
						Defence operations	Noise, contamiantion and waste material	Coastal and marine environment threatened	Healthy coastal water and habitats decline	1	Defence operations	Noise, contamiantion and waste material	Coastal and marine environment threatened	Healthy coastal water and habitats decline	0
						Disposal of munition	Dumping of munitions (including bacteriological)	Disturbance of sea-floor integrity impaired	Healthy coastal benthic habitats decline	3	Disposal of munition	Dumping of munitions (including bacteriological)	Disturbance of sea-floor integrity impaired	Healthy coastal benthic habitats decline	3
				TOTAL INLAND IMAPCT (Ecosystem Services)	10				TOTAL COASTAL IMPACT (Ecosystem services)	36				TOTAL SEAWARD IMPACT (Ecosystem services)	32

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	COASTAL AREA				IMPACT SCORE	SEAWARD - LAGOONS - ISLANDS - OFFSHORE				IMPACT SCORE
Economic (Driver)		**Pressure**	**State**	**Impact (Ecosy** % de l'impact total	of maximum pact		**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 (organochlorinated and other chemicals)	Coastal contamination/pollution	Habitats deterioration seafood contamination		Crops (effects seaward)	Runoff/River (organochlorinated and other chemicals)	Coastal and offshore contamination/pollution	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 brackish waters	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	
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		Oil and gas 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)	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	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		
						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		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	
							Introduction of NIS (ballastwater)	Biodiversity and functions alteration	Healthy coastal water and habitats decline			Introduction of NIS (ballastwater)	Biodiversity and functions alteration	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	Surface and pelagic ecosystems altered	Healthy coastal water and habitats decline		Offshore energy (renewable)	Ocupation of coastal marine space	Surface and pelagic ecosystems altered	Healthy coastal 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	Healthy coastal 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	

						Disposal of munition	Dumping of munitions (including bacteriological)	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

	LANDWARD - INLAND				IMPACT SCORE	COASTAL AREA				IMPACT SCORE	SEAWARD - LAGOONS - ISLANDS - OFFSHORE				IMPACT SCORE
Economic (Driver)		Pressure	State	Impact (Ecosystem))	% de l'impact total		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)	Hydrological alterations	River diversions	Habitats deterioration		Crops (any)	Runoff/River (organochlorinated and other chemicals)	Coastal contamination/pollution	Habitats deterioration seafood contamination		Crops (effects seaward)	Runoff/River (organochlorinated and other chemicals)	Coastal and offshore contamination/pollution	Ecosystems deterioration Seafood contamination	
	Crops (any)	Geomorphological changes	Land alteration	Loss of biodiversity/ Population (species) decreases	3	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)	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	3
		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 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 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	3	Yatching	Coastal areas navigation, contamiantion, noise	Increased pollution (biological, chemical, litter)	Coastal areas degradation Habitats alteration	3
	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	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	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	0	Underwater cables	Wiring operations disturbance	Habitats decline	Loss of habitats and species	1
	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	1	Oil and gas exploration	Exploration disturbances (airguns)	Water column habitats decline	Loss of species, stranding of long-lived species	1
	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)	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	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		
						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	1	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	1

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

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

	LANDWARD - INLAND				IMPACT SCORE	COASTAL AREA				IMPACT SCORE	SEAWARD - LAGOONS - ISLANDS - OFFSHORE				IMPACT SCORE
Economic (Driver)		Pressure	State	Impact (Ecosystem))	% de l'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)	Hydrological alterations	River diversions	Habitats deterioration		Crops (any)	Runoff/River (organochlorinated and other chemicals)	Coastal contamination/pollution	Habitats deterioration seafood contamination		Crops (effects seaward)	Runoff/River (organochlorinated and other chemicals)	Coastal and offshore contamination/pollution	Ecosystems deterioration Seafood contamination	
	Crops (any)	Geomorphological changes	Land alteration	Loss of biodiversity/ Population (species) decreases	3	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)	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 seafloor)	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.)	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, 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	2	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	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 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, contaminantion, noise	Increased pollution (biological, chemical, litter)	Coastal areas degradation Habitats alteration	3	Yatching	Coastal areas navigation, contaminantion, noise	Increased pollution (biological, chemical, litter)	Coastal areas degradation Habitats alteration	3
	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	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 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	0	Underwater cables	Wiring operations disturbance	Habitats decline	Loss of habitats and species	0
	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	2	Oil and gas exploration	Exploration disturbances (airguns)	Water column habitats decline	Loss of species, stranding of long-lived species	1
	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)	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	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		
						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	2	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	1

							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	2	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	
							Introduction of NIS (ballastwater)	Biodiversity and functions alteration	Healthy coastal water and habitats decline			Introduction of NIS (ballastwater)	Biodiversity and functions alteration	Healthy coastal water and habitats decline	
						Dredging (natural environments)	Extration of soil substrates	Disturbance of sea-floor integrity impaired	Benthic species and habitats deterioration	0	Dredging (natural environments)	Extration of soil substrates	Disturbance of sea-floor integrity impaired	Benthic species and habitats deterioration	0
						Offshore energy (renewable)	Ocupation of coastal marine space	Surface and pelagic ecosystems altered	Healthy coastal water and habitats decline	0	Offshore energy (renewable)	Ocupation of coastal marine space	Surface and pelagic ecosystems altered	Healthy coastal water and habitats decline	0
						Solid waste disposal	Asfixiation of benthic habitats	Habitats and species loss	Healthy coastal benthic habitats decline	3	Solid waste disposal	Asfixiation of benthic habitats	Habitats and species loss	Healthy coastal benthic habitats decline	3
						Storage of gases	Subsubstrate storage (seismic risks)	Disturbance of sea-floor integrity impaired	Healthy coastal benthic habitats decline	0	Storage of gases	Subsubstrate storage (seismic risks)	Disturbance of sea-floor integrity impaired	Healthy coastal benthic habitats decline	0
						Defence operations	Noise, contamiantion and waste material	Coastal and marine environment threatened	Healthy coastal water and habitats decline	0	Defence operations	Noise, contamiantion and waste material	Coastal and marine environment threatened	Healthy coastal water and habitats decline	0
						Disposal of munition	Dumping of munitions (including bacteriological)	Disturbance of sea-floor integrity impaired	Healthy coastal benthic habitats decline	3	Disposal of munition	Dumping of munitions (including bacteriological)	Disturbance of sea-floor integrity impaired	Healthy coastal benthic habitats decline	3
				TOTAL INLAND IMAPCT (Ecosystem Services)	15				TOTAL COASTAL IMPACT (Ecosystem services)	35				TOTAL SEAWARD IMPACT (Ecosystem services)	33

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

	LANDWARD - INLAND				IMPACT SCORE	COASTAL AREA				IMPACT SCORE	SEAWARD - LAGOONS - ISLANDS - OFFSHORE				IMPACT SCORE
Economic (Driver)		Pressure	State	Impact (Ecosyste	% de l'impact num t		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)	Hydrological alterations	River diversions	Habitats deterioration		Crops (any)	Runoff/River (organochlorinated and other chemicals)	Coastal contamination/pollution	Habitats deterioration seafood contamination		Crops (effects seaward)	Runoff/River (organochlorinated and other chemicals)	Coastal and offshore contamination/pollution	Ecosystems deterioration Seafood contamination	
	Crops (any)	Geomorphological changes	Land alteration	Loss of biodiversity/ Population (species) decreases	3	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	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	
		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.)	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, 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	
		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 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	3	Yatching	Coastal areas navigation, contamiantion, noise	Increased pollution (biological, chemical, litter)	Coastal areas degradation Habitats alteration	3
	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	2	Seabed mining	Extraction of seabed substrate	Habitats and deep-habitats deterioration	Integrity of sea-floor impaired	2
						Desalinization	Uptake of seawater /release of brine and brackish waters	Habitats deterioration	Integrity of sea-floor and water column impaired	2	Desalinization	Uptake of seawater /release of brine and brackish waters	Habitats deterioration	Integrity of sea-floor and water column impaired	2
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	1	Underwater cables	Wiring operations disturbance	Habitats decline	Loss of habitats and species	1
	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	2	Oil and gas exploration	Exploration disturbances (airguns)	Water column habitats decline	Loss of species, stranding of long-lived species	2
	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)	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	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		
						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	2	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	2

							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	2	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	
							Introduction of NIS (ballastwater)	Biodiversity and functions alteration	Healthy coastal water and habitats decline			Introduction of NIS (ballastwater)	Biodiversity and functions alteration	Healthy coastal water and habitats decline	
						Dredging (natural environments)	Extration of soil substrates	Disturbance of sea-floor integrity impaired	Benthic species and habitats deterioration	2	Dredging (natural environments)	Extration of soil substrates	Disturbance of sea-floor integrity impaired	Benthic species and habitats deterioration	2
						Offshore energy (renewable)	Ocupation of coastal marine space	Surface and pelagic ecosystems altered	Healthy coastal water and habitats decline	0	Offshore energy (renewable)	Ocupation of coastal marine space	Surface and pelagic ecosystems altered	Healthy coastal water and habitats decline	0
						Solid waste disposal	Asfixiation of benthic habitats	Habitats and species loss	Healthy coastal benthic habitats decline	3	Solid waste disposal	Asfixiation of benthic habitats	Habitats and species loss	Healthy coastal benthic habitats decline	3
						Storage of gases	Subsubstrate storage (seismic risks)	Disturbance of sea-floor integrity impaired	Healthy coastal benthic habitats decline	0	Storage of gases	Subsubstrate storage (seismic risks)	Disturbance of sea-floor integrity impaired	Healthy coastal benthic habitats decline	0
						Defence operations	Noise, contamiantion and waste material	Coastal and marine environment threatened	Healthy coastal water and habitats decline	1	Defence operations	Noise, contamiantion and waste material	Coastal and marine environment threatened	Healthy coastal water and habitats decline	1
						Disposal of munition	Dumping of munitions (including bacteriological)	Disturbance of sea-floor integrity impaired	Healthy coastal benthic habitats decline	3	Disposal of munition	Dumping of munitions (including bacteriological)	Disturbance of sea-floor integrity impaired	Healthy coastal benthic habitats decline	3
				TOTAL INLAND IMAPCT (Ecosystem Services)	11				TOTAL COASTAL IMPACT (Ecosystem services)	37				TOTAL SEAWARD IMPACT (Ecosystem services)	34