



## EFH-MO-4

# Strengthening participatory coastal management for the reduction of marine litter in the regions of Tangier-Tetouan-Al Hoceima and Rabat-Salé-Kénitra

## Action Plan for Marine Litter Management in the coastal areas of the Tangier-Tétouan-Al Hoceima region (and the Rabat-Salé-Kénitra region): Proposed Key Elements (Task 3 (and 2 included))

Version	Document Title	Author	Review and Clearance
1	Action Plan for Marine Litter Management in the coastal areas of the Tangier-Tétouan-Al Hoceima region (and the Rabat-Salé-Kénitra region): key elements (Task 3 (and 2 included))	Thomas Vlachogianni	Anis Ismail Michael Scoulios



## THE SWIM AND H2020 SUPPORT MECHANISM PROJECT (2016-2019)

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The SWIM and H2020 SM is a Regional Technical Support Program, funded by the European Commission, Directorate General (DG) NEAR (Neighborhood and Enlargement Negotiations), that includes the following Partner Countries (PCs): Algeria, Egypt, Israel, Jordan, Lebanon, Libya, Morocco, Palestine, [Syria] and Tunisia. However, in order to ensure the coherence and effectiveness of Union financing or to foster regional co-operation, eligibility of specific actions will be extended to the Western Balkan countries (Albania, Bosnia Herzegovina and Montenegro), Turkey and Mauritania. The Program is funded by the European Neighbourhood Instrument (ENI) South/Environment. It ensures the continuation of EU's regional support to ENP South countries in the fields of water management, marine pollution prevention and adds value to other important EU-funded regional programs in related fields, in particular the SWITCH-Med program, and the Clima South program, as well as to projects under the EU bilateral programming, where environment and water are identified as priority sectors for the EU co-operation. It complements and provides operational partnerships and links with the projects labelled by the Union for the Mediterranean, project preparation facilities in particular MESHIP phase II and with the next phase of the ENPI-SEIS project on environmental information systems, whereas its work plan will be coherent with, and supportive of, the Barcelona Convention and its Mediterranean Action Plan.

The overall objective of the Program is to contribute to reduced marine pollution and a more sustainable use of scarce water resources. The Technical Assistance services are grouped in 6 work packages: WP1. Expert facility, WP2. Peer-to-peer experience sharing and dialogue, WP3. Training activities, WP4. Communication and visibility, WP5. Capitalizing the lessons learnt, good practices and success stories and WP6. Support activities.



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## ABBREVIATIONS

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CCI	Clean Coast Index
D10	Descriptor 10 (Marine Litter)
EC	European Commission
EcAp	Ecosystem Approach
EO	Ecological Objective
EU	European Union
GES	Good Environmental Status
H2020	Horizon 2020
ICZM	Integrated Coastal Zone Management
IMAP	Integrated Monitoring and Assessment Programme
IOC	Intergovernmental Oceanographic Commission
LBS	Land-Based Sources
MAP	Mediterranean Action Plan
MEDPOL	Mediterranean Pollution Monitoring Programme
MSFD	Marine Strategy Framework Directive
MSFD TG10	MSFD Technical Sub-Group on Marine Litter
NAP	National Action Plan
NGO	Non-Governmental Organisation
NKE	Non-Key Expert
UNEP	United Nations Environment Programme
UNEP/MAP	United Nations Environment Programme/Mediterranean Action Plan



# 1 GENERAL INTRODUCTION

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Marine litter -any persistent, manufactured or processed solid material discarded, disposed of or abandoned in the marine and coastal environment- is globally acknowledged as a major societal challenge of our times due to its significant environmental, economic, social, political and cultural implications. Marine litter negatively impacts coastal and marine ecosystems and the services they provide, ultimately affecting people's livelihoods and well-being.

Marine litter related information in the Mediterranean, remains limited, inconsistent and fragmented, however it is widely accepted that it is one of the most affected seas by marine litter worldwide. Effective measures to tackle marine litter in the region are seriously hampered by the lack of reliable scientific data. Within this context the need for accurate, coherent and comparable scientific data on marine litter in the Mediterranean countries is evident in order to set priorities for action and address marine litter effectively, thus ensuring the sustainable management and use of the marine and coastal environment of the region.

Within the framework of the SWIM-H2020 SM Morocco has asked for an Expert Facility Activity (EFH-MO-4) in order to assess marine litter in the Moroccan coastline and come up with targeted management options. This activity aimed to support the implementation in Morocco of the obligations and measures relevant to the Regional Plan for Marine Litter Management in the Mediterranean of the Barcelona Convention and will contribute to Integrated Coastal Zone Management (ICZM) within the framework of the implementation of the regional ICZM Protocol of the Barcelona Convention. More specifically, the action aimed to support Morocco in: integrating marine litter measures into the LBS National Action Plan in line with Article 7 of the Regional Plan; assessing marine litter in the Moroccan coastline in line with Article 11 of the Regional Plan; designing a marine litter monitoring programme in line with Article 12 of the Regional Plan; supporting the implementation of the Regional Plan through technical assistance and capacity building in line with Article 15 of the Regional Plan.

The assessment of marine litter in the Moroccan coastline and the proposed management options based on the results are expected to trigger positive changes in the design and implementation of the relevant national institutional, policy and regulatory frameworks, which should incorporate marine litter prevention and reduction measures. Furthermore, it will strengthen the regional coherence and cooperation in approaches to marine pollution prevention and control, and sustainable waste management. The areas addressed/covered by the proposed activity include a study/assessment, technical assistance and capacity building.

The overall Activity entailed the following tasks:

- Task 1: Carry out marine litter pilot surveys (including a workshop) on the Moroccan coast in the coastal areas of the Tangier-Tétouan-Al Hoceima region (with the participation of stakeholders from the Rabat-Salé-Kénitra region).



- Task 2: Carry out awareness raising actions on marine litter (in combination with task 1).
- Task 3: Develop a plan of action to reduce marine litter in the coastal areas of the Tangier-Tétouan-AI Hoceima region (and the Rabat-Salé-Kénitra region).

## 2 AIM AND SCOPE OF THIS DELIVERABLE

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This document presents the key elements needed for the elaboration of an ‘Action Plan for Marine Litter Management in the coastal areas of the Tangier-Tétouan-AI Hoceima region (and the Rabat-Salé-Kénitra region)’. It provides a brief description of the methodological approach to be followed for the elaboration of the action plan as well as a summary description of the main actions undertaken towards this end, within the framework of the SWIM-H2020 SM and the Expert Facility Activity EFH-MO-4. This document provides a set of proposed management options and measures for the prevention, reduction and mitigation of marine litter in the study area and also it provides a proposed structure for the action plan.

## 3 DEFINITIONS AND POLICY CONTEXT

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Within this document marine litter is defined as any persistent, manufactured or processed solid material discarded, disposed of or abandoned in the marine and coastal environment. Marine litter can be classified in size classes as follows: macrolitter referring to items above 25mm in the longest dimension; mesolitter from 5mm to 25 mm; and microlitter from 1µm to 5mm. Sometimes the later size class is further broken down to large microplastics from 1mm to 5 mm and small microplastics from 1µm to 1mm.

The main legislative frameworks related to marine litter in the Mediterranean are: the Barcelona Convention Regional Plan for Marine Litter Management in the Mediterranean (PNUE/PAM IG.21/9) and the Ecosystem Approach (COP19 IMAP Decision IG.22/7); the EU Marine Strategy Framework Directive (2008/56/EC, 2010/477/EC, 2017/848/EC) and the EU Plastics Strategy (COM (2018)).



*Figure 1. The Marine Litter Ecological Objective and the respective Indicators within the framework of the Barcelona Convention Ecosystem Approach and the Integrated Monitoring and Assessment Programme.*

#### **Marine Litter and the Barcelona Convention Ecosystem Approach**

**Ecological Objective 10 (OE10):** Marine and coastal litter do not adversely affect the coastal and marine environment.

**IMAP Common Indicator 22:**

Trends in the amount of litter washed ashore and/or deposited on coastlines (including analysis of its composition, spatial distribution and, where possible, source).

**IMAP Common Indicator 23:**

Trends in the amount of litter in the water column including micro plastics and on the seafloor.

**IMAP Candidate Indicator 24:**

Trends in the amount of litter ingested by or entangling marine organisms focusing on selected mammals, marine birds, and marine turtles.

*Figure 2. The Marine Litter Descriptor, Criteria, and respective Indicators within the framework of the EU MSFD.*

#### **Marine Litter within the EU MSFD**

**Properties and quantities of marine litter do not cause harm to the coastal and marine environment (Descriptor 10)**

**Criteria D10C1 - Primary:**

The composition, amount and spatial distribution of litter on the coastline, in the surface layer of the water column, and on the seabed, are at levels that do not cause harm to the coastal and marine environment.

- ✓ amount of litter washed ashore and/or deposited on coastlines, including analysis of its composition, spatial distribution and, where possible, source (10.1.1)
- ✓ amount of litter in the water column (including floating at the surface) and deposited on the seafloor, including analysis of its composition, spatial distribution and, where possible, source (10.1.2)

**Criteria D10C2 - Primary:**

The composition, amount and spatial distribution of micro-litter on the coastline, in the surface layer of the water column, and in seabed sediment, are at levels that do not cause harm to the coastal and marine environment.

- ✓ amount, distribution and, where possible, composition of microparticles (in particular microplastics) (10.1.3)

**Criteria D10C3 - Secondary:**

The amount of litter and micro-litter ingested by marine animals is at a level that does not adversely affect the health of the species concerned.

- ✓ amount and composition of litter ingested by marine animals (10.2.1)

**Criteria D10C4 - Secondary:**

The number of individuals of each species which are adversely affected due to litter, such as by entanglement, other types of injury or mortality, or health effects.





## 4 ELABORATING AN ACTION PLAN FOR MARINE LITTER: METHODOLOGICAL STEPS

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There are many ways an action plan can be developed however there are some key methodological steps that should be followed. When getting into the planning process, the systematics and the sequence of the various steps may be differentiated, according to local, site-specific conditions, opportunities and priorities; but in general a five-phase process (described by Scoullos et al., 2015\*) should be deployed as presented below. Within each phase a set of specific actions need to be undertaken.

**Phase 1 – Establishment:** The overall aim of the establishment phase is to define/make known the intention for drafting the plan and identify the convening body responsible for the overall coordination of the planning. All parties that should be involved should be identified and a core group/team with the mandate to prepare and implement the plan should be established. At this early stage, effort should be directed to identify the stakeholders and design the stakeholders' engagement process.

**Phase 2 – Analysis and Scenarios:** The aim of the analysis phase is to establish the foundation on which the preparation of the plan and its implementation will be based. Any available information on the marine litter issue (amount, types, sources and impacts) should be collected, including information on pre-existing relevant plans. The marine litter specific context together with the natural, technical, financial and governance/policy specific context are used in order to build alternative scenarios (set of measures) for the prevention, reduction and mitigation of marine litter. In parallel, within this stage the engagement of stakeholders will be initiated.

**Phase 3 – Setting the Vision:** The aim of this stage is to achieve the engagement and consensus building with the stakeholders and the wider community on the action plan based on the findings from the Establishment and Analysis & Scenarios phases. Within this stage stakeholders are engaged in the identification of the key problems and issues for the plan to deal with and will set the course for the eventual 'shape' of the plan and its implementation by reviewing the alternative scenarios (from Phase 2).

**Phase 4 – Designing the Future:** The aim of this stage is the actual drafting and finalization of the marine litter action plan which will contribute in shaping the future of the area addressed by the plan. The action plan should indicatively include: the goals and objectives of the plan, a preamble explaining the scope and process followed for its production and approval, the context derived from the analysis, the governance structure, the institutional framework for implementation, the priority marine litter measures agreed upon by the different stakeholders along with a roadmap for their implementation. Within this stage stakeholders will be engaged in the finalization and final adoption of the action plan.

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\* Scoullos, M. (ed), 2015. *An Integrative Methodological Framework (IMF) for coastal, river basin and aquifer management*. UNEP/MAP-PAP/RAC, GWP-Med and UNESCO-IHP. MedPartnership, Split, Croatia.



**Phase 5 – Realizing the Vision:** The aim of this final phase is to operationalise the adopted marine litter action plan and provide for its constant improvement. Within this stage the necessary actions will be undertaken for the operationalization of the action plan, including getting access to funds and monitoring and reviewing the implementation of the action plan.

## 5 ELABORATING AN ACTION PLAN FOR MARINE LITTER IN THE STUDY AREA: PROGRESS TO-DATE

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In the framework of the SWIM-H2020 SM and the Expert Facility Activity EFH-MO-4 several actions were undertaken towards the elaboration of an action plan for marine litter in the study area. A large number of activities were carried out within the context of phase 1 (Establishment) and phase 2 (Analysis and Scenarios) of the proposed 5-phase approach to elaborate the action plan. In support of phase 4 (Designing the Future) a draft outline of the marine litter action plan has been prepared (see Annex I). The next key step in the process is to undertake all actions foreseen under phase 3 (Setting the Vision) in order to achieve the engagement and consensus of the stakeholders and the wider community on the action plan, based on the findings from the Establishment and Analysis & Scenarios phases.

Within the ‘Establishment’ phase (Phase 1) the following activities were carried out:

- A marine litter workshop was held from the 19<sup>th</sup> to the 20<sup>th</sup> of October 2017 in Tangiers, bringing together more than 35 officials of Ministries of Environment, Agriculture and Marine Fisheries, representatives of Local Authorities, NGOs, Research Institutes and Academia from the regions of Tangiers-Tetouan-Al Hoceima and Rabat-Sale-Kenitra. The workshop participants were introduced to the theme of marine litter, its sources and impacts, key issues (technical, environmental, economic, health, cultural and social) related to marine litter, to improve knowledge on the quantities, types and sources of marine litter in the coastal areas of Tangier Tetouan-Al Hoceima and Rabat-Sale-Kenitra. They were also informed on how to strengthen capacity, monitor marine litter at beach level in a harmonized manner, increase awareness of marine litter and management options, as well as the main legislative framework to combat marine litter, namely the Barcelona Convention Regional Plan for Marine Litter Management in the Mediterranean. At the workshop the participants were informed of the intention of the competent Moroccan authorities to develop an action plan to reduce marine litter in the regions of Tangiers-Tetouan-Al Hoceima and Rabat-Sale-Kenitra.
- A series of awareness-raising and stakeholder engagement activities were carried out in 2018. Two meetings were held on the 16<sup>th</sup> of April 2018 and the 19<sup>th</sup> of October 2018 in Rabat to discuss measures to prevent and reduce marine litter. Particular emphasis was placed on awareness campaigns and associated best practices, i.e. the European Week for Waste



Reduction ([www.ewwr.eu](http://www.ewwr.eu)). These events brought together several stakeholders from national and local authorities, NGOs and donors. A direct follow-up of these meetings was the organization of a public event on the 17th of November 2018 in Rabat on ways to combat marine litter pollution. The event brought together 70 participants who had the opportunity to discuss and exchange views on effective ways to deal with marine litter at local level. In terms of awareness raising, the pilot beach litter surveys carried out in the region of Tangier-Tetouan-Al Hoceima were also instrumental. Local stakeholders, mainly NGOs and local authorities engaged in the surveys were informed about the elaboration process of the action plan.

- Two webinars were organized within the framework of the P2P-3 on the 27<sup>th</sup> March 2018 and on the 27<sup>th</sup> of February 2019, where the group of peers discussed issues related to: the key steps of beach litter monitoring in order to produce fit-for-purpose data, which can be effectively used in the decision-making process and the shortlisting of targeted marine litter measures; the methodological approach on how to elaborate a marine litter assessment report that can provide the scientific evidence needed for the elaboration of an action plan.

Within the 'Analysis and Scenarios' phase (Phase 2) the following activities were carried out:

- Three sets of beach litter surveys (summer 2018, autumn 2018, winter 2018) were carried out on beaches located in five sites along the Mediterranean coastline of Morocco, namely the sites of Qued El Marsa, Tres Pedras, Amsa, Targha and Kaa Asraas. A pool of eleven sites were considered for the selection of the survey sites and based on their fiches and special characteristics the aforementioned five sites were chosen to be investigated in order to ensure a wider coverage of the coastline and also to vary in terms of: (i) distance from neighbouring town, harbour, river outflow, shipping lane, etc.; (ii) prevailing sea currents, prevailing winds, beach orientation, beach substrate type, slope, size, etc.; and (iii) usage of the beach or the surrounding area, such as tourism and recreational activities, agriculture, industrial activities, etc. A total of 30 beach transects were surveyed, which extended over a distance of 3,000m and covered an area of 125,550m<sup>2</sup>. The main findings are summarized below:
  - ❖ *Abundance*: On the 5 sites surveyed a total of 13,078 items were recorded, removed and classified. Items varied widely in abundance and types. The average litter density was calculated to be 436 items/100m ranging from 181 items/100m to 997 items/100m. The average litter density was calculated to be 0.12 items/m<sup>2</sup>, ranging from 0.05-0.30 items/m<sup>2</sup>.
  - ❖ *Composition*: The vast majority of litter items (82%) were made out of artificial polymer materials, a category of litter dominant on beaches all over the world. The second most abundant group of litter items found was cloth/textile (7%). Items made of metal and paper accounted for 5% and 4% respectively, while processed wood accounted for 2%. Among the 159 litter categories, shopping bags (G3) accounted for the highest percentage 15.9% (2,083 items) of the total litter items recorded in all surveys, followed by crisp packets and sweet wrappers (G30) with 13.9% (1,820 items). The third most abundant items were plastic caps/lids from drinks (G21) with 8.6% (1,129 items),



followed by cigarette butts and filters (G27) and food containers (G10) with 7.0% (917 items) and 6.9% (818 items) respectively. Small and big plastic drink bottles (G7, G8), clothing/rags (G137), lolly sticks (G31) and plastic pieces 2.5 cm > < 50 cm (G79) were among the top 10 items found. When it comes to smoking related items, on an aggregated basis 8% of the total litter items collected fell under one of the following category types of litter: tobacco pouches / plastic cigarette box packaging (G25), cigarette lighters (G26), cigarette butts and filters (G27) and paper cigarette packets (G152).

- ❖ *Sources:* Litter from shoreline sources, such as tourism and recreational activities and poor waste management practices, accounted for 82% of all litter collected; while the amount of litter from fisheries and aquaculture was at a level of 3%. Shipping related items accounted for 1.3%, while sanitary and sewage related items accounted for 0.7%. Fly-tipping and medical related items accounted for 0.4% and 0.2% respectively. The collected marine litter items were also classified into 3 major groups of items: single use plastics, non-single use plastics and non-plastic marine litter items. Results are presented at aggregated level and also at beach level (Fig.18-19). As single-use plastics the following items were considered: shopping bags (G3), drink bottles  $\leq 0.5\text{l}$  (G7), drink bottles  $> 0.5\text{l}$  (G8), food containers (G10), plastic caps/lids from drinks (G21), crisps packets/sweets wrappers (G30), lolly sticks (G31), plastic cups and cup lids (G33), plastic cutlery and trays (G34), straws and stirrers (G35). At aggregated level, single-use plastics accounted for three fifths (62%) of the items recorded. At beach level the abundance of single-use plastics varied from 36.1-75.8%.
- A scientific literature review was carried out in order to gather information on the marine litter issue in the Moroccan coastline. It showed that marine litter in Morocco has been understudied with only four published studies addressing the issue. One study focused on the abundance and composition of marine litter on the seafloor of the southern part of the economic exclusive waters of Morocco in the Atlantic Ocean. The marine litter seafloor data were collected during a scientific trawl survey and the findings revealed that over 50% of the collected items were made of plastic, with the majority of items being plastic bags, plastic bottles, boots, gloves, and pots used to catch the common octopus. The amount of litter recorded varied; ranging from 0 to  $1,768 \pm 298 \text{ kg/km}^2$ . Another study investigated also the abundance, composition and distribution of seafloor litter in the Moroccan Mediterranean Sea. The mean abundance of marine litter on the seafloor differed between surveys, generally ranging from  $26 \pm 68 \text{ Kg/km}^2$  to  $80 \pm 133 \text{ Kg/km}^2$ . Plastics accounted for some 73% of the litter collected, followed by rubber with 12%, textile/clothing with 8%, metal with 3%, glass/ceramics with 0.3%, and unidentified materials with 2.7%. The majority of plastic items were plastic bags, plastic bottles, shoes, gloves and octopus pots. One study assessed marine litter in a site located at the coastal wetland of Martil, in the North-East of Morocco. The results obtained showed that the majority of items found were made of plastic (57% by weight). These items generally originated from land-based sources (i.e. tourism and recreational activities) and from commercial fishing. Indicatively, one of the seasonal datasets reveals that the



most abundant items recorded were plastic bags accounting for 26.3% of the total weight of the items collected, followed by food wrappers with 20.5%, plastic bottles with 19.1%, plastic pieces with 12.6% and plastic caps with 8.1%. Lastly, one study focused on beach litter surveys along the Mediterranean coast of Morocco, where fourteen sites were surveyed including urban, rural and remote beaches. The average litter densities reported within this study ranged from 0.05–0,60 items/m<sup>2</sup>.

- A set of management options and measures for the prevention, reduction and mitigation of marine litter were drawn underpinned by the aforementioned findings related to the marine litter issue. The proposed measures include the following:
  - ❖ *Improving and enforcing the solid waste related policies and regulatory frameworks:* This refers to command and control instruments which address waste management issues i.e. solid waste management laws and regulations.
  - ❖ *Improving solid waste management systems and practices:* This entails the promotion and implementation of good practices related to solid waste management at local level in order to minimize solid waste leakages in the coastal and marine environment.
  - ❖ *Promoting best practices for tourism and recreation:* This refers to the promotion of best practices within the tourism and recreation sector with regards to the prevention, reduction, reuse and recycling of waste. Indicative example is the “Responsible Beach Snack Bars” initiative, where beach snack bars voluntarily register on a list and commit themselves to comply with the ‘Decalogue of Good Environmental Practices’.
  - ❖ *Awareness raising campaigns:* This entails wide-ranging activities such as school interventions, communication campaigns, cleanups, workshops, summer schools, exhibitions and others, aiming to deepen public understanding on the issue of marine litter and catalyze change in their perceptions and attitudes towards waste. Within this context, the adopt-a-beach scheme could prove to be instrumental as this is a measure designed to foster volunteer stewardship by encouraging volunteers to ‘adopt’ beaches, clean them up and survey them throughout the year, thus collecting valuable marine litter data essential for facilitating effective responses against marine litter. In particular, awareness raising campaigns should target tourists, local residents and other coastal and marine users (e.g. owners of touristic establishments on beaches, etc.). In addition, they should target consumers and citizens.
  - ❖ *Promoting extended producer responsibility schemes:* This measure refers to an environmental policy approach, in which a producer’s responsibility for a product is extended to the post-consumer stage (waste) of a product’s life cycle; i.e. (i) Mandatory take-back system: A system that requires producers to take-back products. This may apply to products that are particularly complex or dangerous to reuse, recycle or dispose. In this case, the producer may include the costs of disposal in the price of the item; (ii) deposit/refund system: A charge is levied when the product is sold and then fully or



partly refunded when the good or its container, are returned after use. Such arrangements can be mandatory or instituted on an entirely voluntary basis by producers themselves, where the recovery of items is sufficiently valuable.

- ❖ *Ecolabelling and Environmental Management Systems:* Ecolabelling is a voluntary method of environmental performance certification and labelling that is practised around the world. An ecolabel identifies products or services proven environmentally preferable overall, within a specific product or service category. An indicative example of ecolabel is the Blue Flag, which is one of the world's most recognised voluntary eco-labels awarded to beaches, marinas, and sustainable boating tourism operators. In order to qualify for the Blue Flag, a series of stringent environmental, educational, safety, and accessibility criteria must be met and maintained. An indicative example of an Environmental Management System is the ISO 14001:2015.
- ❖ *Banning specific items and activities:* Management measures should entail legislative actions for banning certain items or activities. Indicative examples are the measures foreseen under the upcoming EU Single-Use Plastics Directive that include bans on single-use plastic cutlery, plastic plates, plastic straws, cotton bud sticks made of plastic and plastic balloon sticks as well as oxodegradable plastics, food containers and expanded polystyrene cups.

In July 2016, Morocco opted for a strict ban on the production, import, sale and distribution of single-use plastic bags through the law 77-15. The law was amended in early 2019 with the aim to tackle the new methods of producing plastic bags and the import of raw materials dedicated to this purpose. Two separate funds were made available to manufacturers to dispose of plastic bags: a conversion fund for companies impacted by the ban, and a business competitiveness support fund called "Imtiaz" ("excellence") for investment projects in alternative industries. To-date the ban's impact has been extremely satisfactory and encouraging. Medium and large distribution companies are exclusively using substitute products. According to the Moroccan Ministry of Industry, the consumption of raw materials used in the manufacture of bags dropped by 35,000 tons (50%) between 2015 and 2018. There have been 250 suppliers of substitute products in Morocco since the ban took effect. Although the number of these plastic bags may have been dramatically reduced, there is an overlaying informal market of bags that threatens achievements made so far.

- ❖ *Imposing a fee/tax/levy:* One of the most common economic instruments used in the waste sector is the application of a tax or levy on waste sent to landfill. Landfill taxes/levies can help to tackle marine litter by increasing the price of landfill to encourage the diversion of waste to other forms of treatment that are higher up in the waste hierarchy, including closed-loop waste-management processes such as recovery, recycling or reuse. Furthermore, taxes/levies can be applied on specific items such as plastic bags.





It should be stressed that the aforementioned conclusions and recommendations are drawn on the basis of the results obtained in the studied beaches. Almost all studied beaches were located in areas that are characterized by the presence of tourism and recreational activities with a large number of incoming visitors per day (1,000 – 20,000). Thus, the study results are inevitably 'biased' towards reflecting the impact of tourism and recreational activities. These findings are in line with the results reported by other marine litter studies performed in Morocco, however in order get a more comprehensive and accurate assessment of the amount, composition and sources of marine litter in Morocco there is a need to setup a long-term marine litter monitoring program that will ensure the detection of marine litter seasonal and spatial variations and the respective trends. To this end, wide-ranging survey sites should be selecting featuring the impacts of different pressures.

- A snapshot survey aiming to collectively identify priority awareness raising actions for marine litter was carried out during the marine litter workshop, held from the 19th to the 20th of October 2017 in Tangiers. The results obtained provide valuable insights with regards to the specific context of one of the proposed measures. These results are depicted below:
  - ❖ Regarding the aim of the awareness raising actions, these should equally focus on: the impacts, the sources (human induced activities) and the priority actions/measures to address marine litter.
  - ❖ Regarding the most important target group for the pilot awareness raising actions, these are primarily educators and students, the general public, professionals from tourism sector, professionals from maritime sector (i.e. fishermen), NGOs, industry professionals including product designers, the media.
  - ❖ Regarding some identified weaknesses in terms of capacities to implement certain types of awareness raising actions the following lines of action were highlighted: targeted workshops for different types of professionals; participatory science initiatives; awareness raising campaigns targeted to educators, schools and the general public; the responsible beach snack bars initiative, fishing for litter schemes, etc.
  - ❖ Regarding the main obstacles encountered in applying the above, the following were identified as the most important ones: lack of financial resources; lack of technical skills; lack of tools and channels; difficulties with stakeholders engagement and partnerships building.



# ANNEX I. PROPOSED STRUCTURE OF THE MARINE LITTER ACTION PLAN

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## ‘ACTION PLAN FOR MARINE LITTER MANAGEMENT IN THE COASTAL AREAS OF THE TANGIER-TÉTOUAN-AL HOCEIMA REGION (AND THE RABAT-SALÉ-KÉNITRA REGION)’

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Prepared by [NAME OF THE COMPETENT AUTHORITY]

DATE OF PREPARATION





## 1. INTRODUCTION

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The Mediterranean Sea is one of the most affected basins by marine litter, worldwide. Marine litter - any persistent solid material that is manufactured or processed and directly or indirectly, intentionally or unintentionally, disposed of or abandoned into the coastal and marine environment- represents a pervasive and persistent problem that knows no boundaries. It has a negative impact on vital economic sectors such as fisheries, aquaculture, navigation, energy and tourism, while it may endanger human health and safety. Marine litter threatens species and habitats, with impacts varying from entanglement and ingestion, to bio-accumulation and bio-magnification of toxics released from litter items, facilitation of introduction of invasive species, damages to benthic habitats, etc.

This document was prepared by the [Name of the Competent Authority]. Actions stated in this document were prioritised in collaboration with and with contributions from [name here the stakeholder groups that contributed] through [name/describe here the stakeholder's engagement events/process].

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## 2. GOALS AND OBJECTIVES

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The overarching goal of the Marine Litter Action Plan is to determine those actions needed to tackle marine litter in the coastal areas of the Tangier-Tétouan-Al Hoceima region (and the Rabat-Salé-Kénitra region).

The key objectives of the plan are:

- i. **Prevent** and **reduce** marine litter entering the coastal and marine environment Tangier-Tétouan-Al Hoceima region (and the Rabat-Salé-Kénitra region);
- ii. **Collect** and **remove** marine litter from the coastal and marine environment of Tangier-Tétouan-Al Hoceima region (and the Rabat-Salé-Kénitra region) by using sound methods that don't pose any threats to habitats and species, with a specific focus on marine litter hotspots and accumulations areas;
- iii. **Enhance** and **deepen** knowledge on the marine litter threat (amounts, composition, sources, pathways and impacts) in the Tangier-Tétouan-Al Hoceima region (and the Rabat-Salé-Kénitra region).

iv. +++

v. +++



### 3. THE KEY STEPS FOLLOWED FOR THE ELABORATION OF THE ACTION PLAN

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The elaboration of the Action Plan followed a five-phase process (described by *Scoullos et al., 2015†*) as presented below. Within each phase a set of specific actions were undertaken.

**Phase 1 – Establishment:** The overall aim of the establishment phase is to define/make known the intention for drafting the plan and identify the convening body responsible for the overall coordination of the planning. All parties that should be involved should be identified and a core group/team with the mandate to prepare and implement the plan should be established. At this early stage, effort should be directed to identify the stakeholders and design the stakeholders' engagement process.

**Phase 2 – Analysis and Scenarios:** The aim of the analysis phase is to establish the foundation on which the preparation of the plan and its implementation will be based. Any available information on the marine litter issue (amount, types, sources and impacts) should be collected, including information on pre-existing relevant plans. The marine litter specific context together with the natural, technical, financial and governance/policy specific context are used in order to build alternative scenarios (set of measures) for the prevention, reduction and mitigation of marine litter. In parallel, within this stage the engagement of stakeholders will be initiated.

**Phase 3 – Setting the Vision:** The aim of this stage is to achieve the engagement and consensus building with the stakeholders and the wider community on the action plan based on the findings from the Establishment and Analysis & Scenarios phases. Within this stage stakeholders are engaged in the identification of the key problems and issues for the plan to deal with and will set the course for the eventual 'shape' of the plan and its implementation by reviewing the alternative scenarios (from Phase 2).

**Phase 4 – Designing the Future:** The aim of this stage is the actual drafting and finalization of the marine litter action plan which will contribute in shaping the future of the area addressed by the plan. The action plan should indicatively include: the goals and objectives of the plan, a preamble explaining the scope and process followed for its production and approval, the context derived from the analysis, the governance structure, the institutional framework for implementation, the priority marine litter measures agreed upon by the different stakeholders along with a roadmap for their implementation. Within this stage stakeholders will be engaged in the finalization and final adoption of the action plan.

**Phase 5 – Realizing the Vision:** The aim of this final phase is to operationalise the adopted marine litter action plan and provide for its constant improvement. Within this stage the necessary actions will be undertaken for the operationalization of the action plan, including getting access to funds and monitoring and reviewing the implementation of the action plan.

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†*Scoullos, M. (ed), 2015. An Integrative Methodological Framework (IMF) for coastal, river basin and aquifer management. UNEP/MAP-PAP/RAC, GWP-Med and UNESCO-IHP. MedPartnership, Split, Croatia.*



#### 4. KEY FACTS AND FIGURES FOR MARINE LITTER IN THE TANGIER-TÉTOUAN-AL HOCEIMA REGION (AND THE RABAT-SALÉ-KÉNITRA REGION)

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To-date there are very few studies that have assessed in a comprehensive and harmonized way marine litter in the Tangier-Tétouan-Al Hoceima region (and the Rabat-Salé-Kénitra region). On the basis of the results of the beach litter assessment report prepared within the framework of the SWIM-H2020 SM and the few available studies in the scientific literature, some key facts and figures include the following:

- Findings of the SWIM-H2020 SM beach litter assessment report:
  - ❖ *Abundance:* On the 5 sites surveyed a total of 13,078 items were recorded, removed and classified. Items varied widely in abundance and types. The average litter density was calculated to be 436 items/100m ranging from 181 items/100m to 997 items/100m. The average litter density was calculated to be 0.12 items/m<sup>2</sup>, ranging from 0.05-0.30 items/m<sup>2</sup>.
  - ❖ *Composition:* The vast majority of litter items (82%) were made out of artificial polymer materials, a category of litter dominant on beaches all over the world. The second most abundant group of litter items found was cloth/textile (7%). Items made of metal and paper accounted for 5% and 4% respectively, while processed wood accounted for 2%. Among the 159 litter categories, shopping bags (G3) accounted for the highest percentage 15.9% (2,083 items) of the total litter items recorded in all surveys, followed by crisp packets and sweet wrappers (G30) with 13.9% (1,820 items). The third most abundant items were plastic caps/lids from drinks (G21) with 8.6% (1,129 items), followed by cigarette butts and filters (G27) and food containers (G10) with 7.0% (917 items) and 6.9% (818 items) respectively. Small and big plastic drink bottles (G7, G8), clothing/rags (G137), lolly sticks (G31) and plastic pieces 2.5 cm > < 50 cm (G79) were among the top 10 items found. When it comes to smoking related items, on an aggregated basis 8% of the total litter items collected fell under one of the following category types of litter: tobacco pouches / plastic cigarette box packaging (G25), cigarette lighters (G26), cigarette butts and filters (G27) and paper cigarette packets (G152).
  - ❖ *Sources:* Litter from shoreline sources, such as tourism and recreational activities and poor waste management practices, accounted for 82% of all litter collected; while the amount of litter from fisheries and aquaculture was at a level of 3%. Shipping related items accounted for 1.3%, while sanitary and sewage related items accounted for 0.7%. Fly-tipping and medical related items accounted for 0.4% and 0.2% respectively. The collected marine litter items were also classified into 3 major groups of items: single use plastics, non-single use plastics and non-plastic marine litter items. Results are presented at aggregated level and also at beach level (Fig.18-19). As single-use plastics the following items were considered: shopping bags (G3), drink bottles ≤0.5l (G7), drink bottles >0.5l (G8), food containers (G10), plastic caps/lids from drinks (G21), crisps



packets/sweets wrappers (G30), lolly sticks (G31), plastic cups and cup lids (G33), plastic cutlery and trays (G34), straws and stirrers (G35). At aggregated level, single-use plastics accounted for three fifths (62%) of the items recorded. At beach level the abundance of single-use plastics varied from 36.1-75.8%.

- Findings of the scientific literature review: Marine litter in Morocco has been understudied with only four published studies addressing the issue. One study focused on the abundance and composition of marine litter on the seafloor of the southern part of the economic exclusive waters of Morocco in the Atlantic Ocean. The marine litter seafloor data were collected during a scientific trawl survey and the findings revealed that over 50% of the collected items were made of plastic, with the majority of items being plastic bags, plastic bottles, boots, gloves, and pots used to catch the common octopus. The amount of litter recorded varied; ranging from 0 to 1,768 ± 298 kg/km<sup>2</sup>. Another study investigated also the abundance, composition and distribution of seafloor litter in the Moroccan Mediterranean Sea. The mean abundance of marine litter on the seafloor differed between surveys, generally ranging from 26 ± 68 Kg/km<sup>2</sup> to 80 ± 133 Kg/km<sup>2</sup>. Plastics accounted for some 73% of the litter collected, followed by rubber with 12%, textile/clothing with 8%, metal with 3%, glass/ceramics with 0.3%, and unidentified materials with 2.7%. The majority of plastic items were plastic bags, plastic bottles, shoes, gloves and octopus pots. One study assessed marine litter in a site located at the coastal wetland of Martil, in the North-East of Morocco. The results obtained showed that the majority of items found were made of plastic (57% by weight). These items generally originated from land-based sources (i.e. tourism and recreational activities) and from commercial fishing. Indicatively, one of the seasonal datasets reveals that the most abundant items recorded were plastic bags accounting for 26.3% of the total weight of the items collected, followed by food wrappers with 20.5%, plastic bottles with 19.1%, plastic pieces with 12.6% and plastic caps with 8.1%. Lastly, one study focused on beach litter surveys along the Mediterranean coast of Morocco, where fourteen sites were surveyed including urban, rural and remote beaches. The average litter densities reported within this study ranged from 0.05–0,60 items/m<sup>2</sup>.

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## 5. PRIORITY ACTIONS TO COMBAT MARINE LITTER IN THE TANGIER-TÉTOUAN-AL HOCEIMA REGION (AND THE RABAT-SALÉ-KÉNITRA REGION)

In this section, the priority actions agreed to be undertaken are presented in the format of a tables. Each action is featured with a number, a description, the target group, the expected results, the lead and those who should be involved in the implementation, a timeframe and performance indicators (used to measure achievement of outputs or outcomes).



Number	
Title	+++
Brief description	+++
Target group	+++
Expected result	+++
Lead	+++
Partners	+++
Timeframe	+++
Performance indicators	+++