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STRATEGIC ACTION PROGRAMME FOR THE MANAGEMENT OF MARINE LITTER IN THE MEDITERRANEAN

In cooperation with



WHO

TABLE OF CONTENTS

Page no.

1.	INTRODUCTION	1
1.1	Marine litter in the Mediterranean	1
2.	OBJECTIVES AND PRINCIPLES OF THE STRATEGY	4
2.1	Objectives	4
2.2	Principles of the study.....	4
3.	ACTION PLAN.....	8
3.1	Objective one: Enhance the proper implementation of existing regional legislation dealing with municipal solid waste, as well as sea based solid waste, by building or further developing institutional and legal capacity in local and port authorities and other institutional stakeholders to manage marine litter within an integrated coastal zone management framework	8
3.2	Objective two: Reduce in view to eliminate marine litter generated “in situ” (on beaches) with emphasis on plastic and smoking related marine litter.....	10
3.3	Objective three: Influence environmental attitudes and behaviour of residents and tourists of coastal areas in the Mediterranean Region with regards to marine litter	13
3.4	Objective four: Establish a monitoring programme for marine litter in the Mediterranean Sea	16
3.5	Objective five: Establish synergies with on-going and planned initiatives in the Mediterranean Region as they relate to marine litter	19
4.	LOG FRAME AND WORK PLAN	25
5.	IMPLEMENTATION MODALITIES.....	29
6.	REFERENCES	30
7.	ANNEXES	32

PREAMBLE

The present Strategy was prepared through a participatory process. The first draft was prepared by a designated consultant and after internal circulation was presented (version 2 September 2008) in a Stakeholder Meeting organised on 18-19 September 2008 in Athens, Greece where the draft document was thoroughly discussed and commented. Based on the discussions of the meeting a revised draft was prepared by the Secretariat (version 26 September 2008) which was then reviewed and amended to its present form.

The Strategy is divided into five sections: Section I provides an introduction to and historic evolution of the issue. Section II states the objectives and principles of the strategy. Section III sets out an action plan for attaining the objectives; goals have been identified and a list of activities, including proposed partners, as a means to attain the objectives. Section IV includes a log frame and work plan, developed to guide the implementation of this strategy. The last Section, V, describes the envisioned implementation modalities. The Parties in this Strategy shall include all the countries which are signatories of the Barcelona Convention.

1. INTRODUCTION

1.1 Marine litter in the Mediterranean

Marine litter is discarded waste or lost material resulting from any kind of human activity that has made its way into the marine environment, including material found on beaches or material that is floating or has sunk at sea and accumulated in the sea bottom.

Marine litter was recognised already in the 1960s as an important problem for marine life but since then the volume of marine litter and the associated with it environmental, economic and social problems are growing rapidly globally and in the Mediterranean.

The magnitude of the problem has lead to growing concern internationally and to a certain extent also in the Mediterranean by several governments, organisations, scientists and a series of litter surveys and awareness campaigns, which, however, until now are still rather limited in scope and small in comparison to the scale of the problem

The landlocked Mediterranean Sea (Figure 1) has a surface area of 2.5 million km² and a coastline of approximately 46,000km, 73% of which lies in the northern coast.



Figure 1: The Mediterranean Sea and countries of the Mediterranean region

The coastline and catchment area is home to 427 million inhabitants (7% of the world's population) and to 7% of known marine species; annually the region attracts 25% of the international tourist trade; 30% of shipping traffic passes through the Mediterranean sea (2005c) (Beaujean 2006). The production of marine litter is a result of urbanization and increased economic activities in combination with poor infrastructures throughout the region with more problems, in the south and east Mediterranean countries, where more than 80% of landfill sites are not subject to supervision (Beaujean 2006).

Marine litter was implicitly dealt with in the Mediterranean through the legal and institutional framework to address the pollution of the Mediterranean Sea provided by the *Convention for the Protection of the Mediterranean Sea Against Pollution* (Barcelona Convention) and the Mediterranean Action Plan (MAP), led by the United Nations Environment Programme (UNEP). This was later amended and renamed the *Convention for the Protection of the*

Marine environment and the Coastal Region of the Mediterranean (see Annex 1 for a list of Contracting Parties to the Barcelona Convention). The convention includes seven protocols some of which are directly or indirectly relevant to marine litter (UNEP 2005a)

- a. The prevention and elimination of pollution of the Mediterranean Sea by dumping from ships and aircraft or incineration at sea;
- b. Cooperation in preventing pollution from ships and, in cases of emergency, combating pollution of the Mediterranean Sea;
- c. Protection of the Mediterranean Sea against pollution from land-based sources and activities;
- d. Specially protected areas and biological diversity in the Mediterranean;
- e. Protection of the Mediterranean Sea against pollution resulting from exploration and exploitation of the continental shelf and the seabed and its subsoil;
- f. Prevention of pollution of the Mediterranean Sea by transboundary movements of hazardous wastes and their disposal; and
- g. Integrated Coastal Zone Management in the Mediterranean.

Since the implementation of the Protocols against pollution from land-based sources and activities (LBS) and of the prevention of dumping and hazardous waste are under the guidance of the Marine Pollution Assessment and Control programme of MAP known as MED POL, marine litter is also under MEDPOL's supervision.

MED POL has assisted countries to develop action plans and programmes. The Strategic Action Plan (SAP) was prepared by MED POL and Contracting Parties in 1998 to address land-based pollution; specifically the action plan has identified pollution hot spots, pollution sensitive areas along with planned activities to be implemented up to the year 2025. Under the guidance of MED POL countries then prepared National Action Plans (NAPs) in which specific areas of intervention were identified and assessed the needed budget. In both the SAP and NAPs among the main priority areas (wastewater, industrial waste and solid waste), marine litter sources are implicitly included.

With the ratification by Croatia and Syria of the LBS protocol on 11th May 2008, the Protocol has entered into force. This paves the way for MED POL in partnership with Parties to develop pollution reduction programmes and apply legally binding targets in order to eliminate land based pollution including marine litter.

In 1987 due to the lack of information on marine and coastal litter UNEP/MAP convened a meeting jointly with IOC and FAO in order to enhance understanding of the quantity, composition and origin of persistent materials in the Mediterranean Sea. As a result of the meeting a pilot project was implemented in five countries (Cyprus, Israel, Italy, Spain and Turkey) to assess marine and coastal litter and a report was published entitled "*Assessment of the state of pollution of the Mediterranean Sea by persistent synthetic materials which may float sink or remain in suspension*" (UNEP/IOC/FAO 1991). In 1996 a wide scale assessment was conducted for the purposes of informing the Parties to the Barcelona Convention, this assessment entitled "*The State of the Marine and Coastal Environment in the Mediterranean Region*" provided in depth review of all sectors of the economy within the region, which have a direct impact on the Mediterranean Sea in general and which also contribute to marine litter (UNEP/MAP 1996). Furthermore a comprehensive bibliography (UNEP/MAP 1991) was compiled containing 440 reference covering eight thematic areas on the subject which has been a particularly useful resource for scientist working in the region.

In 2001, MED POL undertook a comprehensive assessment on the status of the management of coastal litter in the Mediterranean. The results of the assessment showed that the main sources of coastal litter in the region are run-off from rivers, tourist activities and coastal urban centres. This result indicates that inadequate coastal solid waste

management is responsible for the presence of litter on beaches, floating on water or on the sea bed (benthic). The above mentioned results are in contradiction with the fact that, almost all the Mediterranean countries have policies for the management of coastal solid waste. In fact, the problem is related to the enforcement of the policies which is, in general, very weak because of the poor coordination between different national and local administrations dealing with solid waste management issues and the inadequate infrastructure and understaffed services. However, perhaps the most important root problem is the absence of proper behaviour by the population which is due to lack of a waste-free culture, awareness and education. Although only few countries have specific policies related to marine litter, usually local administration and municipalities are the ultimate responsables for the management of coastal litter in the region. The role of the Ministry of Environment and/or other Ministries (Mercantile Marine, Interior, etc.) is limited to provision of guidelines and control.

Based on these facts, MEDPOL built up a process to assist – as a first step - coastal local authorities in order to improve the management of coastal solid waste and prevent the introduction of litter into the marine environment. In this line, MED POL implemented in 2004-2005, with the cooperation of RAMOGE and UNADEP, a pilot project with the Municipality of Tripoli, Lebanon in which direct technical and legal assistance was provided in combination with a public awareness campaign. As a follow-up of this pilot project, a national replication strategy has been developed and agreed upon by all Lebanese coastal municipalities.

Various technical reports have been published by UNEP/MAP, within its “MAP Technical Reports Series” focusing on technical and policy related aspects of marine litter and solid waste management. Furthermore there are reports on case-studies related to marine litter which have been implemented under UNEP/MAP and MED POL. In 2003, UNEP MAP published guidelines for management of coastal litter in the Mediterranean Region (UNEP/MAP/MEDPOL 2004). The guidelines were prepared under the framework of SAP and specifically address land-based sources of marine litter, and aimed to provide a common framework for responsible authorities, planners and field operators to formulate national and regional development strategies within the context of the environmental protection of the Mediterranean Sea. In 2005 a global perspective on marine litter was made available by UNEP “Marine Litter - An analytical overview”(UNEP 2005b), within which various global and regional tools were included as well as recommendations for future activities in this area.

2. OBJECTIVES AND PRINCIPLES OF THE STRATEGY

2.1 Objectives

The overall goal of this Strategy is to minimize and further eliminate, to the fullest possible extent, marine litter in the Mediterranean Region through regional and national activities.

Marine litter is, for this strategy, a category of substance listed under the LBS Protocol and for the purposes of this Strategy it will be defined as **any persistent, manufactured or processed solid material discarded, disposed of or abandoned in the marine and coastal environment**. Marine litter consists of items that have been made or used by people and deliberately discarded into the sea or rivers or on beaches; brought indirectly to the sea with rivers, sewage, storm water or winds; accidentally lost, including material lost at sea in bad weather (fishing gear, cargo); or deliberately left by people on beaches and shores. Although in some countries organic material (e.g. faeces) may be included in litter, in the present document only manufactured material (including processed timber) is considered.

The specific objectives for meeting the overall goal are listed below. These have been developed based on the findings of the assessment report, questionnaires and additional literature:-

Objective one: Enhance the proper implementation of existing legislation dealing with municipal solid waste, as well as sea based solid waste, by building or further developing legal and institutional capacity in local and port authorities, and other institutional stakeholders, to manage marine litter within an integrated coastal zone management framework.

Objective two: Reduce, in view to eliminate, marine litter generated “in situ” (on beaches) with emphasis on plastics and smoking related marine litter.

Objective three: Influence environmental attitudes and behaviour of residents and tourists of coastal areas in the Mediterranean Region with regards to marine litter.

Objective four: Follow the trends of marine litter generation and distribution through the establishment of a monitoring programme for marine litter in the Mediterranean Sea.

Objective five: Establish synergies with on-going and planned initiatives in the Mediterranean Region as they relate to waste and marine litter. In fact, this objective aims at ensuring coherence and coordination of scattered activities undertaken by various stakeholders under all previous objectives.

2.1 Principles of the strategy

The underlying concept of this Strategy is that marine litter is a local, national as well as trans-boundary problem requiring specific measures at each level and across all levels; particular to the Mediterranean region is that due to the different levels of economic development amongst the countries a *partnership* approach is required. The management of marine litter is not a standalone activity; removing the eyesore which marine litter causes is only treating the symptom not the cause, therefore its management must fall under an integrated approach to solid waste management both on land and at sea (see Figure 2). For

this reason there are numerous actors and activities in the management of marine litter that are interlinked and must be incorporated in any strategy which attempts to reduce marine litter.

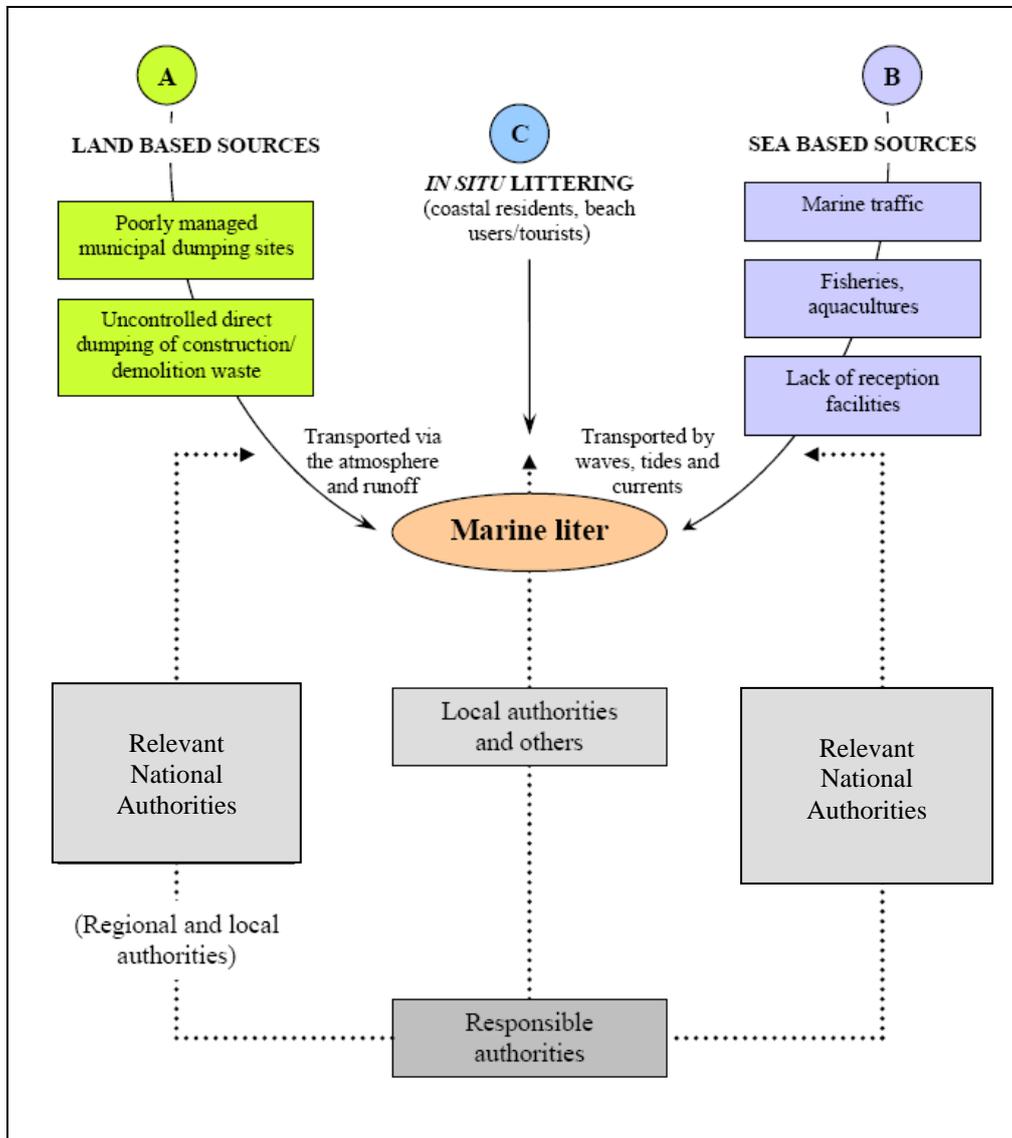


Figure 2. Main sources of marine litter and responsible authorities in the Mediterranean countries

Figure 2 presents the three major sources of litter that the Strategy addresses and the relevant authorities in the majority of the Mediterranean countries: **(A)** land based sources including all municipal, industrial and demolition waste that finds its way to the coast via the atmosphere (winds) or runoff; **(B)** sea based sources from all kinds of marine traffic (tankers, merchant or cruise ships and pleasure craft), fisheries and off shore aquaculture, and **(C)** “in situ” littering activities by coastal residents, tourists or other “users” of the beach.

The magnitude of the marine litter problem in each country is, to a large extent, directly related to the level of efficiency of solid waste management services provided by local and port authorities for municipal solid waste (A) and sea generated waste (B), respectively. Both these problems are addressed by specific Protocols of the Barcelona Convention and MARPOL and therefore the present strategy supports and further advocates and facilitates

the implementation of the aforementioned provisions. As a consequence, this strategy does not focus on the construction of large scale solid waste management infrastructure, such as landfills, waste reception facilities at ports and material recycling facilities. It is understood that these have already been identified, and in some cases funded, through the NAPs and the SAP. Therefore, this Strategy focuses mostly on the “in situ” generated waste (C) as well as on what may inevitably “escape” towards the beach and sea by sources (A) and (B) even if the latter are managed properly. In this sense apart from technical solutions that will be included to effectively address (C), the Strategy will contribute in building legal and institutional capacities of local and port authorities and other institutional stakeholders will provide software support to on-going and planned large scale SWM related investments (covered under the NAPs and other national and regional activities) in the form of public awareness, professional sectorial guidelines, policy formulation and advocacy.

Many of the aforementioned activities and tools have been developed in the Mediterranean region by regional, national and local NGOs, local authorities, schools and various civil society organisations and the Strategy encourages the continuation and enhancement of their involvement. Figure 3 presents some of the key management tools and activities employed in the Strategy and principle actors/stakeholders to be involved.

The Strategy will be supported and in return will enhance, both directly and indirectly, the following existing conventions and legislation: Barcelona Convention and its Protocols; MARPOL 73/78 Convention for the Prevention of Pollution from Ships (Annex V); London Convention for the Prevention of Marine Pollution from Dumping of Wastes (1996 Protocol); Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal; Agenda 21, Johannesburg Plan of Implementation; EC and Mediterranean Standards for bathing waters, EC Packaging and Packaging Waste Directive (94/62/EC), EC Marine Strategy Framework Directive (MSFD).

This Strategy does not intend to duplicate efforts in the region to de-pollute the Mediterranean. It has been drafted to specifically support the European Commission's Horizon 2020 Initiative and therefore the same time frame has been adopted.

Finally, this Strategy follows a precautionary approach and where appropriate the polluter pays principle will be implemented. The application of economic instruments, in particular for supporting local and national authorities to implement cost recovery programmes, is given emphasis in this Strategy.

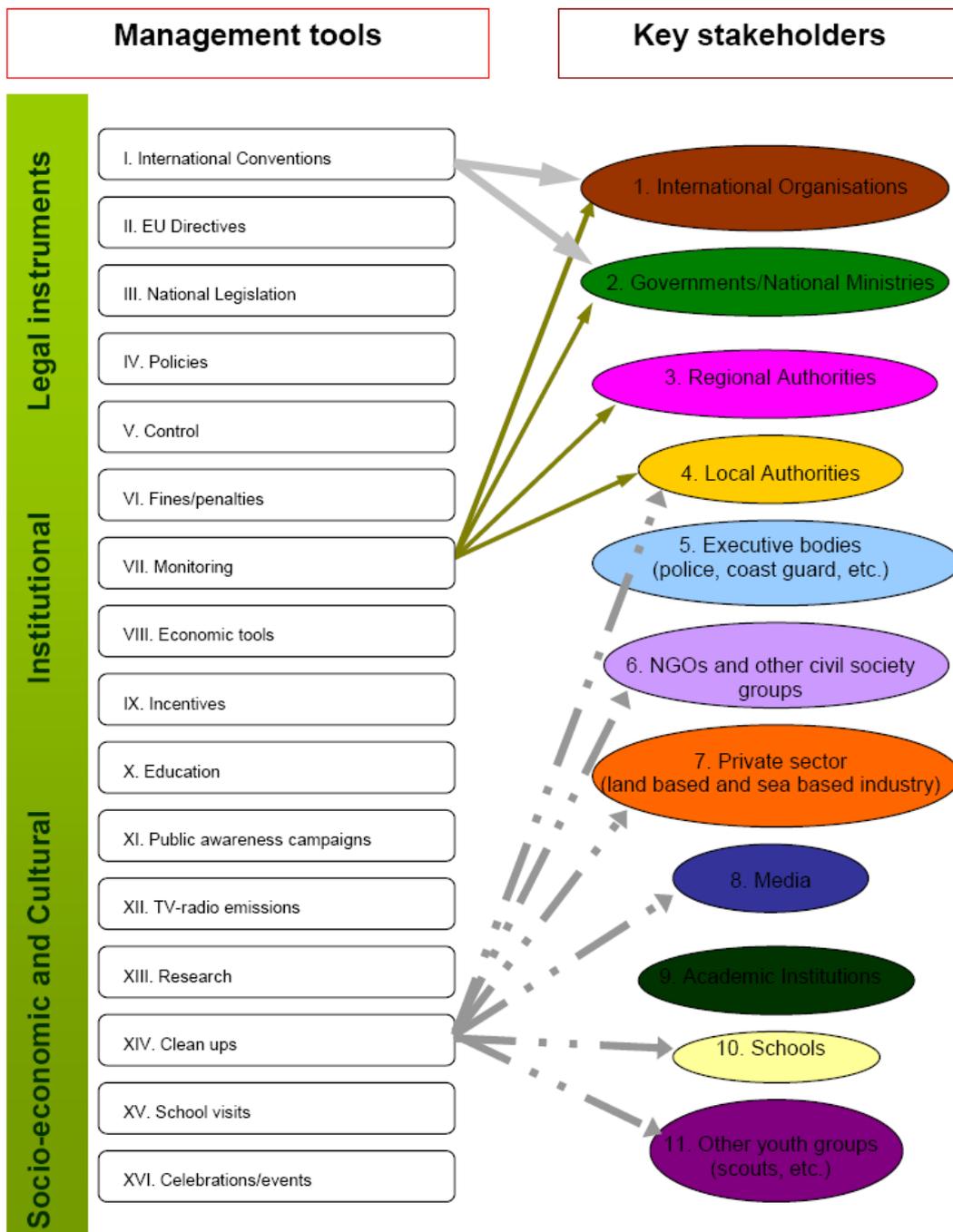


Figure 3. Common management tools/activities and stakeholders to be involved in the implementation of the Strategy

3. ACTION PLAN

- 3.1 Objective one: Enhance the proper implementation of existing regional legislation dealing with municipal solid waste, as well as sea based solid waste, by building or further developing institutional and legal capacity in local and port authorities and other institutional stakeholders to manage marine litter within an integrated coastal zone management framework

Justification and background of proposed activities: Land-based pollution is the main source of marine litter in the Mediterranean Sea, accounting for 52% of litter. The sea based pollution from ships, fisheries and off-shore aquacultures is important too, but of lower magnitude. The Assessment report indicates that in some countries, litter is reaching the Mediterranean Sea through sewer systems and that the origin of land-based litter outside the tourist season was from drainage and outfall. Furthermore assessments of pollution hotspots in the Mediterranean Region conducted under MED POL and used in MeHSIP reports noted many open dumps or poor management of sanitary landfills in coastal zones. Furthermore some coastal towns have also received legal action from the EU for the poor waste management and operations of illegal disposal sites.

Ensuring that port reception facilities are operated properly is of utmost importance if MARPOL Annex V is to be effective in reducing the amount of garbage being disposed by ships. REMPEC has recently conducted an assessment of waste reception facilities (REMPEC 2005) indicating the needs still existing.

Within the Mediterranean Region the LBS Protocol covers a wide range of land based polluting categories, with its entry into force it is now an opportune time to set legally binding targets and develop regional legislation on land based sources of marine litter similar to MARPOL Annex V which covers the sea based ones.

In parallel, the main waste management related legislations are the European Union's Waste Directive (2006/12/EC), Landfill Directive (99/31/EC) and Packaging and Packaging Waste Directive (94/62/EC) which provide a legal framework, but this applies only to 7 out of the 21 countries of the Mediterranean Region. Few countries which have ratified the LBS protocol have addressed marine litter in national legislation; the country questionnaire administered by MED POL, found that only five countries had specific marine litter policies, the remaining countries included marine litter under national waste management legislation. The recent ratification of the LBS protocol by all Parties offers an opportunity for the formulation of a regional marine litter legislation.

Because of the difference in the level of economic development between the countries of the Mediterranean region, (GDP values are lower for South and East Mediterranean countries), access to public services and the level of employment is also lower, (EC 2007). This variance trickles down to the local governance level and the availability of financial, technical and human resources to effectively manage public services. Solid waste management (SWM) is a public service which, in general, receives the least amount of attention and funding from national and international resources; projects on energy, water and sanitation are the more popular attracting most of the development aid. Solid waste management does not seem to be a priority area for governments. In the SAP MED, TDA and the NAPs, country priorities were in waste water treatment works, industrial pollution control and then solid waste management.

Therefore, under this objective National Governments and through them regional and local authorities are strongly urged, encouraged and facilitated to the extent possible to implement the provisions deriving from International/Regional Conventions, Directives and other guidelines aiming at effectively reducing managing and stopping waste from reaching the

coasts of the Mediterranean Sea either through streams, rivers and drains or via waves, currents and tides.

This requires: for land based sources, an effective municipal waste management system to ensure that waste receptacles are provided, that waste is stored properly, collected frequently and disposed or recycled appropriately so that waste doesn't become litter. It also requires a drainage system that is maintained and constructed to block litter entering water bodies. Both the provision of solid waste management services and drainage infrastructure require that the responsible authorities have the human resource, infrastructural and financial capacity to manage these services. *Construction of landfills, procurement of waste collection fleet, improvement of drainage and sewer systems are multimillion euro investments and are not under the scope of this Strategy.* For sea based sources: effective collection, transport and reception facilities at ports and other designated areas.

This objective focuses on the management aspect of marine litter, in particular the legal, institutional and technical requirements for local/port authorities and other institutional stakeholders to effectively manage marine litter and to maintain clean beaches.

In this respect and taking into account the different levels of public service delivery amongst the Mediterranean countries, the more developed countries are encouraged to transfer technology and knowhow and build capacity in the less developed countries. One way to achieve this is by twinning; local or port authorities in a more developed country could be paired with those of a less developed one.

Proposed activities at regional level

Medium term activities (2015)

- Activity 1.1: Document and make use of experience of countries in the Region which have specific marine litter policies and practices in place (based on 3.1).
- Activity 1.2: Develop policy guidelines on drainage and marine litter management for high level decision makers.
- Activity 1.3: Prepare operational guidelines for environmentally and ecologically friendly downloading from ships and port/marina cleaning equipment.
- Activity 1.4: Review, update and develop training programmes to support institutional aspects of the management of marine litter.

Long term activities (2020)

- Activity 1.5: Develop and implement twinning programmes for cross-border capacity building within local and port authorities in the application of marine litter management knowledge and technology.
- Activity 1.6: Continue the work on assessing and monitoring the operation of port waste reception facilities as stipulated under MARPOL and provide assistance to ports, harbours and small marinas to develop and implement effective waste disposal procedures.
- Activity 1.7: Facilitate eligible countries to develop proposals and apply to donors for grant financing of above activities.

Proposed activities at national level

Medium term activities (2015)

- Activity 1.8: Local authorities to integrate beach clean ups into SWM systems and establish networks to improve exchange of experiences between the various national/sub-national/local management authorities.
- Activity 1.9: Mapping of the solid waste infrastructures and/or lack thereof on coastal zones (such as landfills, open dumps, transfer points, etc.). Assessment of the impact of waste disposal sites as point sources of marine litter. Proposals for improvement and, whenever feasible, submission of projects to International Financial Institutions.
- Activity 1.10: Support institutional and technical capacity building of national and local administrations in order for large scale waste management projects to be developed and implemented

Long term activities (2020)

- Activity 1.11: Work with ministries and local/port authorities who have already developed Integrated Coastal Zone Management plans to include management of marine litter.
- Activity 1.12: Assist competent authorities to develop SWM plans, which include the management of marine litter, and investment strategies for smaller towns (i.e. of populations less than 100,000) which were not included in SAP.
- Activity 1.13: Parties to encourage sub-national and local authorities to develop proposals for financing activities under the EU LIFE, EU Neighbourhood Policy, the European Investment Bank (EIB), African Development Bank, GEF and other International Financial Institutions.

3.2 Objective two: Reduce in view to eliminate marine litter generated “in situ” (on beaches) with emphasis on plastic and smoking related marine litter

Justification and background of proposed activities: As identified already in chapter II1 the third important source of marine litter are the beach-goers, seasonal tourists anglers and other people using on occasion the coast for recreation or other purposes, or those who purposely use empty spaces near the coast to illegally dump garbage, rubbish, construction debris and other waste. Illegal activities need to be dealt with by the authorities by regularly patrolling the coastal areas and imposing heavy fines. To do so some legal and institutional changes are necessary in most countries to allow for rapid and effective prosecution and imposition of the fines. At the moment this is not an easy procedure in most Mediterranean countries. Setting up a regulatory framework by the responsible ministries, will provide the basis for the implementation of law enforcement and application of environmental economic instruments to reduce, manage and stop marine litter entering the sea. The Israeli Clean Coast project has set up a good example of enforcement procedures on beach goers caught littering. A regulatory framework should also include the enforcement of adequate port reception facilities and requirements of garbage management plans by ships and smaller vessels, as well as compliance by local authorities to solid waste management systems.

The present objective of the Strategy deals with what is “found” on the beach in the present phase of reality and what is likely to be found there either because it is generated “in situ” or

because it may “escape” from other sources despite the good results that may be expected under the implementation of objective one. Therefore, we need to deal under this objective with institutional and technical solutions for: (1) preventing “in situ” generation of litter and (2) cleaning up the beaches from all kinds of litter.

The information provided in the Assessment Report and the available literature indicates that plastic products (bags, bottles, bottle caps, food containers, fishing nets, packaging etc..) are the main litter items both on beaches and at sea; at least 50% of marine litter is a plastic product. In terms of environmental protection and de-pollution of the Mediterranean Sea, plastic is particularly hazardous as it does not degrade, it simply breaks down into smaller particles which can persist for 450 years (hard plastic) and it may also cause death and injury to certain marine species.

Recent studies have shown that the presence of plastic in our seas and oceans leads to secondary pollution; research conducted by the University of Athens has looked at pollution from heavy metals “extracted” from marine litter and in particular from plastic waste (UNEP/MAP 2008 (un-published)); the University of Plymouth is looking into the long-term effect of micro-plastic particles, of sizes as small as 20 microns, that have been found in abundance in sand and sediment (Thompson et al. 2004), there is also a risk that these particles are entering the marine-food chain (Ayre 2006) ; and lastly scientific research is showing that many types of plastics when exposed to sea water and sunlight change their characteristics and enhance their sponge-like properties, absorbing polychlorinated biphenyls (PCBs) and pesticides (Teuten et al. 2007).

The second most abundant litter item in the Mediterranean Region is smoking related debris; filters, cigar ends and cigarette packaging. Cigarette litter has a shorter life span, about 5 years, but leaches toxic substances into the marine environment and can be ingested by marine species. Furthermore, the public’s attitude is that discarding cigarettes into the environment is not related to marine litter as it is thought that cigarettes degrade immediately. Therefore educating the public and providing sufficient cigarette bins are key factors in stopping cigarette related litter from reaching the marine environment.

Another marine litter item which has a negative impact on the marine environment is fishing gear. In the Assessment, abandoned on the coast or lost fishing gear accounted for 5% of litter on beaches (litter from ocean/waterway activities). Furthermore, the floating marine litter survey conducted by HELMEPA in 2008 noted that the number of fishing gear, ropes and buoys counted was 2% of the total litter observed. Fishing gear is also dealt with under objective one. But despite the fact that they may not be the most abundant litter item on beaches and at sea and in keeping with the precautionary principle, their longevity (longer than plastic - fishing nets take 600 years to disintegrate), makes it important to address them also under this objective of the Strategy.

Removing and reducing the input of plastic and cigarette litter from the Mediterranean Sea and its beaches will drastically reduce the quantity of litter. This objective, and the Strategy as a whole, will therefore give particular emphasis on these two categories. However, with the effective implementation of the objectives under this Strategy it is envisioned that all other litter categories such as fishing gear, glass, aluminium cans, paper etc. will also be reduced. Some necessary activities are related to capacity building and attitudes and are covered in the subsequent objectives and activities. The activities proposed under this objective draw on the lessons learnt from implementing the SAP and specifically relate to technical and legal aspects of cleaning-up beaches and managing marine litter.

Proposed activities at regional level

Medium term activities (2015)

- Activity 2.1: Collect good practices and provide guidelines to countries on legal and institutional aspects in effectively patrolling and imposing fines on those illegally dumping waste in coastal areas and littering on beaches.
- Activity 2.2: Prepare guidelines for environmentally and ecologically friendly mechanical beach clean-ups.
- Activity 2.3: Conduct a study on the impact of climate change on de-pollution efforts, especially of flooding in relation to marine litter, in the Mediterranean Sea.
- Activity 2.4: Propose guidelines (eventually in cooperation with other competent international bodies) including incentive schemes for introduction of environmentally friendly fishing gear.

Proposed activities at national level

Medium term activities (2015)

- Activity 2.5: Support the International Coastal Clean-up campaigns with aim to increase the number of countries participating in campaigns and also the number of volunteers and beaches cleaned. The campaigns and reporting on the results of the clean-up exercises will be linked to objective four.
- Activity 2.6: Identify hot spots and conduct emergency clean-up of hotspots and beaches. Once the area is clean, it is more likely that people will refrain from littering, especially if this is followed by an awareness campaign as outlined in objective three.
- Activity 2.7: Appropriate national authorities to develop a legal framework to introduce enforcement procedures for waste recycling activities (sorting of waste, provision of recycling disposal points) where national waste recycling legislation exists.

Long term activities (2020)

- Activity 2.8: Local Authorities to work with the private sector and other actors to introduce the means to reduce marine litter on beaches with a special focus on plastic and smoking related litter.
- Activity 2.9: Work with conservation NGOs and fishing communities to adopt areas in the Mediterranean Sea and ensure that these areas are litter free. Similar to the concept of adopt a beach.
- Activity 2.10: In the absence of national waste recycling legislation, local authorities should take responsibility and set targets for amount of waste required to be recycled.

3.3 Objective three: Influence environmental attitudes and behaviour of residents and tourists of coastal areas in the Mediterranean Region with regards to marine litter

Justification and background of proposed activities: The high proportion of marine litter from land-based sources is largely due to (a) Uncontrolled dumping by coastal residents and (b) the influx of tourists during the summer season, taking into account that as many as 155 million tourists visit the Mediterranean region each year. Coastal residents are increasing progressively throughout the Mediterranean, since cities but also second and third residence settlements (summer homes) increase. Due to poor local infrastructures and negligence, coastal residents are key polluters of the coast. Tourists are also constantly increasing in numbers. A recent European Investment Bank (EIB 2007) report had predicted that annual tourist arrivals in southern and eastern Mediterranean countries would rise by as much as 19.4% (Morocco), 16.3% (Syria), 15% (Turkey), 14.9% Lebanon and 14.4% (Algeria) between 2006-2010. Furthermore, the report highlights that tourism for the majority of these countries is driven by international markets; the same applies for southern European countries whose tourist population is from northern European countries. Tourism is an important income earner for the Mediterranean countries, for example Cyprus earns as much as 29% directly and Malta 35% indirectly from tourism (UNEP 2005d).

The Assessment report indicates that the sudden increase in population of coastal urban centres results in more than 75% of annual waste being generated in these summer months. Moreover studies have shown that tourists generate, on a per capita basis, more waste than local inhabitants especially in the absence of adequate solid waste management systems. In addition, in some cases there is a lack of capacity by the waste management authority to cope with the increase in population from tourism. The tourism sector being an important income earner for the Mediterranean Region must feature prominently in this Strategy.

The 3R paradigm of waste management: reduce, reuse and recycle should be the focus of this objective. Reducing the amount of waste being generated by both tourists and local inhabitants is the most important of the 3Rs; if waste can be prevented from reaching the coastline and Mediterranean Sea in the first place then managing it becomes simpler.

It is important to connect individual behaviour to a clean coast and instil waste-wise values to all users of the marine environment. The main group to target are the coastal residents; it is this group's actions which will influence whether or not neighbours and visitors will respect the clean and litter-free environment. The more the local residents keep their coasts clean, the more likely it is that the tourists and visitors will follow suit. Therefore, residents of the coastal and inland areas will need to reduce the amount of waste they generate and ensure that it is disposed of appropriately so as not to end up in drains and waterways. Furthermore, influencing attitudes of residents in order to create a socially responsible environment, i.e. the public enforces the law - it is socially unacceptable to litter. These values and attitudes to the environment can be attained through education and a public awareness campaign

The second group which should be targeted are tourists, who may think that as the litter is not in their country, their littering actions won't have a direct affect on them back home. It is important therefore to influence their behaviour and perception of litter. Tourists should understand first that just as they share the benefits of a coast they need to share the responsibility of keeping it clean for others. Furthermore due to the particular nature of marine litter, waste can be conveyed by wind and water, and therefore it is a common problem, beyond a particular site, practically with no boundaries.

Littering at sea follows the same principle, leisure boat users must be informed of the waste disposal procedures on board and the effects of littering on the environment. Under MARPOL Annex V, all boats larger than 12meters are required to have garbage management plans. Charter yacht companies and sports centres should make it mandatory

that no waste is thrown overboard by informing clients and providing adequate waste receptacles.

Finally, educating children and adults through proper formal, non-formal and informal education for sustainable development programmes on the importance of a clean environment is the most long term, cost effective method for ensuring sustainable development in the future.

The private sector in the tourist industry has an important role to play in influencing attitudes and behaviours of both tourists and those working in the tourism industry. Hotels, airlines, sea transport networks and travel agencies, are directly affected if beaches and the sea are polluted with litter - tourists will simply not visit these areas and demand for services will decrease. Therefore, involving these groups as drivers of change will create a win-win situation within the framework of this Strategy. Examples of environmentally and socially responsible private sector initiatives include CSR schemes as well as awards such as the TUI Green Medal scheme.

Influencing behaviour can also be attained through the introduction of incentives to individuals, private and public institutions. Incentives to reduce marine litter and keep beaches clean can include environmental audit schemes such as the European Union's Eco-management audit system (EMAS) and ISO 14001 series for hotels as has been successfully implemented in various countries (i.e. in Spain) and the positive "labelling" scheme of beaches (Blue Flag programme) that includes management of litter. Furthermore, financial incentives such as recycling schemes, local taxes on consumption of plastic bags, reduced waste collection fees for sorted waste from ships or litter caught in nets and trawls by fishermen can also be adopted.

Line Ministries responsible for Tourism, Education, Local Authorities, Maritime and the Environment, should understand that environmental degradation of the Mediterranean Sea and its coastline is a cross-cutting issue and requires the cooperation of all authorities and each one of the ministries. In order to involve the various line ministries and all other stakeholders in this Strategy, it is suggested that in the framework of the Strategy an assessment of the economic, social and environmental impact that marine litter has on the Mediterranean Region be undertaken on a country by country basis in order, on the one hand to assign a financial value to clean beaches and sea and, on the other, assess the "cost of inaction" where littering is allowed inhibited. A regional prototype study could be carried out with examples from various parts of the region. This will ensure political buy-in and pave the way for law enforcement through the application of environmental economic instruments, while it will raise the awareness of the public. The role of schools, civil society organisations and local authorities in raising awareness is of cardinal importance. Many of the campaigns could be organised and run by regional, national and local NGOs, schools and local authorities.

The proposed tools of communication for influencing attitudes amongst tourists, coastal residents, the private sector and decision makers should cover a whole spectrum of methods, channels and means. Efforts should be made for using 'litter free' methods such as – internet (using existing sites), television and the radio. Another form of advertisement is air advertisement which catches the attention of the beach user. The litter-free campaign should pride itself for using innovative communication channels instead of classic litter oriented communication tools such as flyers and posters, which, of course, are not excluded if the circumstances require such an approach.

Proposed activities at regional level

Medium term activities (2015)

- Activity 3.1: Carry out a prototype pilot assessment of the economic, social and environmental impacts that marine litter has in the Mediterranean Region in order (a) to assign a financial value to clean beaches and (b) assess the cost of inaction if littering continues inhibited. This assessment and its methodology may act as a blue-print for relevant national assessments.
- Activity 3.2: Promote a communication strategy in order to present the findings of the economic, social and environmental assessments and marine litter surveys undertaken as part of this strategy (see 3.1 etc.) and provide periodic updates on marine litter hotspots and the general environmental situation of Mediterranean Sea.

Long term activities (2020)

- Activity 3.3: Support Parties to expand or replicate existing coastal management award schemes (such as the Blue Flag and Clean Coast Index).
- Activity 3.4: Encourage and coordinate in cooperation with regional NGO networks a major public awareness Mediterranean "litter free" campaign and educational programmes on marine litter reduction and beach clean-ups.
- Activity 3.5: Implement regional and national programmes on promoting sustainable consumption and production in cooperation with the Marrakech Process and thereafter.

Proposed activities at national level

Medium term activities (2015)

- Activity 3.6: Undertake an assessment to ascertain the economic aspects of, social and environmental impact of pollution from marine litter at national and local level (based on 3.1).

Long term activities (2020)

- Activity 3.7: Involve all line ministries and local/port authorities in the dissemination of the findings of the assessment (3.5).
- Activity 3.8: Develop and implement in cooperation with all willing stakeholders national and local 'Litter-free' Mediterranean Sea campaigns. Use information from above activities to support public awareness campaigns with emphasis on coastal residents and tourists. Involve the media, particularly TV channels and radio stations, in active promotion of the "Litter free Mediterranean Sea" campaigns.
- Activity 3.9: Promote simple formal and non-formal ESD in schools on the multiple impacts of marine litter and what can be done to prevent it. This activity should take into consideration already existing training material. The activity should include a component on training of teachers.
- Activity 3.10: Encourage local authorities to work with schools, NGOs and other CS groups to conduct voluntary beach clean ups.

Activity 3.11: Work with line ministries to implement incentive schemes for coastal areas using appropriate standards such as the ISO 14001 standard and the EMAS.

Activity 3.12: Develop partnership frameworks with sea transport network providers to ensure waste-wise behaviour onboard and adequate disposal of waste on and off-board.

Activity 3.13: Work with the tourism sector in coastal areas to introduce sustainable tourism. Develop concrete proposals of how the tourism industry becomes more eco friendly and protect the environment from littering.

Activity 3.14: Assess the various financial opportunities to assist all competent local authorities and other stakeholders at national or local level to implement the aforementioned activities and replicate existing Programmes either through a cost recovery system (charging beach users and law enforcement) or grant financing for start-up activities.

3.4 Objective four: Establish a monitoring programme for marine litter in the Mediterranean Sea

Justification and background of proposed activities: From the assessment report and an independent literature review it is clear that monitoring marine litter in the Mediterranean has been haphazard. The data collected is not systematic, does not answer key questions and the methodologies employed are different. This questions the validity of the data for drawing conclusions on the state of marine litter in the Mediterranean region. A well thought, methodologically sound monitoring programme is essential in order that the Strategy produces tangible and measurable results.

Monitoring of marine litter should not only indicate the categories (types), distribution and trends of marine litter but should indicate its sources and activities leading to its production and, most importantly, should indicate if the adopted litter management/mitigation strategies are effective or need further adaptation.

Furthermore, monitoring should facilitate the assessment of the ecological, financial and social impact of litter (threats to marine biota and damages to health, tourism, recreation, etc.).

A full marine litter monitoring programme is a complex, expensive and not easy task, which includes collection, interpretation and dissemination of various sets of data on marine litter. The recently developed "UNEP/IOC Operational Guidelines on Survey and Monitoring of Marine Litter" provides a useful standardised methodology, which should be introduced and used also in the Mediterranean region. These guidelines have been developed for monitoring beach, benthic and floating litter and provide detail sampling techniques and survey protocols. In the Mediterranean Region many opportunities exist to use and accordingly improve on-going marine litter monitoring programmes: i) the surveys conducted to monitor marine litter on land and at sea, although ad-hoc and not systematic, provide an opportunity for up scaling, ii) various types of beach clean-up campaigns serve a dual purpose of environmental protection and awareness raising, these programmes attract many volunteers and can be a useful source of data if the data collection methodology is improved and standardised. There are also sub-national and local authorities who are actively involved in managing marine litter and cleaning beaches and in parallel also monitor the trends of marine litter. This Strategy urges such institutions to use a common methodology compatible with the one proposed under the aforementioned UNEP/IOC guidelines in order that the information can be comparable across the region and beyond.

The proposed monitoring programme will require coordination at the regional and national level (Figure 4) and should take into account all relevant regional initiatives. At the regional level MED POL will coordinate this activity and promote the appropriate methodologies. It will be responsible for the evaluation and dissemination of marine litter related information which has been provided by designated national agencies. At the national level, it is proposed that the main institutions or groups involved in marine litter data collection: NGOs, Local/Port Authorities and universities, set up a light coordination structure and select one of them to act as the designated focal point/national agency for collecting the data and keeping record of the carried out marine litter monitoring activities.

Monitoring at the regional level may require, apart from trawl surveys, remote observation surveys employing integrated Geographic Information System (GIS), where floating litter is not collected. These systems are the way forward as they facilitate the development of an interactive database and visually display results through maps. The information contained in this database will have been provided by the designated national bodies, details of which are elaborated in the activity section, and evaluated by MED POL. Furthermore it is anticipated that this system will have multiple users such as environmental groups, policy makers, planners, etc. and will support many activities included in this Strategy and in the wider scope of MED POL and its activities, supporting as well objectives one and four of this Strategy .

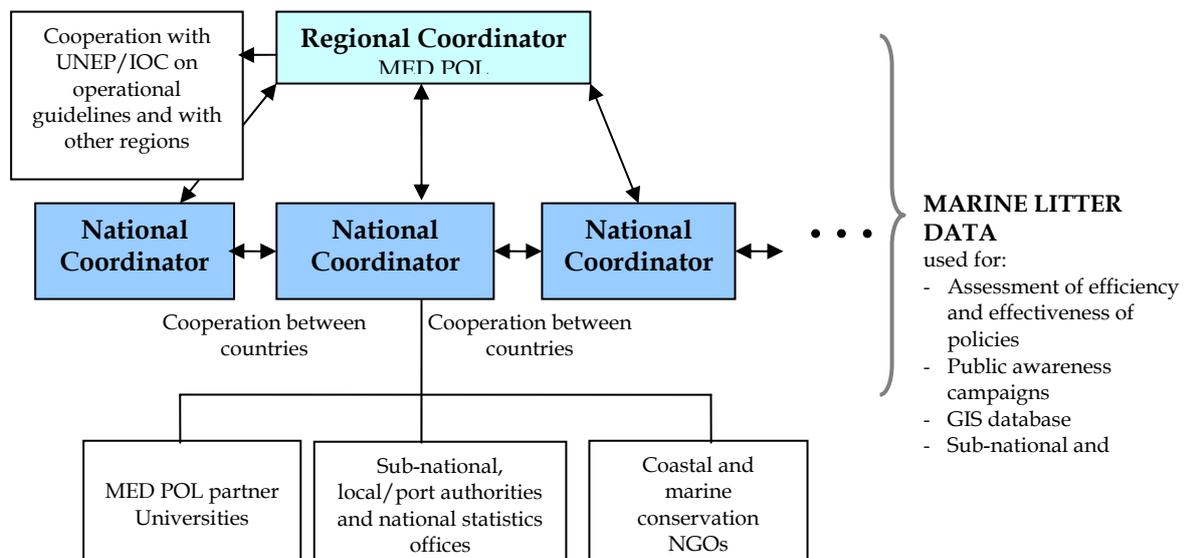


Figure 4: Proposed monitoring framework

At the national level, the designated national body will coordinate the data collection on land and at sea. Also, it will be responsible for ensuring that the UNEP/IOC guidelines are streamlined across all actors and an agreement on a time schedule is reached. The national body will be responsible for collating and documenting the information from the various marine litter surveys and reporting to MED POL.

Regarding monitoring litter at sea, it is an area which needs further additional support as until now very few surveys have been conducted and consequently there is little data on the quantity and impact of benthic and floating marine litter in the Mediterranean Sea. This Strategy proposes adopting the UNEP/IOC guidelines for monitoring benthic and floating

marine litter and aligning on-going activities in this field. An example of community involvement in data collection is the work undertaken by MED POL and the RAMOGE Commission in Lebanon which is acknowledged in this strategy. The project involved fishing communities collecting litter caught in their nets whilst fishing, which was then recorded into a GIS database. Again it is proposed to align data collection methodologies to the UNEP/IOC guidelines.

In this Strategy monitoring the implementation and effectiveness of environmental and waste policies and national legislation will be an integral part of the monitoring component and therefore it is proposed that the MED POL questionnaire continues to be sent to the countries regularly. The MED POL/UNEP questionnaire has been designed to collect information on legal, policy and waste management issues and therefore offers a systematic route for countries to report on qualitative information. The questionnaire will need to be reviewed, and if necessary revised, to reflect the current political and legislative situation in the region. In addition, the indicators in this questionnaire should be aligned to the UNEP/IOC guidelines and parameters selected that are common with other systems such as the EU Medstat indicators (annex three) and indicators for the Mediterranean Strategy for Sustainable Development (MSSD). Aligning indicators with other programmes could also catalyse further financial assistance from bilateral and international partners. *Training of trainers sessions* and a *training manual* will need to accompany this questionnaire. The *training of trainers* will ensure national level capacity to administer the questionnaire and the *training manual* will be a reference guide and aid for MED POL, trainers and country focal points to administer the questionnaire effectively. This activity will also ensure that 'institutional memory' is retained for reporting on marine litter related activities in the long term.

Proposed activities at regional level

Medium term activities (2015)

- Activity 4.1: Present and adopt UNEP/IOC guidelines on monitoring marine litter. Stakeholders in this process include, universities, research institutions, other development agencies, representatives of local and port authorities, national statistics offices, NGOs and other civil society organisations.
- Activity 4.2: Formalise the already developed country questionnaire on "Litter management in coastal zones of the Mediterranean Basin" and offer training in administering the questionnaire. It should be sent for completion to the countries every four (4) years.
- Activity 4.3: Develop and agree on a set of indicators from quantitative (baseline survey) and qualitative (questionnaire) data.
- Activity 4.4: Agree on a reduction of marine litter by a year to be determined, based on the national baselines developed by each country, taking into consideration the fluctuation of litter between two time horizons. This baseline will be used to measure progress in the reduction of marine litter, it is therefore important that the methodology for conducting the baseline is statistically and scientifically robust and there is consensus amongst all the partners taking into account the UNEP/IOC guidelines and international practice.
- Activity 4.5: Integrate the marine litter monitoring system into the MED POL information system. The system will include the baseline information, indicators and will be used to track progress in reducing marine litter. In-putting of data will be a continuous process.

Long term activities (2020)

- Activity 4.6: Consider best practices in the region and implement pilot projects on the collection of floating and sea-bed litter by following the UNEP/IOC guidelines.
- Activity 4.7: Fundraising for the establishment of a full-scale marine litter monitoring programme from country contributions, bilateral agencies and international financial organisations.

Proposed activities at national level

Medium term activities (2015)

- Activity 4.8: Countries to develop a sampling framework and conduct a baseline study of marine litter.
- Activity 4.9: Countries to conduct routine monitoring programmes and report results to the national coordinator and MED POL.

Long term activities (2020)

- Activity 4.10: Parties to establish and implement national marine litter monitoring programmes on the basis of regional agreements.
- Activity 4.11: Capacity building on implementing the UNEP/IOC guidelines on monitoring marine litter.

3.5 Objective five: Establish synergies with on-going and planned initiatives in the Mediterranean Region as they relate to marine litter

Justification and background of proposed activities: This objective should be understood as a continuous and systematic effort in parallel to all and each one of the previous four objectives. The synergies to be obtained will strengthen the activities described at regional and national level under each one of the previously described objectives. It is included as an additional objective because there are many actors in the region, ranging from other United Nations Organisations, NGOs and research institutes which are working to address various aspects of the issue of marine litter in the Mediterranean Sea at various levels. There are also large scale waste management related programmes financed by International Financial Institutions (IFIs), the EU and bilateral aid from which financial assistance to implement activities related to capacity building in this Strategy can be catalysed. This Strategy proposes that partnerships with these organisations be either strengthened, and if no partnerships exist that they are established, in order to meet the common objectives.

This section has identified four categories of partners and proposes various activities which can be undertaken in the medium term, at the regional and national level in coordination with them. Some have already been identified under objectives one to four.

a) Proposed synergies with other United Nations Organisations and conventions

International Convention for the Prevention of Pollution from Ships 1973 (MARPOL 73/78) Annex V – The MARPOL Convention, was laid down as international law by the International Maritime Organization (IMO) in 1973 and was amended by a Protocol in 1978. Known as MARPOL 73/78 it regulates types and quantities of waste that ships may discharge into the sea, taking into account the ecological sensitivity of different sea areas. Under MARPOL the Mediterranean Sea is classified as a Special Area. Annex V is the main legislation covering

the prevention of pollution from garbage by ships; it deals with the different types of waste disposed and the manner in which they are disposed of. The legislation prohibits the disposal of all plastics and prohibits the disposal of garbage in Special Areas. The implementation and enforcement is the responsibility of the contracting parties to Annex V. The provision of waste reception facilities is the responsibility of port or local authorities, and sometimes this is contracted out to the private sector. The latest information provided to the International Maritime Organization (IMO) regarding reception facilities for garbage in the Mediterranean region stated that these are available and cover all the relevant ports (IMO 2008). As a result the IMO agreed that MARPOL Annex V legislation will take effect as of 1st May 2009.

Food and Agriculture Organisation (FAO) Code of conduct for responsible fisheries: Fishing gear as litter in the sea occurs either due to natural factors in the course of normal operations (bad weather, entanglement etc..) or deliberately (abandoning illegal fishing nets or broken gear). In either instance managing abandoned or lost fishing gear is an important avenue in reducing marine litter. In the Mediterranean Region there are many types of fisheries which require a different management approach, for example large scale commercial fishing can be largely controlled by Port Authorities however small scale artisanal fishing have a social and cultural dimension which requires a more integrated approach. In-line with FAOs 'Code of conduct for responsible fisheries' (1995), the present Strategy proposes a selection of cost-effective activities to manage lost and abandoned fishing gear and an enforcement system for reducing abandoned fishing gear.

United Nations Framework Convention on Climate Change (UNFCCC) - Following the precautionary approach, this Strategy is forward looking and in order to mitigate future pollution of the Mediterranean Sea from natural hazards, the issue of climate change is addressed. Increased incidents of flooding and heavy rainfall is anticipated for the Mediterranean Region in the winter months as well as a rise in sea level of 1 metre. Coastal cities such as Thessaloniki (Greece) and Venice (Italy) and regions such as Kastela Bay (Croatia) and the Nile Delta (Egypt) are reported to become the most affected. Anticipating the future effects of climate change in the Mediterranean Region is paramount to an effective strategy for de-polluting Mediterranean Sea. Increases in incidences of flooding without proper measures to control the influent flood water into the Mediterranean Sea will result in debris accumulated in-land: in drains, roads, waste disposal sites and river catchment areas being swept into the Mediterranean Sea. The clean-ups costs of removing the debris will be high and can be avoided if proper measures are put in place to stop waste entering the Mediterranean Sea.

The recent attention which climate change has had and also the MAP activities on this topic, provides an opportunity for the Mediterranean to be in the lead of efforts to reduce marine litter from floods and other phenomena linked to climate change in the Mediterranean Region. Furthermore the Integrated Coastal Zone Management Protocol has made provisions for natural hazards from climate change and is therefore already part of a framework in which this Strategy can support.

UNEP/United Nations Department for Economic and Social Affairs (UNDESA) – Following the concept proposed under Objective I, that the management of marine litter can be separated into the generation of marine litter and prevention of litter reaching the Mediterranean Sea, this activity proposes focusing on the generation of waste. Following on from the Johannesburg Plan of Implementation and the need to address unsustainable consumption and production, a 10 year framework has been prepared by UN DESA's Division for Sustainable Development and UNEP. This framework known as the "Marrakech Process" was launched in 2003 and aims to: i) assist countries in their efforts to green their economies, ii) help corporations develop greener business models and iii) encourage consumers to adopt more sustainable lifestyles.

Medium term activities (2015)

- Activity 5.1: Development of pedagogical tools and guidelines for the shipping sector on marine litter, management of shipping waste and use of port reception facilities. This activity can replicate the best practices of NGOs on training and motivating crew and ship owners to take a more active role in the environment.
- Activity 5.2: Work with countries to implement MARPOL Annex V through development of own legislation and policies.
- Activity 5.3: In collaboration with other competent international organizations and private sector develop a compendium of environmentally safe fishing gear in the Mediterranean Region.
- Activity 5.4: Port authorities to set up a reporting system for abandoned and lost fishing gear.
- Activity 5.5: Advocate for the recent “Adaptation Fund” of UNFCCC to be available to Mediterranean Countries for use in ensuring proper measures against pollution of the Mediterranean Sea from land-based litter.
- Activity 5.6: Highlight the issue of marine litter in the Mediterranean Region at the forthcoming Commission on Sustainable Development (CSD) meeting, 2010 - 2011 cycle which focuses on solid waste.

Long term activities (2020)

- Activity 5.7: Engage with UNDESA and UNEP to support efforts to reduce per capita generation rates in the Mediterranean Region.

b) Proposed synergies with International Financial Institutions and the European Union

In implementing this Strategy MED POL should ensure that marine litter is recognized as an integral part of solid waste management investments. In support of on-going efforts by the EU, World Bank and bilateral agencies, the Strategy should allow for software activities to support large scale infrastructure projects.

Mediterranean Hot Spot Investment Programme (MeHSIP)The MeHSIP programme is an activity of the Horizon 2020 project. A preliminary report has been prepared identifying pollution hotspots eligible for EIB funding and based on MEDPOL pollution hot spots work and studies (Haffner-Sifakis and Sommer 2008). During the data collection phase for this report, information from UNEP/MAP and MED POL were evaluated, in particular the pollution hot spots along with the National Action Plans submitted by all parties to the Barcelona Convention. The report identifies fundable projects under wastewater, municipal waste and industrial waste, the projects identified require loan financing for construction or rehabilitation of wastewater and solid waste disposal facilities. A summary matrix of the on-going and planned projects in the solid waste management sector is included in *annex two*. The projects are mainly rehabilitation and construction of landfills but there is a potential to include management of coastal and marine litter activities. It is clear that in the southern and eastern Mediterranean countries the problem of coastal unmanaged landfills and open dumps is contributing substantially to marine litter. Furthermore, some landfills not located on the coast but in the catchment area inland are also point sources of marine litter pollution. The construction of sanitary landfills and other waste disposal and collection technologies is

outside the scope of the present marine litter Strategy, nevertheless their implementation is crucial for de-pollution of the Mediterranean Sea. Furthermore, any effective investment in hardware (solid waste management infrastructure) must be accompanied by software activities in order to catalyze the environmental and health benefits of the investment. It is proposed that under the investments of Horizon 2020, a series of activities identified in the Strategy should be developed at regional and, mainly, at national level, including:-

- Public awareness to stop littering;
- Environmental education in schools;
- Capacity building in Local and Port Authorities to integrate marine litter clean up activities into operational plans;
- Developing of regional legal frameworks to address marine litter; and
- Advocacy for clean technology options to minimise litter.

MedStat -The European Union (EU) has initiated the MedStat programme which is a statistical co-operation to support the EU's Euro-Mediterranean Partnership (MEDA) programme. An opportunity exists here to fund the monitoring activities in this Strategy through offering additional information on marine litter and therefore supporting MedStat's Environment subtheme (see annex three for a list of MedStat waste related indicators).

EU Marine Strategy Framework Directive -The directive sets up for the first time an overall, integrated policy for the protection of the marine environment which is faced with a number of threats including loss or degradation of biodiversity and changes in its structure, loss of habitats, contamination by dangerous substances and nutrients and the impact of climate change. It requires Member States have to take the necessary measures to achieve or maintain good environmental status in the marine environment by the year 2020. The directive divides the EU waters into maritime regions and Member States by 2015 should develop programmes and measures designed to achieve or maintain good environmental status, which should enter into operation by 2016 at the latest. Marine Litter is specifically mentioned as one of the elements which must be addressed.

Medium term activities (2015)

Activity 5.8: Provide software assistance in education, institutional and legal capacity building and public awareness campaigns to support the MeHSIP infrastructure projects funded by the European Investment Bank.

Long term activities (2020)

Activity 5.9: Jointly develop capacity building projects for local and port authorities to manage marine litter.

Activity 5.10: Following the entrance into force of the LBS Protocol, MED POL to work with the EU to develop legally binding targets for the reduction of marine litter and align targets to Marine Strategy Framework Directive.

c) Synergies with national level programmes and NGO activities

There are major regional NGO networks and numerous NGOs and national or local institutions with considerable experience, expertise and programmes on the management of marine litter and environmental protection which are being successfully implemented. Not all of these programmes can be mentioned in this document, however this Strategy encourages the replication of best practices inter and intra nation in the Mediterranean Region. Below are two good practices that can have an impact on reducing marine litter if replicated on a larger scale.

Blue flag Programme and Clean Coast Index: The Blue Flag Programme, although original formed in response the EU Bathing Water Directive, has members outside the EU. The Programme awards blue flags to beaches that meet the four criteria of; environmental education and information; water quality; environmental management; and safety and service for both coastal areas and marinas. Under the environmental management criteria for beaches it requires that the beach be clean and a beach clean-up committee established. For marinas, the requirements are under this criteria are that adequate and well managed litterbins must be in place, recycling facilities must be offered and that no pollution from boat washing/repair areas may enter the sewage system or natural surroundings. The Blue flag Programme is already in operation in Cyprus, Croatia, France, Greece, Italy, Montenegro, Morocco, Slovenia, Spain, Tunisia and Turkey.

The Clean Coast Programme is an initiative of the Israeli Ministry of Environmental Protection to ensure and achieve clean beaches, especially unauthorized beaches. The Programme operates under four main areas: the continuous cleaning of beaches by municipalities; education of the public; enforcement; and advertising and public relations. The beaches are classified according to an index, ranging from 0-20, which measures cleanliness by the number of litter items found in a particular area, the fewer the items per area the lower the index.

Both these programmes should be considered as good practices for the management of marine litter. The Clean Coast Programme offers a measuring system for beach litter (which can also be included in activities under Objective four and can easily be inserted into a GIS system) and in implementing the Blue Flag Programme the environmental management of coastal areas is attained. Efforts should be made to replicate both Programmes; the Clean Coast Programme can either be a stand-alone activity or integrated into the Blue Flag Programme. A win-win situation can be achieved if support in terms of technological know-how on marine litter issues and publicity of the Blue Flag Programme can be offered by MED POL in return for the FEE to offer assistance to new members joining the programme and making in concerted effort to replicate the Programme in more countries. For the effective and sustainable implementation of these Programmes financial assistance and capacity building will be required for NGOs, Port/Marina and Local Authorities.

Medium term activities (2015)

Activity 5.11: MED POL to provide technical knowledge to local monitoring programmes on the management and monitoring of marine litter (based on UNEP/IOC guidelines).

Long term activities (2020)

Activity 5.12: Parties to work with programmes such as Blue Flag and Clean Coast to replicate them in other coastal areas.

d) Universities and Research Institutes

Universities and research institution are important partners in supporting research and development (R&D) in the field of marine litter. They also provide a platform for exchange of information at both the national and regional level. These bodies can also provide scientific knowledge and policy direction to the wider scope of the Strategy. Furthermore the Seventh Framework Programme of the European Community (EC) for research and technological development for the period 2007 to 2013 can be a source of financing for R&D activities on marine litter.

Long term activities (2020)

Activity 5.13: Engage with research institutes to promote research and development in the field of marine litter and provide scientific knowledge and policy direction activities described in the Strategy.

4. LOG FRAME AND WORK PLAN

Overall goal		Specific objectives	Expected results	Sources & means of verification	Activities		Assumptions
					Regional level	National level	
To minimize and further eliminate, to the fullest possible extent, marine litter in the Mediterranean Region through regional and national activities.	1	Enhance the proper implementation of existing regional legislation dealing with municipal solid waste, as well as sea based solid waste, by building or further developing institutional and legal capacity in local and port authorities and other institutional stakeholders to manage marine litter within an integrated coastal zone management framework.	Integration of marine litter strategies, policies and technical knowledge, in Local and Port authorities' operations.	Specific marine litter policies at local level. Availability of marine litter related technologies. Funding of new marine litter related activities. Local/Port authority reports.	<p><u>Medium term (2015)</u> Document and make use of experience, develop policy and operational guidelines, review, update and develop training programmes.</p> <p><u>Long term (2020)</u> Develop and implement twinning programmes, assess and monitor the operation of port waste reception facilities, facilitate eligible countries to develop proposals and apply to donors.</p>	<p><u>Medium term (2015)</u> Beach clean-ups, establishment of networks, mapping of solid waste infrastructures, assessment of the impact of waste disposal sites, support institutional and technical capacity building of Local and National administrations for large scale project development and implementation.</p> <p><u>Long term (2020)</u> Inclusion of marine litter management in existing ICZM plans, assist competent authorities to develop SWM plans, project development assistance</p>	Local/port authorities willing to adopt Integrated Coastal Zone Management protocol. Commitment by all parties to the implementation of MARPOL Annex V. Commitment by Local/port authorities to improve marine litter. Workable partnerships between NGOs, Local Authorities and Schools for beach cleanups.
	2	Reduce in view to eliminate marine litter generated "in situ" (on beaches) with emphasis on plastic	Reduction in the input of marine litter while maintaining the coasts clean.	Beach clean ups. NGO assessment reports. Waste management reports from	<p><u>Medium term (2015)</u> Collect good practices and provide guidelines</p>	<p><u>Medium term (2015)</u> Support the ICC campaigns, identify hot spots and conduct emergency clean-ups,</p>	Commitment and participation by Local/Port authorities, NGOs, informal sector and

		and smoking related marine litter.		Local and Port authorities	on clean ups, introduce incentive schemes, conduct a study on the impact of climate change, propose guidelines.	development of a legal framework to introduce enforcement procedures for waste recycling activities. <u>Long term (2020)</u> Local Authorities to work with the private sector, NGOs, etc., set targets for amount of waste required to be recycled.	private sector (hotel, shops and supermarkets). Capacity for NGOs and artisanal fishing groups to work together.
3	Influence environmental attitudes and behaviour of residents and tourists of coastal areas in the Mediterranean Region with regards to marine litter.	Reduction in the amount of waste produced by local residents and tourists.	Amounts of waste collected from receptacles. Number of marine litter Impact Assessments. Awareness and Education materials. Hotels, enterprises, etc. participating in litter reduction activities.	<u>Medium term (2015)</u> Carry out a prototype pilot assessment of the economic, social and environmental impacts of Marine litter, promote communication strategy. <u>Long term (2020)</u> Encourage and coordinate in cooperation with regional NGO networks awareness campaigns, promote sustainable consumption and production.	<u>Medium term (2015)</u> Undertake an assessment to ascertain the economic aspects of, social and environmental impact of pollution from marine litter. <u>Long term (2020)</u> Develop and implement national and local campaigns, promote simple formal and non-formal ESD, develop partnership frameworks, introduce sustainable tourism, assess financial opportunities, replication for start up activities	Adherence to results of monitoring exercise. Political will from line ministries. Communication and transport networks willing to participate. Involvement of local authorities in enforcement of anti-litter strategies.	

	<p>4 Establish a monitoring programme for marine litter in the Mediterranean Sea.</p>	<p>Marine litter monitoring programme under the coordination of MEDPOL/UNEP established.</p>	<p>Country reports, coastal and sea-based litter clean up campaigns, research and development conducted by Universities.</p>	<p><u>Medium term (2015)</u> Adapt and adopt UNEP/IOC guidelines on monitoring marine litter, administer questionnaire every 4 years, develop common indicators, agree on a reduction of marine litter by a year to be determined, integrate the monitoring system in the MEDPOL information system.</p> <p><u>Long term (2020)</u> Identify best practices and implement pilot projects, fundraising for the establishment of a marine litter monitoring programme.</p>	<p><u>Medium term (2015)</u> Conduct a baseline study, conduct routine monitoring programmes, report results.</p> <p><u>Long term (2020)</u> Establish and implement national monitoring programmes, Capacity building on implementing the UNEP/IOC guidelines.</p>	<p>Communication between National and Regional Coordinators. Basic capacity in national coordinators to collect and interpret data provided by local organizations in a timely manner. Collaboration at the regional and national level.</p>
	<p>5 Establish synergies with on-going and planned initiatives in the Mediterranean Region as they relate to</p>	<p>Financial assistance catalysed from other on-going and planned</p>	<p>Reporting systems on for abandoned and lost fishing gear, tools and</p>		<p><u>Medium term (2015)</u> Support MARPOL implementation, develop pedagogical tools and guidelines for the shipping</p>	<p>Collaborative attitude between partners. Consensus by EU and international</p>

	<p>marine litter.</p>	<p>projects.</p>	<p>guidelines for shipping sector, UNEP led software activities in large scale infrastructure projects, Implementation of Blue Flag programmes, etc. partnerships in place.</p>		<p>sector, address the issue of abandoned and lost fishing gear, provide software assistance and public awareness in support of the EIB's MeHSIP projects, support local monitoring programmes.</p> <p><u>Long term (2020)</u> Develop joint capacity building projects, develop legally binding targets and align them to the Marine Strategy Framework Directive, work with programmes such as Blue Flag and CCI, engage with research institutes to promote R&D.</p>	<p>agencies to integrate marine litter in solid waste management investments. Willingness of Clean Coast Index, FEE and Blue Flag Programme to expand activities.</p>
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5. IMPLEMENTATION MODALITIES

It is suggested that the overall strategy will be part of the MED POL activities and that MED POL will be responsible for coordinating and monitoring progress.

To assist MED POL in the implementation of the Strategy an internal communication strategy should be developed. This will ensure that the partners are familiar with their reporting duties and that progress on meeting targets is closely monitored by MED POL.

The work plan in section four has identified potential partners to work with MED POL in implementing the monitoring component of the Strategy. Partners at the national level are mainly line Ministries, sub national agencies, local/port Authorities, tourist related private sector, waste related private sector, NGOs and other civil society organisations.

In terms of financing the activities in this Strategy there are various options. One of the objectives of this Strategy is to develop synergies with other programmes and support on going efforts by international development and bilateral agencies. It is foreseen that additional financial resources will be catalysed through this approach. Furthermore the information from the socioeconomic assessment should also provide impetus for the private sector (hotels, transport networks), local/port authorities and governments to play a larger role and invest more in managing marine litter. Finally, volunteers and advocates of a clean marine environment play a crucial role in this Strategy. The goodwill and human resources offered by this group is part of this Strategy, and their in-kind contribution will go a long way in covering some activities.

Government, ministries and local/port authorities should as far as possible aim to finance environmental protection through internal budgets, the development of economic instruments and implementation of polluter pays principle within this Strategy will serve to finance some of these activities. For countries with lower economic development it is proposed that these countries engage with specific departments within EU (FEMIP, ENPI and Europe Aid), African Development Bank, the World Bank, other United Nations Programmes and bilateral partners, for soft loans and grants. In order to leverage funds from these institutions this Strategy has included the preparation of assessments and development of policies and strategies, which will assist these countries and institutions in the negotiation process.

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ANNEX I
PARTIES TO THE BARCELONA CONVENTION

Albania
Algeria
Bosnia and Herzegovina
Croatia
Cyprus
Egypt
European Union
France
Greece
Israel
Italy
Lebanon
Libyan Arab Jamahiriya
Malta
Monaco
Montenegro
Morocco
Slovenia
Spain
Syrian Arab Republic
Tunisia
Turkey

**ANNEX II
 ASSESSMENT OF SOLID WASTE MANAGEMENT UNDER MEHSIP**

Country	Current situation	On-going SWM Programmes	Proposed solid waste related investments for MeSHIP
Algeria	Domestic solid waste is deposited in wild dump sites creating serious hygienic problems to the population.	A series of sanitary landfills are planned for the coastal areas, as well as transfer stations.	Incomplete assignment and therefore no proposes MeSHIP investments
Egypt	Regarding domestic waste, the governorates are responsible for the investments and the operations are under the responsibility of the municipalities.	Solid Waste Management for South Sinai, South Sinai Regional Development Programme: 6,4 million euros, (EC funded).SMAP III Plan of Action for an Integrated Coastal Zone Management in the area of Port Said' and the 'SMAP III ALAMIN Alexandria Lake Mariut Integrated Management' projects, (EC-funded)Another national priority is the rehabilitation of dumping sites in Beheira governorate (5 cities) and construction of sanitary a sanitary landfill.	None related to MSW

<p>Israel</p>	<p>Solid waste is also an important environmental problem, despite the Country's relatively well developed waste legislation. Over 90% of solid waste is now sent to organized landfills, but abandoned landfills now create environmental problems, besides occupying scarce land resources. Rehabilitation of these thus is a matter of priority.</p>	<p>None</p>	<p>Rehabilitation of Landfills in Haifa, Natanya, Ashkelon, Rishon LeZion, Retamin</p>
<p>Lebanon</p>	<p>Approximately 2.3 million people inhabit the narrow Lebanese co.</p>	<p>Containment of Tripoli seafront dumpsite, treatment of slaughterhouse waste and rehabilitation of Sour coastal dumpsite and Saida seafront dumpsite</p>	<p>Awaiting confirmation</p>
<p>Morocco</p>	<p>Municipal solid wastes are partly collected in many urban centers and are generally deposited on unorganised wild dump sites without sanitary measures, resulting in serious environmental and potential health problems.</p>	<p>Municipal waste management for the town of Chefchaouen</p>	<p>None related to MSW</p>

ANNEX III
LIST OF EU MEDSTAT INDICATORS RELATED TO SOLID WASTE
MANAGEMENT

- Municipal waste incinerated
- Generation of municipal waste
- Municipal waste collected from households
- Municipal waste collected from commerce and trade, small businesses, office buildings, institutions
- Municipal waste collected from street and market cleaning, yards, litter containers etc.
- Composition of municipal waste
- Generation of municipal waste by type
- Waste generated in manufacturing industry
- Treatment of municipal waste
- Amount of municipal waste landfilled
- Treatment of hazardous waste
- Disposal of hazardous waste
- Waste treatment facilities