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**DRAFT DECISION ON THE ADOPTION OF THE STRATEGIC FRAMEWORK FOR MARINE LITTER
MANAGEMENT**

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Draft Decision on the adoption of the Strategic Framework for Marine Litter management

The 17th meeting of the Contracting Parties,

- *Recalling* the UNEP Global Marine Litter Initiative that took an active lead in assisting eleven Regional Seas Programmes in organizing and implementing regional activities on marine litter;
- *Recalling* the results of the assessment of the status of marine litter in the Mediterranean prepared in 2008 in the framework;
- *Taking note* of the commitments endorsed by the Fifth International Marine Debris Conference and the revised Honolulu Strategy, a global framework strategy to prevent, reduce, and manage marine debris/litter;
- *Taking note* of the process of gradual application by MAP of the Ecosystem Approach for the management of human activities in the Mediterranean region, that includes ecological objectives and operational objectives with associated indicators and targets for marine litter;
- *Having considered* the progress of the European Commission in developing the marine litter descriptor of the Good Environmental Status within the context of the EU Marine Strategy Framework Directive;
- *Taking into consideration* Article 15 of the LBS Protocol for the adoption of action plans, programmes and measures, as well as the annex 1 section C, point 14 of the same Protocol;

Decides to:

- ***Adopt*** the Policy document and the associated Strategic Framework for Marine Litter management presented as Annexes I and II to this decision;
- ***Request*** the MEDPOL Secretariat, in close collaboration with the Contracting Parties and in cooperation with the competent MAP components and partners, to prepare a Regional Plan on Marine Litter Management in the framework of Article 15 of the LBS Protocol; and
- ***Invite*** the Contracting Parties to fully support the process and provide the adequate resources

ANNEX I

**A NEW POLICY TO ADDRESS MARINE LITTER IN THE
MEDITERRANEAN**

A new policy to address marine litter in the Mediterranean

Background

Marine litter has been an issue of concern in the Mediterranean since the 1970s. Today the coastline and catchment area of the Mediterranean 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.

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.

The Mediterranean countries adopted the Convention for the Protection of the Mediterranean Sea against Pollution (the Barcelona Convention) in 1976. Within the framework of this Convention, in 1980 the Mediterranean countries adopted a Protocol for the Protection of the Mediterranean Sea against Pollution from Land-Based Sources. The Protocol recognizes the importance of dealing with the problem of marine litter. In the Annex I of the Protocol marine litter is defined as "Persistent synthetic material which may float, sink or remain in suspension and which may interfere with any legitimate use of the sea". The Protocol was amended in 1996 and entered into force in 2008. The Annex I of the amended Protocol defines litter as "any persistent manufactured or processed solid material which is discarded, disposed of, or abandoned in the marine and coastal environment".

The Mediterranean was designated a Special Area for the purposes of Annex V of the MARPOL 73/78 Convention. Recently the Mediterranean coastal States Parties to the MARPOL Annex V presented a joint submission to the IMO's MEPC, notifying that adequate reception facilities for garbage were provided in their respective ports.

In the framework of the MED POL Programme of UNEP/MAP, a comprehensive Bibliography on Marine Litter containing 440 references and an Assessment of the State of Pollution of the Mediterranean Sea by Persistent Synthetic Materials, which can Float, Sink or Remain in Suspension were published in 1991.

MAP action on coastal and marine litter

The Eleventh Meeting of the Contracting Parties to the Convention for the Protection of the Mediterranean Sea against Pollution and its Protocols, 1999, asked the MED POL Programme to include in its work programme, action on coastal and marine litter and to prepare a relevant assessment.

Following the decision by the Contracting Parties, a Questionnaire about Litter Management in Coastal Zones of the Mediterranean was sent to Mediterranean countries and the answers were analyzed with the aim of preparing a new assessment. The assessment showed that the main sources of coastal litter in the region are river runoff, tourist activities and coastal urban centers. This result indicated that it is the inadequate management of coastal solid waste that is responsible for the presence of litter on the beaches, floating in the water and on the sea bed. In addition to the above mentioned results, it appeared that almost all the Mediterranean countries have policies for the management of coastal solid waste but the enforcement of the policies is weak mostly because of the poor coordination between different national and local administrations dealing with solid waste issues. However, only few countries have policies related specifically to marine litter. Local administration and

municipalities are ultimately responsible for the management of coastal litter in the region. The role of the Ministry of environment is limited to the control aspects.

Based on these facts, MED POL built up a strategy to assist coastal local authorities to improve the management of coastal solid waste and prevent the introduction of litter into the marine environment that was successfully tested through a pilot project implemented in Lebanon. A national replication strategy was also developed and agreed upon by all Lebanese coastal municipalities.

In 2003, in the framework of MED POL, WHO/EURO prepared Guidelines for Management of Coastal Litter for the Mediterranean Region. These guidelines were prepared within the framework of the Strategic Action Programme (SAP) to address pollution from land-based activities and are intended to help the responsible authorities, planners and field operators.

Following the Global Marine Litter Initiative of UNEP/GPA of 2006, a new assessment was prepared by MED POL to update the current status of the marine litter problem in the Mediterranean and better understand how it is dealt with by the countries of the region. The new assessment was the result of a joint effort of relevant authorities, IGOs, NGOs, scientists and economic sectors in several Mediterranean countries, and has taken full consideration, and can be regarded as the follow-up to, the collective previous related initiatives and activities of UNEP/MAP.

The assessment relied on the information collected from the completed questionnaires of fourteen Mediterranean countries, analysis of beach clean-up data mainly from the period 2002-2006, the monitoring and recording of litter floating on the sea surface for the duration of the study by HELMEPA member companies with ships traveling in or transiting the Mediterranean, existing literature and initiatives and the direct contacts with local authorities, non-governmental organizations and associations, as well as scientists and individuals, who could provide reliable data on marine litter (recorded or unrecorded). Efforts were made to provide useful statistics that could be further extrapolated to give a quantifiable estimation of the marine litter problem in the Mediterranean.

Recently, in the framework of the gradual application of the Ecosystem Approach (ECAP) for the management of human activities in the Mediterranean by MAP (COP Decision IF 17/6, Almeria, 2008) an Ecological Objective for marine litter has been proposed: "Marine and coastal litter do not adversely affect coastal and marine environment". Also Operational Objectives with associated Indicators are under development. Marine litter monitoring will be implemented in the framework of the ECAP integrated monitoring programme, which will be developed during the biennium 2012-2013.

The main findings of the assessment

- Although useful data on marine litter exists in the region (types, quantities, etc.) it is inconsistent and geographically restricted mainly to parts of the North Mediterranean. Standardized research data for statistical purposes concerning the problem of litter in the Mediterranean is a necessity. Furthermore, information sharing between and among NGOs, IGOs, research institutes, relevant authorities, etc. in the Mediterranean regarding litter data needs to be improved;
- Previous deductions that most of the Mediterranean marine litter is from land-based sources, rather than ships, were confirmed;
- Marine litter found on Mediterranean beaches originates from shoreline and recreational activities and is composed mainly of plastics (bottles, bags, caps/lids etc.), aluminum (cans, pull tabs) and glass (bottles) (52% - based on item counts). This figure is in line with the

global average in the same period (2002-2006). Marine litter from smoking related activities accounts for 40% (collected items) which is considerably higher than the global average;

- In terms of marine litter *floating in the sea*, plastics account for about 83.0%, while all other major categories (textiles, paper, metal and wood) account for about 17% (no. of items observed);

- Besides being an eyesore, marine litter also poses hazards and dangers for wildlife and people. A variety of marine wildlife species was found to be entangled in or injured by marine litter items. In fact, derelict fishing gear, which includes fishing line, nets, rope and lures represents about 70% of all entanglements;

- Most of the countries that provided input to this assessment are undergoing a series of policy reforms relating to marine litter, covering the whole range from waste prevention practices all the way to environmentally sound disposal of waste, with a view to involving a wide range of stakeholders. Administrative coordination, budget allocation, technical capacity and weak enforcement remain the main obstacles. On the up-side, there is a clear indication that private sector involvement is increasing. No country has any kind of cross-border collaboration scheme on the issue of marine litter management;

- The economic impact of marine litter has not been addressed in the region while the specific to the region impacts on nature and humans need to be further identified and explored.

Public awareness and education

In parallel to the assessment, MED POL with the support of the Regional Seas Programme of UNEP developed a medium-term public awareness and education campaign on the management of marine litter in the Mediterranean with the overall objective to contribute to the protection of the environment and the sustainable development of the Mediterranean.

MED POL opted to work with partner NGOs of the region, in the context of a project entitled "Keep the Mediterranean Litter-free Campaign" carried out by the three partner organizations with the support of UNEP/MAP.

The outcome of the project was a brochure produced in 11 Mediterranean languages, a series of awareness and clean-up events and a publication for a common regional strategic approach on how to raise awareness and appropriately educate the public about marine litter. The latter has been developed for the general public as well as for all other stakeholders such as the maritime industry, the tourism sector, agriculture, regional and national authorities, NGOs, the media, etc.

Numerous international organizations and NGOs have conducted surveys and beach cleanup campaigns yielding data and information on marine and coastal litter pollution of the Mediterranean Sea. These efforts, which continue to present, are considered as a reliable source of data and information.

Towards a new strategy for the proper management of marine litter in the Mediterranean

With the entering into force of the Barcelona Convention's LBS Protocol (2008), the entry into force of the Integrated Coastal Zone Management (ICZM) Protocol in 2011 and the coming into effect in 2009 of the Mediterranean Sea as a *Special Area* (under Annex V of the

International Convention for the Prevention of Pollution from Ships (MARPOL)), the issue of marine litter management got indeed strengthened.

As a result, the need was felt to enter into a more operational phase and tackle the issue of marine litter with more concrete initiatives. Recently, in planning the medium and long-term work plan for MAP and MED POL, the Contracting Parties to the Barcelona Convention asked the Secretariat to formulate a new strategy for the proper management of marine litter in the Mediterranean region and to present it for adoption.

The strategy that is being prepared is based on **the overall goal to ensure that marine and coastal litter do not adversely affect the coastal and marine environment and the impacts related to properties and quantities of marine litter in the marine and coastal environment are minimized, controlled and eliminated to the maximum extent practicable through regional and national activities.** 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. Also, the objectives take into consideration the Ecological Objectives, Operational Objectives with associated Indicators and targets for marine litter, which are under development in the framework of the gradual application by MAP of the Ecosystem Approach for the management of human activities in the Mediterranean:

- 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 behavior 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, based on the ecosystem approach;
- Objective five: Assess lost and abandoned fishing gear and identify and implement counter measures against biological damage;
- Objective six: 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.

The strategy is being prepared through a participatory process and its basic elements have already been discussed at expert and Government-designated levels. It is proposed to be implemented through a legally binding Regional Plan based on Art 15 of the LBS Protocol, to be formulated on the basis of the strategic framework prepared by MED POL. The Regional Plan will include activities both at the national and regional levels and will indicate measures, targets and timetables.

While a number of preparatory activities could immediately be implemented at the regional and national levels, the Regional Plan will be prepared during the biennium 2012-2013 and will be presented to the Contracting Parties to the Barcelona Convention for adoption at their next Meeting in 2013.

ANNEX II

MANAGEMENT OF MARINE LITTER IN THE MEDITERRANEAN: A STRATEGIC FRAMEWORK

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PREAMBLE

The present strategic framework 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 last meeting of MED POL Focal Points held in Rhodes on 25-27 May 2011, where the strategic framework was presented and welcomed by the participants, the present revised draft was prepared by the Secretariat.

The strategic framework 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 strategic framework. Section III sets out a strategic framework 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 strategic framework. The last Section, V, describes the envisioned implementation modalities. The Parties in this strategic framework 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 led 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). 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.

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. The convention includes seven protocols some of which are directly or indirectly relevant to marine litter:

- 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*". 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. Furthermore a comprehensive bibliography 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 ultimately responsible 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. 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”, 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 STRATEGIC FRAMEWORK

2.1 Objectives

The overall goal of this Strategic Framework is to ensure that marine and coastal litter do not adversely affect coastal and marine environment and the impacts related to properties and quantities of marine litter in the marine and coastal environment are minimized, controlled and eliminated to the maximum extent practicable through regional and national activities.

Marine litter is, for this strategic framework, a category of substance listed under the LBS Protocol and for the purposes of this strategic framework 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 based on the ecosystem approach.
- Objective five: Assess lost and abandoned fishing gear and identify and implement countermeasures against biological damage
- Objective six: Establish synergies with on-going and planned initiatives in the Mediterranean Region as they relate to waste and marine litter, including the Marine Strategy Framework Directive. In fact, this objective aims at ensuring coherence and coordination of scattered activities undertaken by various stakeholders under all previous objectives

2.2 Principles of the strategic framework

The underlying concept of this strategic framework 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.

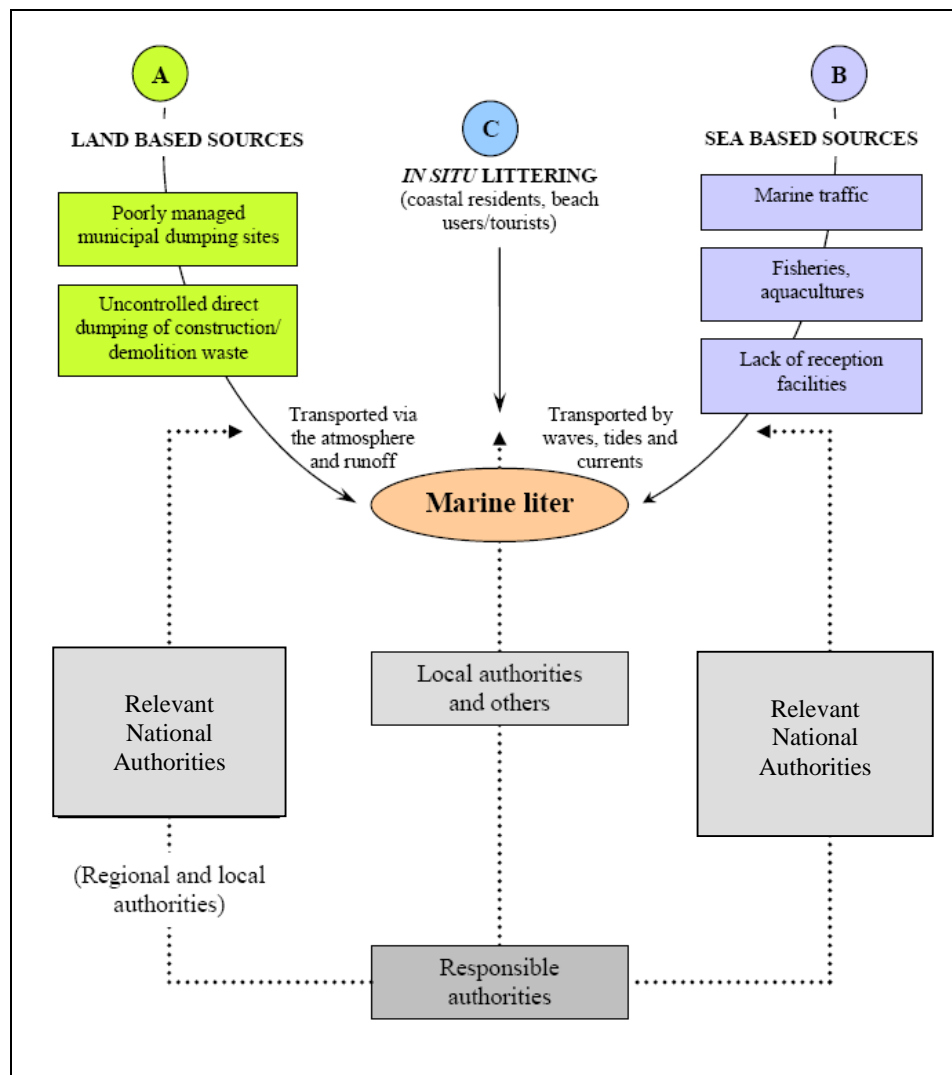


Figure 2. Main sources of marine litter and responsible authorities in the Mediterranean countries

Figure 2 presents the three major sources of litter that the strategic framework 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 strategic framework supports and further advocates and facilitates the implementation of the aforementioned provisions. As a consequence, this strategic framework 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 strategic framework 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 strategic framework 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 strategic framework encourages the continuation and enhancement of their involvement. Figure 3 presents some of the key management tools and activities employed in the strategic framework and principle actors/stakeholders to be involved.

The strategic framework 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 strategic framework 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 strategic framework 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 strategic framework.

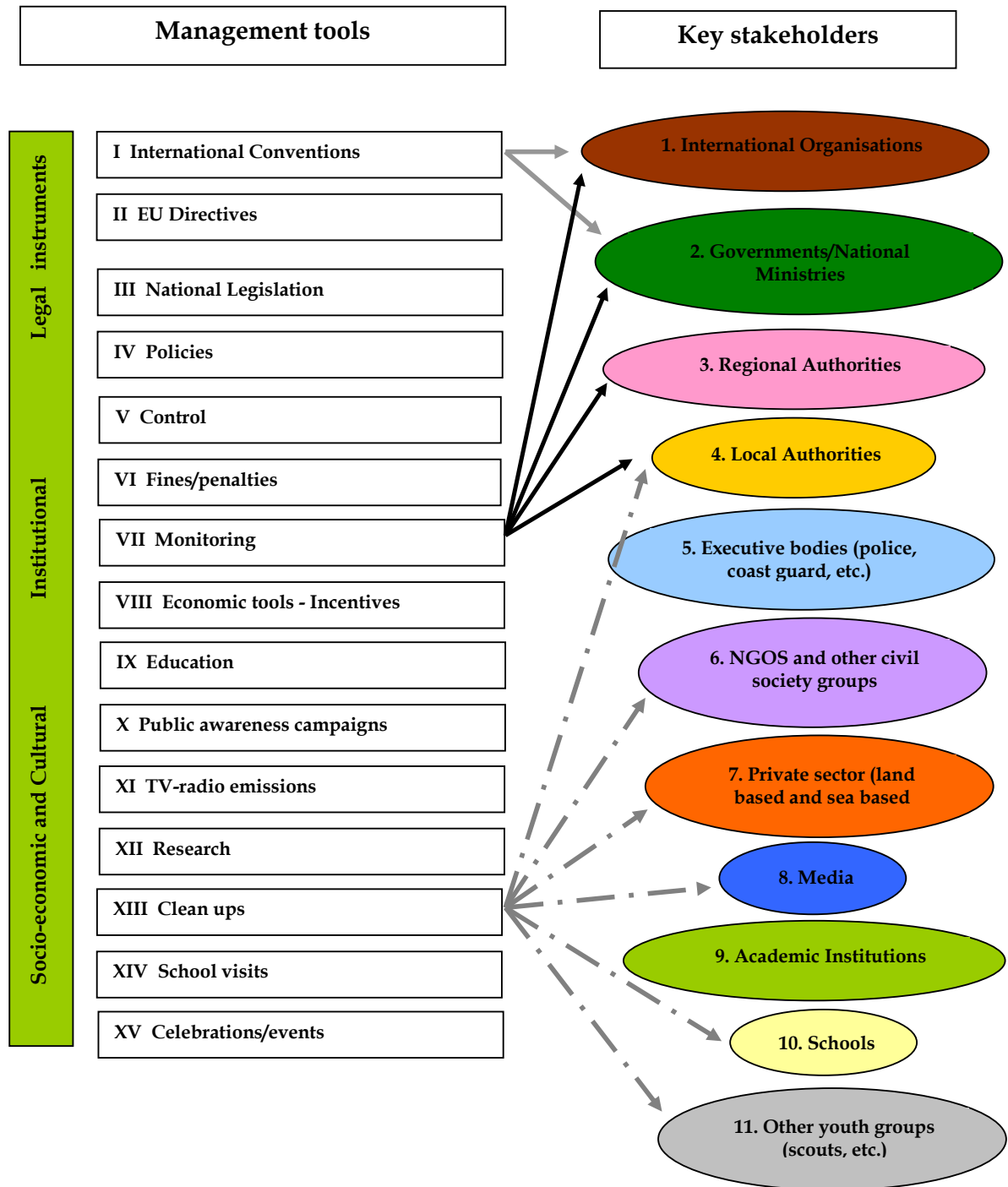


Figure 3. Common management tools/activities and stakeholders to be involved in the implementation of the strategic framework

3. STRATEGIC FRAMEWORK

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: Shoreline and recreational activities 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 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. 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 strategic framework.* 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

- 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

- 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

- 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

- 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 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 strategic framework 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; 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, there is also a risk that these particles are entering the marine-food chain; 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.

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 strategic framework.

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 strategic framework as a whole, will therefore give particular emphasis on these two categories. However, with the effective implementation of the objectives under this strategic framework 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

- 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: 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

- Activity 2.4: 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 2.5: Identification of hot spots and conducting 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 2.6: 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

- Activity 2.7: 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 2.8: 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 2.9: 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 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.

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 strategic framework.

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 context of this strategic framework. 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 strategic framework, it is suggested that in the framework of the strategic framework 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

- 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 strategic framework (see 3.1 etc.) and provide periodic updates on marine litter hotspots and the general environmental situation of Mediterranean Sea.

Long term activities

Activity 3.3: 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 3.4: Implementation of 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

Activity 3.5: 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

Activity 3.6: Involve all line ministries and local/port authorities in the dissemination of the findings of the assessment (3.5).

Activity 3.7: 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 3.8: 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 3.9: Encourage local authorities to work with schools, NGOs and other CS groups to conduct voluntary beach clean ups.

Activity 3.10: Work with line ministries to implement incentive schemes for coastal areas using appropriate standards such as the ISO 14001 standard and the EMAS.

Activity 3.11: Develop partnership frameworks with sea transport network providers to ensure waste-wise behaviour onboard and adequate disposal of waste on and off-board.

Activity 3.12: 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 3.13: 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 based on the ecosystem approach

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 strategic framework 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. Also a litter monitoring programme should be part of a broader integrated marine monitoring programme, in line with the national priorities of the countries, as well as with its regional/international commitments. In the framework of the gradual application of the Ecosystem Approach (ECAP) for the management of human activities in the Mediterranean, Ecological Objectives (EO), Operational Objectives (OO), with associated Indicators and targets for marine litter are under development by UNEP/MAP. In Table 1 are presented the proposed EO, OO and indicators, which will be submitted for adoption by the Contracting Parties.

Table 1
Ecological Objectives, Operational Objectives, and targets proposed
in the framework of the gradual application of the ECAP

Ecological Objective	Operational Objectives	Indicators
Marine and coastal litter do not adversely affect coastal and marine environment	10.1 The impacts related to properties and quantities of marine litter in the marine and coastal environment are minimized	10.1.1 Trends in the amount of litter washed ashore and/or deposited on coastlines, including analysis of its composition, spatial distribution and, where possible, source
		10.1.2 Trends in amounts of litter in the water column, including microplastics, and on the seafloor
	10.2 Impacts of litter on marine life are controlled to the maximum extent practicable	10.2.1 Trends in the amount of litter ingested by or entangling marine organisms, especially mammals, marine birds and turtles

Therefore, a monitoring programme for litter will be developed during the biennium 2012-2013, in the framework of the new integrated monitoring programme for the application of the ECAP.

In the development of the new integrated monitoring programme of ECAP, the recently developed “UNEP/IOC Operational Guidelines on Survey and Monitoring of Marine Litter” provides a useful standardised methodology, which should be taken into consideration in the development a methodology suitable for 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.

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 strategic framework and in the wider scope of MED POL and its activities, supporting as well objectives one and four of this strategic framework.

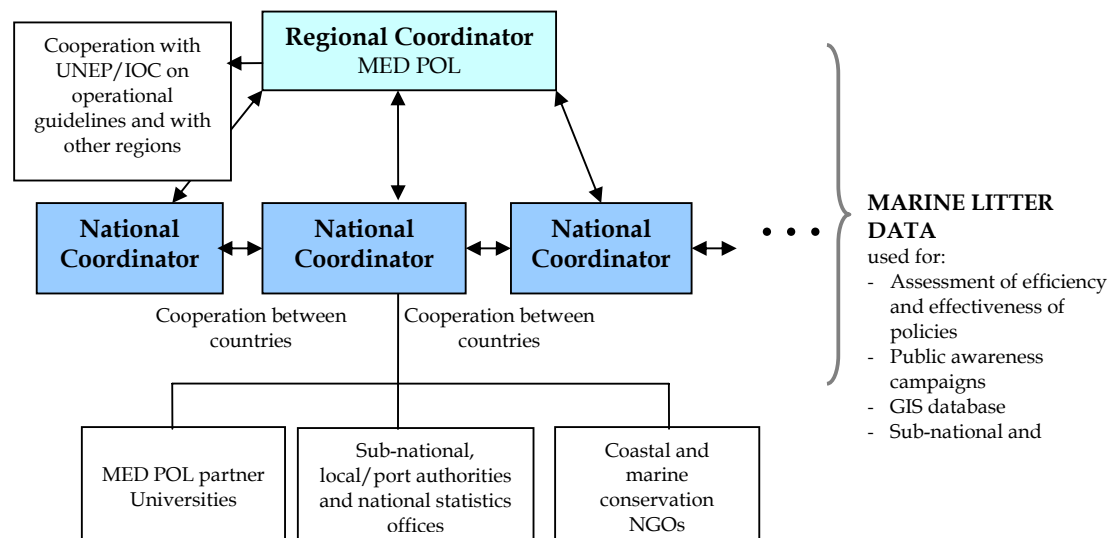


Figure 4: Proposed monitoring framework

At the national level, the designated national body will coordinate the data collection on land and at sea. 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. The UNEP/IOC guidelines, together with available monitoring methodologies for litter at EU level or at national level, will be used as a basis for the development a Mediterranean monitoring Programme for marine litter.

The follow up of 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 indicators under development for the gradual application of the Ecosystem Approach. *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

Activity 4.1: Develop guidelines on monitoring marine litter taking into consideration the UNEP/IOC guidelines. 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, in the framework of the gradual application of the ECAP.

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 methodologies developed under the ECAP, 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

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

Activity 4.8: Countries to develop a sampling framework and conduct a baseline study of marine litter based on the ECAP indicators.

Activity 4.9: Countries to conduct routine monitoring programmes in the framework of the ECAP integrated monitoring programme of MAP and report results to the national coordinator and MED POL.

Long term activities

Activity 4.10: Parties to establish and implement national marine litter monitoring programmes on the basis of the ECAP.

Activity 4.11: Capacity building on implementing the UNEP/IOC guidelines on monitoring marine litter.

3.5 Objective five: Assessment of lost and abandoned fishing gear and countermeasures against biological damage

Justification and background of proposed activities: Every abandoned, deliberately discarded or lost at sea fishing gear is part of the marine litter, considering the definition of marine litter given at the international level: “any persistent, manufactured or processed solid material discarded, disposed of or abandoned in the marine and coastal environment”. The United Nations Environment Programme (UNEP) Regional Seas Programme recognises the immediate and direct interconnection between marine litter and lost/abandoned fishing gear and related debris.

The fishing gear could be lost at sea for several reasons (bad weather conditions, accidental cutting of buoys by vessels, etc.) or abandoned because leaving it in the sea is a convenient means of illegal disposal. Food and Agricultural Organization of the United Nations considered the ghost fishing a big concern generating additional mortality in overexploited marine ecosystems. Ghost nets are often considered perpetual “killing machines” that never stop fishing. Some studies were performed to quantify the decay of efficiency of ghost net, these parameters depends on many factor as the type and dept of seabed where the net remains, the velocity of biofouling development, visibility or transparency of water etc.

Overall catch rates of lost/abandoned fishing gear vary so greatly that a global estimate would be meaningless. It was considered lost tangle nets to catch around 5 percent of the total commercial catch. Several studies on static fishing gear have shown it to be about 10% of the target population. Fish and crustaceans such as lobsters and crabs are frequently caught in lost or discarded fishing gear. The major damage seems to be caused by cages traps, placed on the seabottom, in which there is a self baiting phenomenon. Lost traps also continue to attract fish and crustaceans, which enter them in search of food or shelter.

Also other fishing gear as drifting net and trammel nets may act actively killing a great number of marina fauna. Drift netting is a fishing technique where nets, called drift nets, are allowed to drift driven by current at the sea surface. Drifting nets travel the seas with the currents and tides continually fishing as they progress through the waters. As they are unattended and roaming, they fish indiscriminately, not only catching threatened species but undersized and protected fish/marine mammals as well.

Trammel nets are fishing net with three layers of netting that is used to entangle fish or crustacea. A slack central layer with a small mesh is sandwiched between two taut outer layers with a much larger mesh. The net is kept vertical by the floats on the headrope and weights on the bottomrope. Trammel nets are used especially near the coasts in rocky habitats characterised by high biodiversity and continue to fishing species of high economic value.

Lost/abandoned fishing gear continue to trap passing fish ‘unintentionally’ (by-catch) also of particularly endangered and protected species. Floating parts and suspending parts of

abandoned fishing gear entangle wildlife such as marine mammals, sea turtles, sea birds and fish, often attracted by fishes that have been caught or entangled in nets and fishing lines.

Due to the resistance to degradation of synthetic materials (nylon, polyethylene and polypropylene), once discarded or lost, fishing gear remain in the marine environment, with negative economic and environmental impacts. Lost/abandoned fishing gear is lately becoming increasingly a world wide evident nuisance. It is assumed that hundreds of thousands tonnes of nondegradable fishing nets are abandoned or lost in the world oceans every year. Worldwide, this phenomenon is having an impact on the sustainability of already stressed fisheries. Ghost fishing kills thousands of fish that might otherwise have found their way to the market. An estimated US\$ 250 million in marketable lobster is lost each year from ghost fishing.

Furthermore, derelict fishing gear in the form of nets and ropes, invisibly floating just below the water's surface, can cause significant risks to vessel operations. Nets, ropes and other derelict gear, it has been documented, have entangled vessel propellers and rudders resulting in costly repairs, significant loss of operational time, and endangering boater and crew safety.

Moreover, lost/abandoned fishing gear, like other marine debris, has the capacity to travel for very long distances and through different habitats, transporting with them invasive species from one sea area to another.

Proposed activities at regional level

Medium term activities

- Activity 5.1: Strengthening co-operation between Regional Fishery Bodies and Mediterranean strategic framework.
- Activity 5.2: Develop training programmes to support Fishery Bodies on the aspects of the management of lost/abandoned fishing gear.
- Activity 5.3: Develop an awareness campaign, together Fishery Bodies, to the fisheries to sensitize them on environmental and economic consequences following the abandoning of fishing gear at sea.
- Activity 5.4: Propose guidelines (eventually in cooperation with other competent international bodies) including incentive schemes for introduction of environmentally friendly fishing gear.
- Activity 5.5: Integrate a lost/abandoned fishing gear 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 lost/abandoned fishing gear.
- Activity 5.6: Stimulate and encourage Parties to cooperate in conduction of a baseline study on lost/abandoned fishing gear particularly aimed to understand the extension of the problem in the Mediterranean sea and the best available solutions.
- Activity 5.7: Strengthening the cooperation among Fishery Bodies, the scientific community and the fishing industry in reviewing of fishing gear materials and developing of new technologies.

Long term activities

Activity 5.8: 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, with particular reference to lost/abandoned fishing gear.

Proposed activities at national levelMedium term activities

Activity 5.9: Quantification of the problem at national level through a estimation of the amount of gear being purchased by fishers within a country, the number of fishers, the number of vessels, and estimate the loss versus the collection of used and expired fishing gear.

Activity 5.10: Conduct routine monitoring programmes and mapping activities of lost/abandoned fishing gear and report results to the national coordinator and MED POL.

Activity 5.11: Provide assistance to fisheries to recover their lost fishing gear from the water

Activity 5.12: Develop reception facilities available for the disposal of disused fishing gear and other wastes from vessels.

Long term activities

Activity 5.13: Work with conservation NGOs and fishing communities to adopt areas in the Mediterranean Sea and ensure that these areas are lost/abandoned fishing gear free. Similar to the concept of adopt a beach.

Activity 5.14: Establish and implement national lost/abandoned fishing gear monitoring programmes on the basis of regional agreements.

3.6 Objective six: 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, European Commission (Marine Strategy Framework Directive), 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 strategic framework can be catalysed. This strategic framework 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. As a result the IMO agreed that MARPOL Annex V legislation will take effect as of 1st May 2009.

Conventions and Regional Seas Programmes : Marine litter is also a matter of concern for all other Regional Seas Programmes and in particular for OSPAR and HELCOM that have already implemented a number of related activities. Most of the Regional Seas Programmes include marine litter management in their strategic approach. Collaboration in the areas of common interest (methodology, monitoring, analysis of results, capacity building, policy, etc.) would contribute to the implementation of the activities in the Mediterranean.

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', the present strategic framework proposes a selection of cost-effective activities to manage lost and abandoned fishing gear and an enforcement system for reducing abandoned fishing gear. In addition, collaboration would also be encouraged with the General Fisheries Commission for the Mediterranean (GFCM) of FAO.

United Nations Framework Convention on Climate Change (UNFCCC) - Following the precautionary approach, this strategic framework 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 strategic framework 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

- Activity 6.1: 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 6.2: Work with countries to implement MARPOL Annex V through development of own legislation and policies.
- Activity 6.3: In collaboration with other competent international organizations and private sector develop a compendium of environmentally safe fishing gear in the Mediterranean Region.
- Activity 6.4: Port authorities to set up a reporting system for abandoned and lost fishing gear.
- Activity 6.5: 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.

Long term activities

- Activity 6.6: 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 strategic framework MED POL should ensure that marine litter is recognized as an integral part of solid waste management investments. In support of ongoing efforts by the EU, World Bank and bilateral agencies, the strategic framework 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. 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. 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 strategic framework, 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 strategic framework 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 strategic framework through offering additional information on marine litter and therefore supporting MedStat's Environment subtheme.

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 hazardous 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

Activity 6.7: 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

Activity 6.8: Jointly develop capacity building projects for local and port authorities to manage marine litter.

Activity 6.9: 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 strategic framework 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, Malta, 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

Activity 6.10: 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

Activity 6.11: 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 institutions 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 strategic framework. Furthermore under the EU programme "Oceans for tomorrow" there will be a call for research on marine litter. This 2011 call will address the pathways of marine litter, especially micro-plastics, its degradation process, its toxicity and impacts.

Long term activities

Activity 6.12: 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 strategic framework.

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><i>Medium term</i> Document and make use of experience, develop policy and operational guidelines, review, update and develop training programmes.</p> <p><i>Long term</i> 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><i>Medium term</i> 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><i>Long term</i> 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 and smoking related marine litter.	Reduction in the input of marine litter while maintaining the coasts clean.	Beach clean ups. NGO assessment reports. Waste management reports from Local and Port authorities	<p><i>Medium term</i> Collect good practices and provide guidelines on clean ups, introduce incentive schemes, conduct</p>	<p><i>Medium term</i> Support the ICC campaigns, identify hot spots and conduct emergency clean-ups, development of a legal framework to introduce</p>	Commitment and participation by Local/Port authorities, NGOs, informal sector and private sector (hotel, shops and

				a study on the impact of climate change, propose guidelines.	enforcement procedures for waste recycling activities. <u>Long term</u> Local Authorities to work with the private sector, NGOs, etc., set targets for amount of waste required to be recycled.	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</u> Carry out a prototype pilot assessment of the economic, social and environmental impacts of Marine litter, promote communication strategy. <u>Long term</u> Encourage and coordinate in cooperation with regional NGO networks awareness campaigns, promote sustainable consumption and production.	<u>Medium term</u> Undertake an assessment to ascertain the economic aspects of, social and environmental impact of pollution from marine litter. <u>Long term</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 in the framework of the ECAP integrated monitoring programme under the coordination of UNEP/MAP – MEDPOL established.</p>	<p>Country reports, coastal and sea-based litter clean up campaigns, research and development conducted by Universities.</p>	<p><u>Medium term</u> Adapt and adopt UNEP/IOC guidelines on monitoring marine litter, taking into consideration the ECAP, 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</u> Identify best practices and implement pilot projects, fundraising for the establishment of a marine litter monitoring programme.</p>	<p><u>Medium term</u> Conduct a baseline study, conduct routine monitoring programmes, report results in the framework of the implementation of ECAP.</p> <p><u>Long term</u> Establish and implement national monitoring programmes. Capacity building on implementing the adopted 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>
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	5	Assessment of lost and abandoned fishing gear and countermeasures against biological damage	Reduction in the amount of fishing gear lost in the sea and protection of marine species	Reporting systems on for abandoned and lost fishing gear, tools and guidelines for shipping sector	Awareness campaigns and capacity building programmes, cooperation with other competent bodies	Support MARPOL implementation, develop pedagogical tools and guidelines for the shipping sector, address the issue of abandoned and lost fishing gear	Collaboration enhanced among national stakeholders and International Organizations
	6	Establish synergies with on-going and planned initiatives in the Mediterranean Region as they relate to marine litter.	Financial assistance catalysed from other on-going and planned projects.	UNEP led software activities in large scale infrastructure projects, Implementation of Blue Flag programmes, etc. partnerships in place.		<p><u>Medium term</u> Provide software assistance and public awareness in support of the EIB's MeHSIP projects, support local monitoring programmes.</p> <p><u>Long term</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>	Collaborative attitude between partners. Consensus by EU and international agencies to integrate marine litter in solid waste management investments. Willingness of Clean Coast Index, FEE and Blue Flag Programme to expand activities.

5. IMPLEMENTATION MODALITIES

It is suggested that the overall strategic framework 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 strategic framework 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 strategic framework. 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 strategic framework there are various options. One of the objectives of this strategic framework 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 strategic framework. The goodwill and human resources offered by this group is part of this strategic framework, 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 strategic framework 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 strategic framework has included the preparation of assessments and development of policies and strategies, which will assist these countries and institutions in the negotiation process.

APPENDIX

FINANCIAL ASPECTS OF THE MANAGEMENT OF MARINE LITTER IN THE MEDITERRANEAN

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1. THE PURPOSE OF THE REPORT

The purpose of this Report is to identify, elaborate, discuss and present the 'financial implications' of the *Development of the Strategic Framework for the Integrated Management of Marine Litter in the Mediterranean* (from now on the *Strategic Framework*). Initially, two crucial issues should be clarified: What we mean by 'financial implications', and, more importantly, why it is important to bring out and present the financial implications of this (or any other) Strategic Framework. In short then:

- Financial implications: It is a shorthand way of describing what may also be called 'financial consequences' of the implementation of the objectives / actions of the strategic framework. It also implies an interest in the (distributional) question of who (which agency/ies) will address the consequences and if they are able to pay for them.
- Why add financial implications to the strategic framework report?: Generally, strategic frameworks are more effectively implemented when the financial implications are integrated within the strategic framework and the stakeholders are aware, familiar and involved in the mobilization of resources needed for the various actions proposed / envisaged under the strategic framework.

It follows from the above then that focusing attention to financial issues is essentially a tool for decision making. The strategic framework (any strategic framework) with all its scientific soundness and rigour, will need approval by political, administrative and business leaders and stakeholders. Decision will need to be taken based on, *inter alia*, financial issues. Thus, the financial / economic implications form an integral part of the effort to achieve important objectives for reducing / eliminating coastal and marine litter.

2. THE STRUCTURE OF THE REPORT

The Report contains 4 main Chapters:

- A brief introduction to bring out important assumptions / observations in the strategic framework itself with bearing on the approach to the financial implications;
- Elaboration of the Financial Implications falling under three parts: Identification of financial implications, classification of financial implications and costing of financial implications (investment);
- Discussion of funding issues and proposals on the most suitable approach to financing the expenditures involved;
- A focus on the expected benefits of addressing the problem of marine litter.

3. INTRODUCTION

3.1 Assumptions / observations in the strategic framework

This Chapter of the Report highlights points and arguments developed in the strategic framework report that identify its approach to the problem of coastal / marine litter and form the scientific / technical context in which this financial Report is developed. This Report accepts the technical approach put forward by the strategic framework report and seeks to uncover the financial implications from that.

What follows is a cluster of points rather prominently presented in the strategic framework report that are taken on as parameters in this Report.

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 strategic framework acknowledges that inadequate coastal solid waste management is responsible for the presence of litter on beaches. It continues on to stress that this *'is in contradiction with the fact that, almost all the Mediterranean countries have policies for the management of coastal solid waste (but) 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 ultimate responsible 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.'*

This strategic framework 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. Instead it focuses mostly on the "in situ" generated waste as well as on what may inevitably "escape" towards the beach and sea by the other two sources even if the latter are managed properly. In this sense, apart from technical solutions that will be included to effectively address source (C), the strategic framework will contribute in building legal and institutional capacities of local and port authorities and other institutional stakeholders to 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.

This strategic framework 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 strategic framework.

The strategic framework states very clearly that its focus is the building up of precautionary capacity for addressing the issue of marine / coastal litter, rather than an strategic framework concerning the construction of costly waste management (physical) infrastructure.

Another point which is clearly evident in the strategic framework is its valid observation that what is lacking is not legislation but its enforcement, a limitation originating from lack of resources and the weak position at the Municipalities at the local level where the issues appear and exist.

Although not explicitly states, the strategic framework is intended to promote actions in the 'less resourceful' countries of the Mediterranean, particularly the non-EU countries.

The strategic framework makes the observation that the SAP gives high, if not exclusive, priority to pollution from wastewater and the Hot Spots identified and prioritized are liquid waste Hot Spots. Little attention is given to solid waste and almost no attention to coastal litter.

The strategic framework does not deal with the **institutional framework issues**. Therefore, since the strategic framework focuses on the building up of precautionary capacity (rather than infrastructure construction) and the costs arise from institutional strengthening, studies, workshops, advocacy, the levels of administration and the distribution of responsibilities envisaged remain unspecified. However, for the purposes of this Report (which also does not cover such issues) it will be assumed that national agencies / authorities will need to be

strengthened to support municipal / local authorities which face the problem on their 'front yard' and will need to respond to this challenge. It is with this level of administration that the financial implications should be addressed because it is that which is known to be the most resource-poor. The strategic framework should be made to address this issue, for its affordability by the local Municipalities may be the key to political acceptability and ease of implementation. It would be helpful if the strategic framework report made some reference to 'institutional issues and choices (*A Solid Waste Management Strategy for the Maltese Islands: Consultation Document, 2009*).

3.2 The Characteristics of the 'litter sector'

In this Chapter an attempt is made to bring an economic perspective to bear on 'litter' which will help in the analysis later on. In economic terms, environmental problems reveal market or policy failures, and the attention then focuses on the use of instruments to correct failures (market-creation incentives, charges, fees, etc.). If litter has any value in a market situation they would not be thrown around for others to collect and dispose. It is therefore useful to pinpoint the economic characteristics of litter (the litter sector, so to speak) as a stepping stone to moving on to the financial interpretation of the proposed activities to address coastal litter.

Any discussion of the issue of litter entails questions relating to its occurrence, persistence, reduction and gradual elimination. These questions together with the actions and responses by the various individuals and authorities involved can be called 'litter sector', the same way that there is 'transport sector', 'housing sector', etc. The 'litter sector' has certain characteristics which are important for policy-making with associated economic and financial implications. These characteristics briefly include the following:

Open spaces. Litter is more often present in open places which are public as opposed to private property. Beaches are a case in point. It is rather rare to find litter on private property such as front gardens because the owner will protect it, remove the litter or take legal action. Spaces which are 'common property' are vulnerable to littering by direct or indirect source (in the environmental economics literature it is referred to as the '*Tragedy of the Commons*', after the renowned essay by Garret Hardin 1968, *Science Vol 162, No 3859*).

Economic value. Litter is waste material that has no immediate economic value otherwise the user would keep it for himself. Therefore, the user has **no** incentive to maintain it, on the contrary has an incentive to get rid of it without cost.

Wider effects. The impact of litter affects a much wider area than the actual spot on which it is left. Equally, cleaning a particular limited spot under the control of any individual has little effect on the quality of the surrounding public area unless the whole area is, and shows up as, litter-free. Therefore, individual action although important in preventing litter, has its limits in cleaning up relative to collective action and policy-driven responses.

Public action is crucial. Public authorities play an important role in addressing litter problems. Market solutions and prices / charges and private initiatives are crucial but most effective when supported by wider campaign effort involving collective actions and policy commitments.

Interaction with the economy. Litter interacts (favourably or unfavourably) with what is in many countries the most important sector of the economy. Tourism, as a revenue generating activity, is very sensitive to litter and its presence can affect earnings and the performance of the tourist sector. Tourism related business units, with strong incentive for clean beaches, can be an important source of finance / support for implementing activities to influence

behavior, increase awareness, etc., conducive to the reduction / elimination or even removal of coastal litter.

4. THE FINANCIAL IMPLICATIONS

4.1 Identification of the financial implications

4.1.1 The main objectives of the strategic framework

Generally, three important factors underlie the financial interpretation of an strategic framework (project or programme): The cost, how it is financed and who bears the burden. The cost alone, although important in showing the extent of the burden, does not show much about the other side of the coin which matters particularly in the case of environmental and public sector Strategies: how the cost is financed and at which level of government or on which group in society the responsibility for paying the cost falls.

In the interpretation of the financial implications of this strategic framework, in addition to the above, an important factor is the source of the costs: That which the proposed activities under the strategic framework say should be done / provided, such as, a physical long lasting infrastructure, a revenue generating assets, equipment, staff and personnel, studies, seminars and workshops, etc. This is most important for the identification and classification of the financial implications of the strategic framework. Thus, the framework for developing the financial implications is set. It is a four dimensional framework which will be used in this Report even briefly and generally in some parts):

- The costs
- The source of the costs
- The financing of the costs
- The burden of the cost

To anticipate possible comments, it must be stated that the question of benefits will be dealt with at a later part of this Report after discussing costs.

The first is important insomuch as the shows extent of the commitment involved. It analysis must not stop there because the financial implications should include reference to how the cost may be paid, by whom and if it is affordable. The social value of the strategic framework hinges on, first, its affordability and, second, on its benefits. Answers to such questions often justify claims for increased financial support to environmental projects and indeed for coastal litter management projects that can contribute to (or undermine) coastal tourism depending on how the coastal zone is protected and managed.

The first step in this attempt to identify the financial implications of the strategic framework is essentially to interpret the objectives and the proposed actions in terms that reveal the composition of the investment / expenditure effort that will materialize them. This is not usually evident at first glance because often objectives aiming towards a common result (management of the coastal environment or prevention of litter) involve diverse types of activities with different cost-creating sources ('cost centres' in the language of finance).

In this section of the Chapter the aim is to attempt to identify the financial profile of the Objectives of the strategic framework, and in the following part to classify the proposed actions in terms of the expenditure cost involved (or implied).

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.

Financial implications

Need to build and develop legal and institutional capacity in local and port authorities and other institutional stakeholders. No major infrastructural investment is envisaged.

Cost elements: Cost of studies, personnel and equipment, reporting system, in-house training, preparation of guidelines.

Objective two

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

Financial implications

Need to ensure that capacity for prevention and / or management and removal of beach litter is developed and put in place.

Cost elements: Cost of studies, personnel, placement and receptacles, removal trucks.

Objective three

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

Financial implications

Need to put in place an on-going effort of public awareness and information, and closer co-operation with environmental NGOs and interested stakeholders (especially hoteliers).

Cost elements: Cost of awareness campaign and information building and dissemination (seminars and publications, communication with stakeholders).

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.

Financial implications

Need to establish a monitoring programme.

Cost elements: Cost of studies, monitoring system (satellite, GIS, ground monitoring) and cooperation with neighbouring countries.

Objective six

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.

Financial implications Need to establish closer cooperation with regional organizations, sub-regional programmes and capacity for more effective implementation of integrated coastal zone management strategies / institutions.

Cost elements: Cost of capacity building, studies and institutional strengthening for the application of Economic Instruments and ICAM.

4.2 Classification of proposed activities

The classification of financial implications, in this particular case, entails grouping proposed activities according to National or Regional level and according to Medium or Long term perspective. This is important because will allow examination of possible priorities (within the logic of the strategic framework) and the main responsibility for implementation.

4.2.1 The Approach applied

A twofold classification of Activities is applied: **(1)** differentiating regional from national activities, and **(2)** distinguishing between medium term and long term activities.

A comprehensive listing of all proposed activities falling under the 6 major Objectives of the strategic framework is presented in Table 2.

There are in total 75 proposed activities, 31 concerning national level activities and 44 concerning regional level activities. Of the 31 national level activities 13 are medium term and 18 long term. Of the 44 regional level activities 30 are medium term and 14 long term. A summary table is shown below.

Table 1
Summary of Proposed Activities

	Medium Term	Long term	Total
National Activities	13	18	31
Regional Activities	30	14	44

4.2.2 Classification of financial implications

A close review of the proposed activities immediately shows that almost all of them concern the strengthening of institutional capacity to engage effectively in precautionary actions on three main fronts:

- to undertake studies of the various aspects of marine / coastal litter,
- to mobilize private sector stakeholders, develop partnerships with NGOs and network with other countries,
- to disseminate information through seminars and workshops.

The following table presents the classification of the proposed activities according to the above three categories (institutional strengthening / staff, studies, seminars and workshops). That is to say, institutional strengthening as the overarching or background 'cost creator' activity, with subsequent direct cost activities for studies, outreach to private sector stakeholders, and seminars, workshops, etc.

A word of caution is needed here. The classification is based on and focuses specifically on that which gives rise to cost and needs financing, such as 'develop guidelines' (cost of study), 'support local authorities to promote awareness campaigns' (cost of mobilization and outreach), work with line ministries to implement incentive schemes for coastal areas (cost of technical and administrative strengthening). But, obviously to pursue these activities institutional strengthening is presupposed to put in place the administrative, management and technical capacity for the envisaged direct actions.

Table 2
Classification of proposed activities

NATIONAL ACTIVITIES – MEDIUM TERM	
MAINLY STUDIES	
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
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. Proposals for improvement and, whenever feasible, submission of projects to International Financial Institutions
2.5	Identify hot spots and conduct emergency clean-up of hotspots and beaches for demonstration and awareness.
2.6	Appropriate national authorities to develop a legal framework to introduce enforcement procedures for waste recycling activities (where national waste recycling legislation exists)
3.5	Undertake an assessment of economic, social and environmental impact of pollution from marine litter at national and local level (based on 3.1)
4.8	Countries to develop a sampling framework and conduct a baseline study of marine litter
NATIONAL ACTIVITIES – LONG TERM	
1.11	Work with ministries and local/port authorities who have already developed Integrated Coastal Zone Management plans to include management of marine litter
1.12	Assist competent authorities to develop SWM plans, including management of marine litter, and investment strategies for smaller towns not included in SAP
1.13	Parties to encourage sub-national and local authorities to develop proposals for financing activities
2.9	In the absence of national waste recycling legislation, local authorities should take responsibility and set targets for amount of waste required to be recycled
3.12	Work with the tourism sector in coastal areas to introduce sustainable tourism and develop concrete proposals
3.13	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
MAINLY INSTITUTIONAL STRENGTHENING	
1.10	Support institutional and technical capacity building of national and local administrations for implementation of large scale waste management projects
2.4	Support the International Coastal Clean-up campaigns 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
4.9	Countries to conduct routine monitoring programmes and report results to the national coordinator and MED POL

2.7	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
2.8	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
3.11	Develop partnership frameworks with sea transport network providers
4.11	Capacity building on implementing the UNEP/IOC guidelines on monitoring marine litter
4.10	Parties to establish and implement national marine litter monitoring programmes on the basis of regional agreements.
MAINLY SEMINARS AND ADVOCACY	
3.6	Involve all line ministries and local/port authorities in the dissemination of the findings of the assessment (3.5)
3.7	Develop and implement in cooperation with stakeholders for 'Litter-free' Mediterranean Sea campaigns. Use resulting information to support public awareness campaigns with emphasis on coastal residents and tourists. Involve the media
3.8	Promote simple formal and non-formal ESD in schools. This activity should take into consideration already existing training material.
3.9	Encourage local authorities to work with schools, NGOs and other CS groups to conduct voluntary beach clean ups
3.10	Work with line ministries to implement incentive schemes for coastal areas using appropriate standards such as the ISO 14001 standard and the EMAS
REGIONAL ACTIVITIES – MEDIUM TERM	
MAINLY STUDIES (AND SEMINARS)	
1.1	Document and make use of experience of countries in the Region which have specific marine litter policies and practices in place
1.2	Develop policy guidelines on drainage and marine litter management for high level decision makers
1.3	Prepare operational guidelines for environmentally and ecologically friendly downloading from ships and port/marina cleaning equipment
1.4	Review, update and develop training programmes to support institutional aspects of the management of marine litter
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
2.2	Prepare guidelines for environmentally and ecologically friendly mechanical beach clean-ups
2.3	Propose guidelines for introduction of environmentally friendly fishing gear
3.1	Carry out a prototype pilot assessment of the economic, social and environmental impacts that marine litter has in the Mediterranean Region
3.2	Promote a communication strategy to present the findings of the economic, social and environmental assessments
4.1	Present and adopt UNEP/IOC guidelines on monitoring marine litter

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
4.3	Develop and agree on a set of indicators from quantitative (baseline survey) and qualitative (questionnaire) data
4.4	Agree on a reduction of marine litter by a year to be determined, based on the national baselines taking into account the UNEP/IOC guidelines and international practice
4.5	Integrate the marine litter monitoring system into the MED POL information system
6.1	Development of pedagogical tools and guidelines for the shipping sector on marine litter, management of shipping waste and use of port reception facilities.
6.2	Work with countries to implement MARPOL Annex V through development of own legislation and policies
6.3	Develop a compendium of environmentally safe fishing gear in the Mediterranean Region
6.5	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 SEMINARS AND ADVOCACY
6.7	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
6.10	MED POL to provide technical knowledge to local monitoring programmes on the management and monitoring of marine litter (based on UNEP/IOC guidelines).
	MAINLY INSTITUTIONAL STRENGTHENING
6.4	Port authorities to set up a reporting system for abandoned and lost fishing gear
	REGIONAL ACTIVITIES – LONG TERM
	MAINLY STUDIES
3.4	Implement regional and national programmes on promoting sustainable consumption and production in cooperation with the Marrakech Process and thereafter
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
	MAINLY ADVOCACY AND SEMINARS
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 COOP
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 COOP
3.3	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
4.7	Fundraising for the establishment of a full-scale marine litter monitoring programme from country contributions, bilateral agencies and international financial organizations
6.6	Engage with UNDESA and UNEP to support efforts to reduce per capita generation rates in the Mediterranean Region

6.9	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 NO COST TO COUNTRIES
6.11	Parties to work with programmes such as Blue Flag and Clean Coast to replicate them in other coastal areas.
6.12	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 strategic framework
	MAINLY INSTITUTIONAL STRENGTHENING
1.7	Facilitate eligible countries to develop proposals and apply to donors for grant financing of above activities
6.8	Jointly develop capacity building projects for local and port authorities to manage marine litter

4.3 Approximate Estimation of costs

4.3.1 Approach and assumptions

The **first** and most important point to clarify at the outset is that for the purposes of this Report the strategic framework report is taken as given and no attempt is made to add or change its philosophy and approach. More importantly, as the strategic framework report does not identify particular countries to which the strategic framework is addressed, and does not differentiate between any group of countries (despite differences with regard to environmental legislation and institutional capacity) it is assumed that the Report makes broad reference to the Mediterranean with an implied emphasis on countries that seem to aspire to achieve precautionary capacity (rather than on countries that have such capacity, and much more, in place).

Within this framework, the cost estimate presented here is not derived from country data applying to each and every country of the Mediterranean. That kind of effort is clearly beyond the scope of time and resources made available for the purposes of this Report.

Instead, based on broad knowledge of other UNEP MAP programme activities / projects (TDA, SAP, CAMP, etc.) that address several aspects of environmental management issues and proposed activities, it was decided to use such background information combined with actual information gathered in Cyprus.

Second, costs are *approximate orders of magnitude*, sufficiently sound though to serve as a broad framework to highlight the financial implications of the strategic framework. In any case, discussion of the financial implications is not confined to costing but includes important considerations like who bears the costs, the capacity of that agency to access funding sources, capability to cooperate with private sector stakeholders, and institutional powers to put in place instruments for (gradual) cost recovery. Above all, under 'financial implications' reference is also made to an interpretation of costs relative to benefits.

Third, it is assumed, as made clear in the strategic framework report itself, that the aim of the strategic framework is to increase capacity for marine / coastal litter reduction activities as part of beach management process operating within the broader Solid Waste Management Strategy, and furthermore within an integrated coastal zone management in each country.

The costing calculations take that into account, namely that there is already a SWM Strategy and existing responsibilities at national and local level which need strengthening to

(according to the objectives of the strategic framework) “*enhance the proper implementation of existing legislation, reduce / eliminate marine litter generated “in situ” on beaches, influence environmental attitudes and behaviour of residents and tourists of coastal areas, establish synergies with on-going and planned initiatives in the Mediterranean Region as they relate to waste and marine litter*”.

Fourth, as the strategic framework does not contain information about the adequacy of national / local technical and other capacity for SWM, combined with the fact that there is only limited and scattered information in the regional level reports (mainly the SAP) on coastal litter, it is inferred here that the existing capacity and the existing institutional responsibilities need upgrading as clearly indicated by the strategic framework report . Hence the cost estimate refers to additional staff (as opposed to setting up an agency anew) to take responsibility and implement actions for beach management and specifically for beach litter.

Fifth, the cost estimates are derived from research and data collection for Cyprus, a country that in terms of physical and economic development can be seen as representative of many other neighbouring countries, despite of course particular differences. However, as will be explained later, an approach is adopted so that the results can be transferred to other countries.

Sixth, the costs are estimated for (a) the staff and basic equipment to strengthen the beach management capacity and enhance the outreach to private sector stakeholders, (b) studies c) seminars, workshops and training.

Table 3
Approximate Estimation of annual costs in Euro (for one country)

Cost category	Item cost	Total
Institutional Strengthening	Staff 325,000 Equipment 350,000	675,000
Studies	180,000	180,000
Seminars, (workshops, advocacy, training, networking)	155,000	155,000
Estimated total (per year)	1,010,000	1,010,000

Note: *This estimate does not include the cost of acquiring and operating remote sensing system of monitoring the movement of wastes approaching the coastal area. Estimates of the University of Cyprus puts the cost of acquiring the system at e1,000,000 plus e750,000 the cost of operating land and sea based emergency response actions. This cost is not included because such a system can be shared by 3 or more countries (for example Cyprus, Israel, Egypt, likewise Lebanon, Syria, etc.) partly using resources already in place operating for other purposes (coastal guard, defense, etc.).*

4.3.2 Calculation Notes

Cost of staff: The cost for staff is based on 1 Officer-in-charge at the level of the responsible Ministry (Ministry of Interior or Environment, for example) plus 2 responsible professional officers in each coastal District (in the case of Cyprus Famagusta, Larnaca, Limassol and Paphos). In total 9 persons X e2,000 monthly plus e1,000 social benefits X 12 = 324,000 (say 325,000). These professionals will be expected to monitor and report on the quality of the beach and possible threats to it by litter (Such institutional issues are not elaborated in the strategic framework).

Cost of equipment: 2 collection trucks e50,000 each, 50 receptacles e300 each, 3 beach cleaning vehicles per District X e100,000 each = 1,315,000 due for replacement on average every 4 years / 4 = 328,750 (say e330,000) except receptacles every year plus e15,000 total 345,000, say 350,000.

Cost of Studies: 36 Studies (18 national and local level and 18 regional level with national participation) = 18 X e20,000 = e360,000 + 18 X e20,000/2 = e180,000 Total e540,000 once every 3 years, therefore e540,000 / 3 = e180,000.

Cost of Seminars / Workshops: 5 national responsibility workshops held at District/Municipal level twice a year (e100,000) + 21 regional level held every other year e10,000 each co-funded by central Ministry (21 X e10,000 / 2 / 2 = e52,500 (say 55,000). Total e155,000.

4.3.3 Calculations for transfer of cost estimate results

To allow the transfer of the estimated annual cost to other countries, the above cost of e1,010,000 should be related to a **physical unit of area (or cost indicator)** so that, as much as possible and with appropriate adjustments, it can be applied to the relevant area of another country and to the country itself more broadly.

Given that the cost of the strategic framework related directly to the reach area, particularly the beach area used for recreation and tourism (although the data can be applied to the coast more generally), the cost indicator to be used is the **cost per kilometer of coast and square meter (m²) of beach area**. Below the relevant figures for Cyprus are cited showing how an indicator is derived:

Table 4
Derivation of cost indicator for Cyprus

Length of developed part of the coast 80 km		
Cost estimate applying to area	Cost indicator	Calculations
per km of useable coast area	e13,000	e1,010,000 estimated cost / 80 km = e12,625 (say e13,000)
per m ² of beach area	e 0.63	80,000m x 20m = 1,600,000 m ² of beach area / e1,010,000
Cost per beach user	e 6.3	1,600,000 m ² / 10m ² per person = 160,000 persons full capacity occupancy e1010,000 / 160,000 = e6.312

However, the above cost indicators will become far more meaningful when compared with the revenue-generating performance of the beach (which in many Mediterranean countries is a major source of revenue).

Table 5
Tourism revenue generation in Cyprus (mainly from coastal tourism)

Revenue generated by tourism expenditure (primarily for beach related activities)		
Description of revenue	Revenue per m2	Calculation
Tourism revenue per m2 of beach	e1,562	e2,500,000,000 / 1,600,000

The above indicators provide a good basis for assessing the affordability of the objectives and proposed actions of the strategic framework. If a country earns so much from coastal tourism (mainly due to the quality and 'health' of the beach and coastal) it is certainly affordable to finance a litter strategic framework **provided that the revenues accrue to the level of government that is charged with the responsibility to finance the activities.** This issue can only be stressed here. The institutional side of finance needs specialized study.

More generally, concerning the 'cost of inaction' when countries delay the implementation of litter / prevention / reduction activities, UNEP Reports (*Marine Litter, A Global Challenge*, 2009) have listed several social impacts with cost consequences that each country should strive to avoid, such as:

- Loss of economically important wildlife
- Damage to fisheries, boats and fishing gear (up to 30,000 Pounds St. a year)
- Damage to boat propellers (the cost of boat rescue is put at 900,000 Pounds St. a year – Royal National Lifeboat Institute)
- Damage to tourism activities. (*Marine Strategy Framework Directive Task Group 10 Report Marine Litter, JRC Scientific and Technical Report, April 2010*)

4.3.4 Adjusting the estimated cost for other countries according to the length of the coast – examples

Based on the per km of coast cost of e13,000, the corresponding cost for Albania, for example, would be e1,300,000 (13,000 X 100 km.), for Malta e650,000 (13,000 X 50 km.), for Slovenia e 611,000, for Syria e1,040,000 and so on.

The length of the coast to be adopted for purposes of cost estimate should be based on the coast zoned for development according to the Coastal Zone Management Strategy Study. For example, for Croatia, with a length of coast of 1,777, should not mean that the cost would be e23.0 million (13,000 X 1,777 km.) because not all the coast is used for recreation and tourism or falling within an urban settlement. The same applies to Turkey, Greece and the other countries. However, the cost indicator may be used more widely depending on the needs of policy making.

The above estimates assume the all the countries have the same prices and costs, which may or may not be the case. This should be clearly acknowledged. To account for this a second parameter of adjustment may be used, that of the GDP per person.

This Report, although acknowledges the influence of price and cost differences between the countries of the region on the cost, does not recommend cost estimate adjustment primarily because the relevant components of costs (professional personnel, studies, equipment, seminars, etc.) tend on average to be rather uniform. For the sake of illustrating the point, the figure of e13,000 per km of coast derived based on cost estimated obtained for Cyprus would be adjusted as follows: The GDP-adjusted cost estimated for Syria, with GDP per capita at 22% relative to Cyprus, would be e2,860 ($e13,000 \times 0.22$) if in the implementation of the strategic framework only national personnel will be used. For Greece, for example, the GDP-adjusted estimated cost per km of coast would be e19,240 ($13,000 \times 1.48$).

This point is mentioned mainly to clarify that it is not ignored in the analysis but not adopted as relevant as the financial implications of the strategic framework entail mainly international costs rather than national costs (equipment, light machinery, staff, seminars, consultant studies, etc.).

5. FUNDING ISSUES

5.1 The private sector

A large part of the cost of the strategic framework as estimated above is capable of attracting funding not only from IFI and Regional Organizations but from a much closer source, the domestic private sector. Usually, IFI lending or granting funds for environmental programmes build into the programmes the need to increase national and local capacity for mobilizing domestic funds (such as establishing capacity for applying user charges, deposit funds, levies, polluter pays penalties, etc.). This is stressed here because for the financing of this strategic framework, which focuses on precautionary actions, there is no proposal for building capital intensive infrastructure that would require external capital grant financing.

The outreach to the private sector will be one of the primary responsibilities of the professionals recruited for 'institutional strengthening'. Without capacity building within the national and municipal administration the mobilization of private sector participation will be difficult. In most countries banking organizations, the Chamber of Commerce, the Association of Hoteliers, etc., undertake initiatives for beach cleaning, provision of equipment, awareness campaigns, etc. In this connection, gradually action should be taken to incorporate the use of Economic Instruments (EI) (*UNEP/MAP-PAP/RAC, Economic Instruments for Coastal Zone Management, 2000*), and for the application of the *Polluter Pays Principle*. This is clear and is strongly recommended. However, the application of EI and PPP, requires tracing the polluters who are many and diverse involving high administrative collection and legal expenses.

This Study recommends that much easier to reach and mobilize in the first instance, until the litter strategic framework is incorporated within an Integrated Coastal Zone Management Process, is the **beneficiaries** of clean beaches which is the tourism hotel and tourist enterprises sector. Recall the characteristics of the litter sector referred to at the beginning of the Report (4.0) that litter affects tourism directly.

Based on the practical principle of '*beneficiary pays*' the hotel and restaurant sector in coastal areas is a potential source of funding at least for seminars, workshops, awareness and cleaning campaigns, even small scale studies.

Banks are known to finance beach cleaning events when their name is associated with the initiative and shown on the T-shirts and container bags.

5.2 Environmental finance: particular type of investment

Looking forward to a cluster of longer term activities to streamline a beach / coastal litter strategic framework within the overall Integrated Coastal Zone Management Strategy (which is the ultimate objective of the strategic framework), a set of basic issues of environmental finance will be useful to present for future reference. It is the view of this Report that the 'financial implications' should be a part of the initial study design so that the formulation of proposals may be calibrated and go together with the implementation design. Although this strategic framework makes it clear that the objectives concern capacity building and institutional strengthening for precautionary readiness to prevent marine / coastal litter, it is important to mention that the implementation of strategic frameworks, generally, is likely to be more effective when the financial / economic assessment (financial implications) are considered together within the same study effort with the technical / scientific assessment. Usually, like in this case, the financial implications are taken up at the tail end.

For future reference and with a view to promoting the objectives of the SAP and the NAPs, it should be adopted and shared by all the actors concerned that the protection of the marine environment from pollution from land based sources, at least, entails complex objectives and combined actions which cannot be achieved with conventional assumptions that investment resources will be made available as a matter of course to match the estimated costs. In order to match the financial needs detailed investment planning is needed to show the particular nature, duration and operational characteristics of the environmental asset, infrastructure or intervention called for to reduce and gradually eliminate pollution. Particular type of finance is required according not only to the type, size and risk of environmental investment considered but also according to the administrative, legal and social context within which the investment will be undertaken, operated and utilized. The specific characteristics of each financing source need to be taken into consideration when developing the financial packages for implementation. For example:

- Long term finance for major infrastructure is not envisaged in this strategic framework. Such capital funding is suitable for high cost and long lasting infrastructure and requires government guarantees. Even when capital funds are made available from IFI they may be insufficient without national co-financing (public and private), or, without provisions made for ensuring at least partial cost recovery charges over time.
- Private sector participation is unrealistic without administrative and legal provision for recovery charges collected from the beneficiaries.
- Commercial finance is most suitable for bridging revenues and expenditure flows, requiring prior financial planning and assessment of the administrative and legal capacity for repayments.
- Donor funds are mostly intended for start-up actions until domestic financial strategies and legislation are in place rather than available on a continuous basis.
- Most importantly, national budget funds needed for continuous activity may not be made available without demonstrating the socio-economic significance of such activities in terms of the benefits for the local and national and regional economy and environment.

5.3 The issue of Benefits from Environmental Investment (and why consider benefits?)

As mentioned earlier, estimated costs cannot be used for decision making in isolation from other factors. Two such factors are of most importance: The assessment of the size of the cost relative to the extent of what it will prevent or create (benefits), and, the type and composition of the cost relative to potential funding opportunities. Funding opportunities have been alluded to earlier. Private sector mobilization is essential and national funds earmarked out of tourism revenue. When larger capital projects are called for then higher level regional and international sources will need to help because of transboundary effects and the importance of the quality of a shared coastal and marine environment (what economists call 'externalities').

To fully grasp the importance of considering the benefits accruing from environmental expenditure / investment it is necessary to explain why often benefits are not translated into cash money allowing governments to misinterpret that environmental expenditure is without revenue return.

Marine and coastal resources have a dual role; they are an integral part of both the coastal and marine ecology and the coastal economy. The protection and improvement of the quality of marine resources generate, in addition to ecological benefits, diverse and long-term economic and social benefits. Such benefits are often underestimated due to **partial information** arising from the fact that many are indirect, long-term and are not fully reflected in market prices. Thus the identification and, as far as possible, measurement of benefits is necessary to ensure that decision-making for the implementation of the strategic framework and associated activities takes into account all information concerning all or most of the expected positive outcomes of strategic framework implementation. Such positive outcomes accruing from implementation costs concern (a) avoided damages to the environment which would occur without the strategic framework and (b) positive improvements to the environment in terms of added quality and productivity for a variety of social and economic activities (tourism, recreation, fisheries, human health, agriculture, community education, biodiversity research, etc.).

5.4 Incorporating benefits in strategic framework implementation

The following simple table may offer an illustration of the classification of the different categories of services and benefits described above.

Table 6
Benefits of Strategic Framework Implementation

Main elements of strategic framework	Type of potential benefits	Without strategic framework implementation (dis-benefits)	With strategic framework implementation (benefits)
The Objectives comprising the strategic framework	Economic	<ul style="list-style-type: none"> - Pollution damages and accumulated costs - Damages to economic activities dependent on marine, coastal quality (fisheries, aquaculture, agriculture, tourism, recreation) - Health costs 	<ul style="list-style-type: none"> - Prevention of marine pollution and avoided costs - Growth in economic sectors (fisheries, transport, trade, tourism) - Reduction of health hazards and productivity increase

	Social	- Depletion of coastal resources limiting recreation and enjoyment opportunities to society	- Management of coastal resources providing diverse opportunities for recreation, leisure and cultural activities
	Environmental	- Destruction of environmental integrity, biodiversity and life-support ecological functions	- Integrity of the coastal environment and biodiversity as a natural system

5.5 Examples of the Value of Benefits in the Mediterranean

Table 7
Summary of findings of cost-benefit studies in the Mediterranean

Study	Estimated annual value of benefits from coastal protection (million USD)	Comments on benefits monetized
Study of Izmir Bay Turkey (1992)	286.0	Tourism, property values
Study of the island of Rhodes Greece (1992)	21.0	Tourism, property values and human health
Study of the coast of Israel (1999)	244.0	Tourism and recreation benefits
Average	184.0	Generalized for the southern Med region
Possible value of annual benefits in the Mediterranean 'south', excluding France, Italy and Spain	3,128 (billion)	Possible annual benefits for the countries of the Mediterranean 'south'
Estimated Annual Cost of the Implementation of the Prevention / Response marine Pollution Strategy under review (2005)	25.3 (Scenario 1) 10.5 (Scenario 2)	Possible benefits many times higher than estimated costs

Sources: Balkas T.I. & Juhasz F. 1993, Constantinides, G. 1993, 2005, Zenovar Consultants, 1999

The above findings illustrate the high value of economic, social and environmental benefits accruing from the protection of the coastal and marine environment. Such monetization of benefits is not often attempted depriving environmental investment from their proper justification in economic terms that Finance Ministries appreciate. More recently the METAP programme has undertaken several economic benefit valuation case studies but then again mainly dealing with wastewater management.

The point to stress here is that the cost of tackling beach litter is certainly minute relative to the benefits that will accrue (directly and indirectly).

Of course, if the burden of the financial costs will fall on impoverished local Municipalities which receive, irregularly, small grants from higher level administration (Regional Governments / Ministries) the need to reach out to the private sector becomes more urgent. But this cannot be the ultimate solution because Municipalities must be given both technical

capacity and finance to operate. This is an important point to communicate in the context of this strategic framework.

5.6 Market forces and sustainable finance

In addition to the incentive function of economic instruments (EI) (to correct externalities) their financial function is of direct interest to both public sector and private stakeholders. It establishes a source of sustainable finance for national, local and port authorities for financing actions that would otherwise take much longer to realize, thus delivering both private sector gains from the prevention of marine pollution as well as public sector benefits from the capacity to fulfil regional and international obligations. User charges collected for polluters, for example, tend to ensure flow of funds for investment and capital and running cost recovery.

Most important, going back to Chapter 3.2 on the Characteristics of the 'litter sector', ultimately the reduction / elimination of coastal litter will depend on the extent to which a market is created for clean beaches, a market connected with tourism and coastal recreation. In this context 'market creation' means that the hoteliers and restaurant owners, whose income depends on clean beaches, should realize that the beach is part of their economic space to be cleaned up and in fact protected like their interior hotel and restaurant spaces. Market creation is one of the main aims of Economic Instruments and Integrated Coastal Zone Management.

Again, despite the importance of applying EI, Municipalities must acquire and enhance in-house capacity for operating EI and ICZM and this is the responsibility of national governments with the support of region-wide organizations. Therefore, financial resources must be handed down to the Municipalities at least to do tasks that private sector stakeholders cannot do or finance, such as regular reporting of analyses of beach quality, inspection of 'offenders', etc.