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**UNITED NATIONS
ENVIRONMENT PROGRAMME
MEDITERRANEAN ACTION PLAN**

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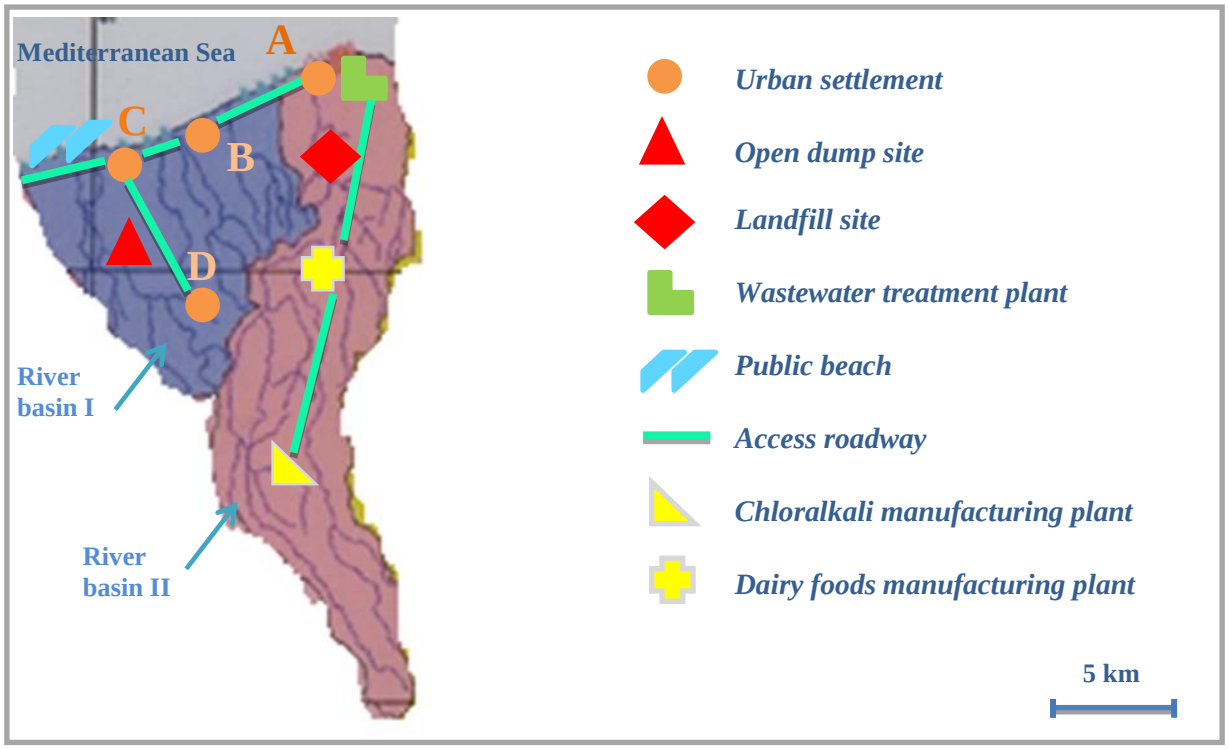
Regional meeting on applying methodology for
programmes of measures and economic analysis in the NAP update

Athens, Greece, 11 – 13 May 2015

Training materials (mid-term assessment, identification and prioritisation of issues and setting of quantifiable objectives and operational targets; elaboration of pollution prevention and control Programme of Measures)

Problem statement

Two river basins (I & II), shown below, consist of a system of riverine tributaries discharging to the Mediterranean. In the summer, the river tributaries have low water levels and occasionally dry-up. In the winter, river flow increases due to snow melt from nearby mountains. Occasional flash floods are common in the spring. Subsurface geology is a karstic rock formation.



The following tables provide information on:

- **Table 1:** Description of existing human activities.
- **Table 2:** Current environmental status including pollutants/substances concentrations and/or loads.
- **Table 3:** Hotspots categorization.
- **Table 4:** Description of existing pollution prevention and control measures.
- **Table 5:** Adopted legislation, regulations, policies and strategies.

Tasks to be undertaken by each of the "Working Groups" in order to elaborate the Programme of Measures for river basins I and II are explained in the following sections. Tasks are numbered in accordance with the numbering of the phases included in document UNEP(DEPI)/MED WG.414/3. For each task, reference is made to the related 'Fact Sheet' included in the aforementioned document.

Table 1: Description of Existing Human Activities

River Basin I

- Characterized as a recreational/touristic area; total revenues from tourism € 70 million, estimated share of employment 30%.
- An aquaculture site (open sea) with annual production capacity of 180 tons.
- Three towns with an average annual population growth of 3%:

Town	Population	
	Summer*	Winter
B	8,000	2,000
C	50,000	10,000
D	3,000	50

** high season monthly data*

- No wastewater treatment plants within the river basin.
- Town 'D' discharges raw sewage to the river tributary flowing directly into the sea close to town 'C'.
- Towns 'B' and 'C' discharge raw sewage directly into the sea.
- One open dumpsite located near the main roadway used by the three towns to dispose of their municipal solid waste (MSW).
- Several recreational beaches.
- SPAMI[1] Protected area (turtles) and proposed national PA (coastal wetland); economic value of marine and coastal PA assessed at € 50 million.
- Eutrophication sensitive area.

River Basin II

- Characterized as an industrial area with a major urban centre. Agriculture and fishing are the second and third largest sectors. Respective shares of employment are 27% and 19%.
- City 'A': population 210,000 inhabitants, with an average annual growth of 1.5%.
- Secondary urban wastewater treatment plant designed for 150,000 PE built in 2008 east of the City.
- One chloralkali plant established in 2000 uses mercury cell technique for manufacturing chlorine.
- Currently, the chloralkali plant stores metallic mercury and solid waste contaminated with mercury.
- The chloralkali site is contaminated with mercury. As the yearly production capacity of chlorine increased from 35,000 tons in 2000 to 50,000 tons in 2015, the release of mercury to the environment via products, air emissions and aqueous effluents has proportionally increased.
- One dairy food industry (cheese manufacturing) with a capacity of 25,000 tons of cheese per year.
- The plant started as a small family business in 1990. By 2010, an automated production line was established to produce 250 tons of cheese per year.
- Cheese manufacturing plant discharges organic matter mainly via its aqueous effluents.
- One landfill receiving municipal solid waste and some industrial waste from City 'A' and existing industries.
- No public beaches.
- Distance to neighbouring country 8 km (to the east).

[1] Specially Protected Areas of Mediterranean Importance (SPAMI) defined by 1995 Protocol Concerning Mediterranean Specially Protected Areas and Biological Diversity in the Mediterranean.

Table 2: Current Environmental Status including Pollutants/Substances Concentrations and/or Loads

River Basin I

- SAP-MED Sector: urban environment.
- Ecological objectives: EO5 and EO10. [2]
- Main pollutants' emissions measured in the river outlet and national Emission Limit Values (ELV) in mg/l:

		2004	2014	National ELV
BOD	Summer	300	450	60
	Winter	80	100	
N Total	Summer	20	35	25
	Winter	15	21	
P Total	Summer	10	18	10
	Winter	8	10	
Total suspended solids (TSS)	Summer	170	200	-
	Winter	45	50	
Pb	Summer	-	3	-
	Winter	-	1	-
Zn	Summer	-	10	-
	Winter	-	4	-

- Marine litter from recreational activities and the dumpsite are transported to sea either directly or via running water in river tributaries during winter/spring seasons; additional loads come through sewerage.

River Basin II

- SAP-MED Sector: urban environment and industrial development.
- Ecological objectives: EO5, EO9, EO10.[2]
- Main pollutants' emissions and national Emission Limit Values (ELV) in mg/l:

	WWTP	Dairy industry	Chloralkali plant	National ELV
BOD	100	850	50	60
COD		3,500		200
N Total	25	40		25
P Total	10	16		10
TSS	80			-
Fats		75		-
Chloride		1,500		-
Cu	10		20	-
Pb	15			-
Hg	0.01		0.04	0.05
Trichoromethane (TCM)			26	-
Chlorine			0.5	-

- 90% of municipal solid waste is collected and deposited into landfill.
- Marine litter items are wind-blown from the landfill site to the sea; additional loads from tourism and wastewater.

[2] EO5: eutrophication; EO9: contaminants; EO10: marine litter

Table 2: Current Environmental Status including Pollutants/Substances Concentrations and/or Loads	
River Basin I	**River Basin II**
• 75% of municipal solid waste is collected and deposited in the open dumpsite; 25% is scattered along the coastal area and informally along the sides of roads. **Pressures**: • Population growth in summer (400% during high season). • Increasing number of recreational facilities at a yearly rate of 3%. • Increasing number of beach goers • Lack of treatment of municipal wastewater flowing into the Mediterranean. • BOD emissions at the river outfall exceed national ELV (60 mg/l) and Regional Plan[3] ELV (50 mg/l). • Total N and P emissions in summer exceed national ELV (25 and 10 mg/l, respectively). • Surface area of the illegal dumpsite increasing in size • Increasing trend of illegal dumping of solid wastes along sides of roads. **Impacts - Eutrophication**: • Concentrations of Total Nitrogen and Total Phosphorus in water column exceed prevailing physiographic, geographic and climate conditions (GES target).[4] **Impacts – Marine litter**: • Increase in the amount of litter ingested by or entangling turtles. • Increase in the number/amount of marine litter items deposited on the coastline and on the seafloor.	• Chloralkali total emissions via products, air emissions and aqueous effluents are 1.22 g mercury/ton of annual chlorine capacity (0.15 g Hg/ton Cl_2 to water). • The chloralkali plant uses 82 tons of metallic mercury in cells and, additionally, stores about 13 tons of metallic mercury. • Chloralkali industrial wastes containing mercury (average mercury content 200 mg /kg waste) are currently exported for safe treatment. Some wastes from maintenance are sent to the municipal landfill. • Solid industrial wastes from the dairy industry are also sent to the municipal landfill site. **Pressures**: • Population growth (1.5% per year). • Wastewater treatment plant receives raw sewage that exceeds its design capacity. • BOD discharges from the WWTP and dairy industry exceed national ELV (60 mg/l) and Regional Plan ELV for urban wastewater[3] and food sector[5], respectively. • Total N and Total P emissions from WWTP and dairy industry exceed national ELV (25 and 10 mg/l, respectively). • Illegal dumping of industrial hazardous waste in the municipal landfill. • Leachate seepage into the karstic rock formation. • Decreasing trend in mercury releases from the chloralkali plant. • Mercury emissions complying with national ELV in water but still exceeding ELV for products air and water set by the Regional Plan.[6]

[3] Decision IG19/7. Regional Plan on the reduction of BOD5 from urban waste water (BOD ≤50 mg/l).
[4] Decision IG 21/3 on the Ecosystems Approach including adopting definitions of Good Environmental Status (GES) and targets.
[5] Decision IG 20/8.2. Regional Plan on the reduction of BOD5 in the food sector (BOD ≤30 mg/l).
[6] Decision IG 20/8.1 Regional Plan on the reduction of inputs of mercury (≤1g Hg/t Chlorine manufactured).

Table 2: Current Environmental Status including Pollutants/Substances Concentrations and/or Loads	
River Basin I	**River Basin II**
Impacts – Bathing water quality: • Decrease of transparency in coastal waters. • Increase in number of incidences of gastro-intestinal diseases during summer months. **Impacts – Marine biodiversity**: • Increase in deposition of marine litter on the seafloor affecting SPAMI. • Turtles' abundance levels are maintained but still below natural levels (GES target). • Increase in the abundance of NIS (mussels) introduced by human activities.	**Impacts - Eutrophication**: • Chlorophyll-a concentration in the water column is below thresholds (GES target).[4] **Impacts – Marine litter**: • Maintained trend in the number/ amount of marine litter items in the water surface and the seafloor. • Number/amount of marine litter items in the water surface and the seafloor do not have negative impacts on human health, marine life, ecosystem services and do not create risk to navigation. **Impacts – Contaminants**: • Increase in mercury concentrations in sediments and biota. • Increase in the frequency of cases of sardine and anchovies' samples above regulatory limits for mercury.

Table 3: Hotspots Categorization					
Categories and subcategories		**River basin I**		**River basin II**	
		Score	**Criteria**	**Score**	**Criteria**
Public health	Population	2	10,000-100,000 within 20 km	4	> 100,000 inhabitants within 10 km
	Wastewater collection and treatment	4	Urban wastewater (agglomerations > 10,000 PE) not collected or treated	3	The sewer network has big leakages and WWTP overflows
	Drinking water quality	3	Any industrial or urban wastewater, or solid waste or agricultural run-off reaching drinking water sources which are filtered but not disinfected before storage and distribution	3	Any industrial or urban wastewater, or solid waste or agricultural run-off reaching drinking water sources which are filtered but not disinfected before storage and distribution
	Bathing water quality	4	No monitoring data	4	No monitoring data
Good Environmental Status	Organic matter	4	Significant deviation from the RP/national ELV for point sources	4	Significant deviation from the RP/national ELV for point sources
	Nutrients	4	Significant deviation from GES target	3	Deviation from GES target
	Contaminants	1	Meeting GES targets	4	Significant increase of frequency of cases of seafood samples above regulatory limits for contaminants and significant deviation from GES target
	Marine litter	4	Significant increase of number of areas with accumulated marine litter at sea and in the land part of the coastal zone up to 1 km close to the river mouth and run-off drainage system. Illegal dump sites.	2	Maintained trends in the amounts of litter washed ashore and/or deposited on coastlines

Table 3: Hotspots Categorization					
Categories and subcategories		**River basin I**		**River basin II**	
		Score	**Criteria**	**Score**	**Criteria**
Economics	Economic activities and underpinning ecosystem services	2	Tourist area between 10,000 to 100,000 tourists annually	3	Moderate effects on aquaculture or fisheries and/or close to an important aquaculture and fisheries area.
Transboundary Effects	Transboundary/ Trans-regional Effects	1	Area far from the border with no direct/indirect effect	3	Downstream area close to the borders discharging to the Mediterranean sea Moderate amounts of substances which are toxic, persistent and liable to bio-accumulate and/or marine litter.
Total score and Classification		**100**	**Hotspot 'B'**	**110**	**Hotspot 'B'**

Table 4: Description of Existing Pollution Prevention and Control Measures	
River Basin I	**River Basin II**
Municipal wastewater treatment sector • An old sewage network is in place, but it leaks extensively and is under capacity in summer season; there is no separate collection of wastewater and storm waters. • There are no wastewater treatment plants for towns 'B', 'C' and 'D'. • Raw sewage is discharged by town 'D' to a river tributary where, in the summer, it penetrates the ground through the karstic rock formation while in the winter, it is washed down with the flowing river water to the sea. • Raw sewage is discharged by towns 'B' and 'C' directly to the sea. • National water and wastewater strategy considered the collection and treatment of sewage in all the coastal cities with more than 20,000 PE (including Town C) by 2015. A project for WWTP for 30,000 PE was developed in 2011. Feasibility study showed water tariffs would need to increase by 60% to cover investment and operational costs. **Municipal solid waste sector** • Collection and transport of municipal solid waste is organized by the three municipalities. Waste is collected in open trucks and transported to the open dump site. There are no waste separation/ recycling provisions. • Marine litter along the beach is not collected on a regular basis nor monitored. • Municipal solid waste in the open dump site is often burned in order to make place for new waste. • The national master plan for solid waste management considered the closure of the illegal dumpsite and the construction of a new sanitary landfill by 2012. The plan was not implemented due to lack of funding. • There is a proposal to introduce deposit refund system for beverage containers and a tax on the usage of plastic bags	**Municipal wastewater treatment sector** • Sewage network is being expanded to account for the increase in population and to allow for separate collection of storm water. Work will be completed in 2018. • Municipal wastewater treatment plant applies secondary treatment processes, but is designed for a BOD load of 150,000 PE. It has not been expanded with the growing population. • Municipal WWTP is not capable of treating industrial wastewater. • Water pollution charges for emissions above ELVs are in place but not enforced. • Sludge generated from the WWTP is sold to farmers as fertilizer. It contains heavy metals including mercury. **Municipal solid waste sector** • Municipal solid waste is collected in regulated covered trucks and transported to the landfill. • Town 'A' has adopted a policy that advocates recycling and reuse of solid waste; estimated recycling rate is 9%, mainly metal fraction. • Landfill is currently not fit for hazardous waste disposal and does not enforce regulation to ban disposal of such types of waste. • Hazardous waste disposal charge is not collected. • There is no leachate collection system for the landfill site. • Landfill does not control the transport of windblown litter to sea (i.e. no fence or soil cover). • National master plan for solid waste management foresees the construction of an industrial waste disposal site adjacent to the existing site and to extend and adapt the current landfill to new legal standards by 2020.

Table 4: Description of Existing Pollution Prevention and Control Measures	
River Basin I	**River Basin II**
Marine and coastal environment • Pollutants' concentrations are periodically measured at the river outlet, BOD and nutrients exceed national ELV and also the Regional Plan[7] ELV in summer. • There are no water quality measurements on intestinal enterococci concentrations in bathing waters. • Concentrations of Total N and Total P in water column are sometimes monitored showing that exceed prevailing physiographic, geographic and climate conditions (GES)[8] in summer. • Quality of bathing waters in recreational beaches is not regulated or monitored but a decrease in transparency and an increase in marine litter have been identified. **Biodiversity and protected areas** • There is a SPAMI site within the River basin I due to the presence of turtles and there is a proposal for designation of national coastal PA. National law on protected areas is not fully enforced.	**Industrial development sector** • Chloralkali surrounding soil and groundwater has been assessed to be contaminated with mercury; however, the extent and effect of contamination has not been evaluated to date. • Chloralkali plant has implemented techniques to reduce mercury emissions to water based on good practices on monitoring and leak detection/repair and cleaning and recovery of mercury. However, total emissions (products, water and air) still exceed ELV set by the Regional Plan on Mercury,[9] mainly due to emissions to air. Regional Plan ELV to be achieved by 2018. • Chloralkali plant has committed itself to convert current mercury cell plant to membrane cell plant by 2020 and manage metallic mercury from the decommissioning process in an environmentally sound manner. • Cheese manufacturing plant has significant losses of product (milk, fat and whey) and the wastewater treatment process reduces only about 40-60% of organic matter content. • In response to inspections and administrative sanctions, the cheese manufacturing plant is in the process to implement BAT and BEP in order to reduce losses of product by 2016 and to establish a pre-treatment plant to decrease BOD concentration by 2020 in order to comply with national ELV on BOD.

[7] Decision IG19/7. Regional Plan on the reduction of BOD5 from urban waste water (≤50 mg/l BOD).
[8] Decision IG 21/3 on the Ecosystems Approach including adopting definitions of Good Environmental Status (GES) and targets.
[9] Decision IG 20/8.1 Regional Plan on the reduction of inputs of mercury (≤1g Hg/t Chlorine manufactured).

Table 5: Adopted Legislation, Regulations, Policies and Strategies	
Legislation and regulations	**Policies and strategies**
• The main national legal instruments that regulate specific environmental protection issues and create the necessary legal support for implementing the pollution prevention and control measures at the national level are: – Environment Law, which mandates the Ministry of Environment to prepare the regulations necessary to preserve the environment in its three media (air, water and land) from pollution, and to undertake environmental monitoring and inspections to assess compliance, enforce implementation of regulations, and impose sanctions in the event of non-compliance. – Water Law, which addresses the protection of inland water resources and seawater from pollution and contamination (including municipal wastewater). – Waste Law, which classifies types of waste, provides for prevention and recycling and sets main obligations for both producers and managers. – Law on protected areas. – National standard on the allowable criteria for discharging treated wastewater into aquatic environments, ELV on BOD, N, P and some heavy metals, not distinguished by sectors. – National regulation on standard requirements for landfills and the acceptable contents of hazardous substances in deposited waste. – No regulations have been adopted regarding marine quality standards.	• The national environmental policy framework with regard to pollution prevention and control includes: – River basins management plan. Plan calls for reducing riverine marine litter by 20% by 2025. – Coastal Areas Management Programme (CAMP). – Water and wastewater strategy. Strategy paper calls for construction of wastewater treatment plants for all agglomerations of more than 2000 inhabitants by 2025. – The national master plan for solid waste management. Plan calls for recycling and reuse of waste. No clear operational target is set. – Air pollution abatement strategy. Strategy calls for reduction of heavy metals in air emissions by 20% by 2025. – National Implementation Plan for the Stockholm Convention on persistent Organic Pollutants. – Integrated Strategy on Hazardous Substance and Waste Management (including heavy metals and organohalogens). Strategy calls for safe handling and disposal of generated hazardous wastes from polluting industries by 2025. • Strategy on historically contaminated sites. Sites contaminated with mercury, POPs and other hazardous substances are identified and measures to assess the extent of the contamination are put in place. Remediation stage is progressively implemented in priority sites, no timeframe defined. • No specific mention of the following policies and framework strategies could be found: – Wastewater reclamation and reuse. – Management and reuse of sludge. – Protection of marine biodiversity. – Management of marine litter generated at beaches and other public places.

Tasks to be undertaken by the Working Groups in order to define the Programme of Measures for River Basins I & II

Task 1: Description of the Midterm Baseline

Based on:

i. The described information regarding existing human activities (Table 1), current environmental status (Table 2), hotspots categorization (Table 3), existing pollution prevention and control measures (Table 4), and the legal and policy frameworks (Table 5); and
ii. The guidance notes and templates[10] provided in the working document "Facilitating the Implementation of NAP Update Guidelines: From Midterm Benchmark to Programmes of Measures" UNEP(DEPI)/MED WG.414/3;

Kindly elaborate the expected environmental status (i.e. the midterm baseline), based on the following elements, and as appropriate:

- List of existing policy, legislative and regulatory measures.
- List of existing operational targets.
- Trends of pollutants' loads and their prospects in the years to come.
- List of hotspots and sensitive areas.
- Major impacts on marine environment and ecosystems and trends of marine pollution levels.
- List of ongoing projects and their prospects in the future.

Please integrate the resulting information from the above noted points into the second column of MIDTERM BASELINE FACT SHEET (A) in document UNEP(DEPI)/MED WG.414/3.

The MEDPOL Focal Point in their meeting in December 2014 agreed, in principle, on a number of NAP follow-up indicators.[11] Relevant indicators to this exercise are included in Annex A. It is highly recommended to assess midterm baseline by populating the indicators with relevant data to the extent possible.

In order to underpin the overall assessment with a good description of socio-economic conditions (current and expected) in the analyzed area, and to allow for a good understanding on the links between human activities and related environmental pressures and impacts, the following questions need to be considered:

- *Distribution of population and key economic sectors and sub-sectors;*
- *Direct and indirect benefits from different uses of marine environment (e.g. revenues, employment, direct and indirect contribution to GDP, value of services provided by ecosystems, etc.);*
- *Pressures from economic sectors (e.g. size of fishing fleet, total catches, number of overnight stays of tourists, type and capacity of tourist accommodation, type and size of coastal industries) and related impacts (e.g. per sector/ sub-sector);and*
- *Trends in human activities (demography, economy) with related pressures and impacts within the timespan of updated NAP.*

[10] Templates of document UNEP(DEPI)/MED WG.414/3 are reproduced at end of this document.
[11] The NAP Update Guidelines is included in the Draft Report of the Second MED POL Focal Points meeting on NAP update [UNEP(DEPI)/MED WG.404/7].

Task 2A: Analysis of Gaps

Based on the midterm baseline elaborated in Task 1, please assess the gaps to achieve the GES targets, SAP-MED and Regional Plans requirements by completing the third column of the MIDTERM BASELINE FACT SHEET (A) in document UNEP(DEPI)/MED WG.414/3.

With the view to carry out this exercise, the Secretariat compiled in Annexes A and B of this document a list of relevant requirements for this particular exercise:

- *Annex A provides a list of pollution prevention and control requirements from the Regional Plans and SAP-MED for consideration in setting operational targets. These are classified based on SAP-MED sector (i.e. municipal wastewater, solid waste, industrial development, in addition to physical alterations and destruction of habitats).*
- *Annex B contains a list of requirements pertinent to legal, institutional and policy frameworks such as monitoring, inspection, enforcement and reporting. These requirements can be integrated into proposed policies and regulations in the framework of existing framework structures.*

Kindly match the relevant legally binding GES targets, SAP-MED and Regional Plans requirements and obligations which are related to the two river basins in Annexes A and B to the information and indicators' data used for the midterm assessment and complete the first column of the MIDTERM BASELINE FACT SHEET (A) in document UNEP(DEPI)/MED WG.414/3.

Task 2B: Prioritization of Issues

Based on the gaps identified in Task 2A, investigate the issues behind these gaps and prioritize them.

Some of the underlying issues behind the gaps may be highly related to aspects for reducing pollution from land-based sources. Other issues may be completely irrelevant and should be discarded. As their scope and number may be quite long, relevant issues should be prioritized. This process would ensure the establishment of a proper framework for setting realistic quantifiable/ operational targets. The following are some suggestions for prioritization of issues for the purpose of this exercise:

- *Existing operational measures.*
- *Significant deviations from requirements for key priority contaminants and related sectors.*
- *Worrisome and substantive increases of pollution loads for key contaminants over the last 10 years (increases in drivers and pressures exceed the measures).*
- *Geographical categorization of direct and non-direct releases into the marine environment.*

Task 2C: Setting the Operational Targets

Based on the identified gaps in Task 2A and prioritized issues in Task 2B, and with reference to the legally binding requirements included in Annex A, kindly establish the quantifiable objectives/operational targets that would meet the GES targets, SAP-MED and Regional Plans requirements. For the purpose of this exercise, please limit the number of operational targets for each ecological objective to three targets. Kindly fill the forth column of the MIDTERM BASELINE FACT SHEET (A) in UNEP(DEPI)/MED WG.414/3.

Operational targets should be:

- *SMART (specific, measurable, achievable, realistic and timely).*
- *Set at the national level, but if necessary, targets be may be also set at the regional level.*

Operational targets may be, as appropriate:

- *Set halfway in time or phased prior to reaching the final target date.*
- *Similar to those required by the SAP MED, Regional Plans or EcAp GES targets in case no existing measures are implemented.*
- *Lower in quantifiable terms than the legally binding requirements in case the existing measures are effective in pollution prevention and control (e.g. 20% BOD reduction by 2020 and 50% BOD reduction by 2025).*

In setting the operational targets and implementation timetable, economic analysis should be used to evaluate:

- *Overall socio-economic conditions and expected trends as a framework for setting the targets*
- *Objectives/ environmental improvements in light of economic benefits they bring (e.g. potential for development of existing/ new sectors, new jobs) or in light of avoided costs of environmental degradation (e.g. prevention of economic losses due to decrease in tourism, falling fish stocks, public health related expenditure).*

Task 3A: Identification of Potential Measures

Based on the established operational targets set in Task 2C and the gaps identified in Task 2A, kindly suggest potential measures to bridge each gap by focusing on issues of highest priority as determined in Task 2B. Select one Ecological Objective (EO) to work with. Identify potential measures for the selected EO. Propose individual measures to fulfill each operational target at the river basin level. Specify the type of proposed measure. Kindly fill the corresponding column of the POTENTIAL NEW MEASURES FACT SHEET (B) in document UNEP(DEPI)/MED WG.414/3 (one sheet for each operational target).

Potential measures are directly linked to each operational target and related ecological objective. Type of measures may be legal, institutional, policy, economic or technical/ investment.

Task 3B: Aggregation of Potential Measures

Based on the suggested potential measures for the selected EO in Task 3A, and taking into consideration proposed measures by other working groups for the two other EOs,[12] aggregate measures between sectors and between river basins in order to establish an integrated list of potential measures. Coordinate with other groups to produce a single list. Fill the corresponding columns of the INTEGRATED MEASURES FACT SHEET (C) in document UNEP(DEPI)/MED WG.414/3.

Potential measures may be aggregated horizontally between sectors within a single river basin, and integrated vertically between the two river basins. The aggregated measures are linked to the operational target noting the administrative hierarchy where the measure will be implemented (regional or local) and the type of measure (legal, institutional, policy, economic, technical/investment). One simple criterion to apply for aggregation is whether a single measure is dependent on another for the achievement of an operational target. In that regard, measures strictly of legal, institutional, policy or economic nature should be integrated into existing national/ regional policy frameworks and structures; hence, strengthening these frameworks.

[12] Note that as a single Ecological Objective was selected in Task 3A, the integrated measures will only contribute to the achievement of the EcAp targets of this particular objective.

Task 3C: Shortlisting Measures

Based on the single aggregated and integrated list of measures agreed between all working groups in Task 3B, kindly shortlist, prioritize and rank in your own group these measures in descending order. Prioritization categories and ranking criteria are suggested for shortlisting the aggregated measures in Annex C. Complete the corresponding form of the PRIORITY FACT SHEET (D) in document UNEP(DEPI)/MED WG.414/3. Measures with the highest scores are ranked first and listed in the SHORTLISTED MEASURES FACT SHEET (E), along with the corresponding operational targets and administrative hierarchy.

In principle, six categories and four criteria are suggested for shortlisting aggregated measures in Annex C. Categories include overall GES achievements; elimination of hot spots/sensitive areas, contribution to ecological objectives; technical feasibility, geographical scope and implementation timetable. Scores from 1 to 4 are proposed along with the prioritization criteria; the highest score indicating the most favorable measure. Based on the aforementioned criteria, measures with the highest scores are ranked first, and hence are candidates for economic analysis. It is recommended that ranking is limited to pollution prevention and control measures.

Please keep the shortlisted measures included in FACT SHEET (E) as these will be referred to when undertaking the economic assessment on Day 2.

ANNEX A: Requirements of the regional plans in the framework of SAP-MED and ther indicators

Applicable requirements and indicators extracted specifically for this exercise (for use with Tasks 1, 2A and 2C)

Sector	Substance	Requirements of Regional Plans and SAP-MED for Consideration in Setting Operational Targets	Related Ecological objectives	Timetable for implementation	Potential indicators
Urban environment	Municipal Wastewater Treatment	Ensuring that water quality in bathing waters and other recreational areas does not undermine human health [Regional Plan Requirement]	EO5 EO9 EO10	2015	**BW01**. Share of bathing water categories: A (Excellent quality), B (Good quality), C (Sufficient) and D (Poor quality) with respect to total number of assessed bathing waters. **ECAP Common Indicator 15/[IND04]** "Percentage of intestinal enterococci concentration measurements within established standards"
		Adopt emission limit values (ELV) for BOD5 in urban wastewater after treatment in accordance with the requirements of the "regional guideline on the reduction of BOD5 from urban waste water" [Regional Plan Requirement]	EO5	2015 or 2019	**IND05**. Number of substances covered by national standards (ELV) for point source discharges into water or air.
		Coastal cities and urban agglomerations of more than 100,000 inhabitants are connected to a sewer system [SAP-MED Requirement]	EO5	Deadline passed	**WW01**. Share of population with access to an improved sanitation system (total, urban, rural). **WW02**. Wastewater collected (in population equivalent). **WW03**. Wastewater treated (in population equivalent). **WW04**. Share of the treated wastewater according to the type of treatment (primary, secondary, tertiary) and, where relevant, share of wastewater reused after treatment. **WW05**. Total loads of BOD5, Total nitrogen, Total phosphorus discharged to the Mediterranean Sea from urban wastewater treatment.
		Ensure that all agglomerations of more than 2,000 inhabitants collect and treat their urban wastewater before discharging them into the environment [Regional Plan Requirement]	EO5	2015 or 2019	

Sector Substance		Requirements of Regional Plans and SAP-MED for Consideration in Setting Operational Targets	Related Ecological objectives	Timetable for implementation	Potential indicators
	Solid Waste	Ensuring adequate urban sewer systems, WWTP and waste management systems to prevent run-off and riverine inputs of Marine Litter [Regional Plan Requirement]	EO10	2020	
		Urban solid waste management is based on reduction at source with the following waste hierarchy: prevention, re-use, recycling, recovery, and environmentally sound disposal [SAP-MED Requirement]	EO10	2025	**MW04**. Municipal waste generation per capita. **MW05**. Share of recycled, composted, incinerated, treated in waste-to-energy facilities or landfilled municipal waste with respect to collected amount. **MW06**. Share of generated municipal waste per waste composition category: paper/paperboard, textiles, plastics, glass, metals, other inorganic material, organic material.
		Establish environmentally suitable and economically feasible systems of collection and disposal of urban solid waste in cities of more than 100,000 inhabitants [SAP-MED Requirement]	EO10	Deadline passed	
		Adopt preventive measures to minimize inputs of plastic in the marine environment [Regional Plan Requirement]	EO10	2017	
		Implement programmes on regular removal and sound disposal of accumulations/hotspots of marine litter [Regional Plan Requirement]	EO10	2019	**ECAP Common Indicator 16/[MW01**]. Trends in the amount of litter washed ashore and/or deposited on coastlines, including analysis of its composition, spatial distribution and, where possible, source. [**ECAP Common Indicator 17/[MW02].** Trends in the amount of litter in the water column including microplastics and on the seafloor. **[ECAP Common Indicator 18/[MW03].** Trends in the amount of litter ingested by or entangling marine organisms focusing on selected mammals, marine birds and turtles. (trial basis)

Sector	Substance	Requirements of Regional Plans and SAP-MED for Consideration in Setting Operational Targets	Related Ecological objectives	Timetable for implementation	Potential indicators
		Close to the extent possible existing illegal solid waste dump sites [Regional Plan Requirement]	EO10	2020	**MW07**. Number of illegal dumpsites at coastal area that have been closed/remediated over the past 10 years.
		Implement adequate waste reducing/reusing/ recycling measures in order to reduce the fraction of plastic packaging waste that goes to landfill or incineration without energy recovery [Regional Plan Requirement]	EO10	2019	**MW0X**. Share of (supermarkets) applying deposit, return and restoration system for plastic beverage bottles. **MW08**. Annual consumption of plastic bags at national level per capita. **MW09**. Share of producers, manufacturer brand owners and first importers responsible for the entire life-cycle of the product with measures prioritizing the eco-design of the product and the hierarchy of waste management.
Industrial development	Heavy metals and organometallic compounds	Concentration of priority contaminants in biota, sediment or water is kept within acceptable limits [SAP-MED Requirement]	EO9	Not specified	**IND004**. National loads of pollutants from point sources: (a) PAH, VOC, PCDD/PCDF, Hexachlorobenzene, Cadmium, Chromium, Lead and Mercury which are directly or indirectly discharged to the Mediterranean Sea. (b) Total loads of BOD_5, Total nitrogen, Total phosphorus discharged to the Mediterranean Sea. **ECAP Common Indicator 11/[IND01].** Concentration of key harmful contaminants measured in the relevant matrix (biota, sediment, seawater). **ECAP Common Indicator 12/[IND02].** Level of pollution effects of key contaminants where a cause and effect relationship has been established. **ECAP Common Indicator 14/[IND03].** Actual levels of contaminants that have been detected and number of contaminants which have exceeded maximum regulatory levels in commonly consumed seafood.

Sector Substance	Requirements of Regional Plans and SAP-MED for Consideration in Setting Operational Targets	Related Ecological objectives	Timetable for implementation	Potential indicators
	Cease releases of mercury from the activity of Chloralkali plants [Regional Plan Requirement]	EO9	2020	**IND004**. National loads of pollutants from point sources: PAH, VOC, PCDD/PCDF, Hexachlorobenzene, Cadmium, Chromium, Lead and Mercury which are directly or indirectly discharged to the Mediterranean Sea. **IND07**. Share of companies within Annex I of the LBS Protocol applying cleaner production, BAT and/or BEP.
	Phase out to the fullest possible extent discharges, emissions and losses of organomercuric compounds and reduce those of organolead and organotin compounds [SAP-MED Requirement]	EO9	Deadline passed	**IND004**. National loads of pollutants from point sources: PAH, VOC, PCDD/PCDF, Hexachlorobenzene, Cadmium, Chromium, Lead and Mercury which are directly or indirectly discharged to the Mediterranean Sea. **IND07**. Share of companies within Annex I of the LBS Protocol applying cleaner production, BAT and/or BEP.
	Phase out discharges and emissions and losses of mercury, cadmium and lead [SAP-MED Requirement]	EO9	2025	
	Identify existing sites which have been historically contaminated with mercury [Regional Plan Requirement]	EO9	Deadline passed	**IND06**. Share of contaminated sites with toxic, persistent and liable to accumulate substances in the coastal area which have been closed/remediated including spills from industrial accidents.
	Apply environmentally sound management measures to sites which have been historically contaminated with mercury [Regional Plan Requirement]	EO9	2015	

Sector	Substance	Requirements of Regional Plans and SAP-MED for Consideration in Setting Operational Targets	Related Ecological objectives	Timetable for implementation	Potential indicators
		Achieve environmentally sound management of metallic mercury from the decommissioned plants [Regional Plan Requirement]	EO9	To be achieved following decommission	**IND004**. National loads of pollutants from point sources: PAH, VOC, PCDD/PCDF, Hexachlorobenzene, Cadmium, Chromium, Lead and Mercury which are directly or indirectly discharged to the Mediterranean Sea. **HW01**. Amount of hazardous waste generated by Y categories. **HW02**. Amount of hazardous waste environmentally soundly managed or exported by Y categories and by disposal/recovery operation (D - Disposal, R- Recovery, as well as treated in waste to energy facilities).
		Progressively reduce total releases of mercury (to air, water and to products) from existing Chlor alkali plants until their final cessation [Regional Plan Requirement]	EO9	2020	**IND004**. National loads of pollutants from point sources: PAH, VOC, PCDD/PCDF, Hexachlorobenzene, Cadmium, Chromium, Lead and Mercury which are directly or indirectly discharged to the Mediterranean Sea.
		Take appropriate measures to isolate and contain mercury containing wastes [Regional Plan Requirement]	EO9	2025	**HW01**. Amount of hazardous waste generated by Y categories. **HW02**. Amount of hazardous waste environmentally soundly managed or exported by Y categories and by disposal/recovery operation (D - Disposal, R- Recovery, as well as treated in waste to energy facilities).
Industrial development	Organo-halogens	Eliminate to the fullest possible extent pollution caused by discharges, emissions and losses of organohalogen compounds [SAP-MED Requirement]	EO9	2025	**IND004**. National loads of pollutants from point sources: PAH, VOC, PCDD/PCDF, Hexachlorobenzene, Cadmium, Chromium, Lead and Mercury which are directly or indirectly discharged to the Mediterranean Sea. **IND07**. Share of companies within Annex I of the LBS Protocol applying cleaner production, BAT and/or BEP.

Sector / Substance	Requirements of Regional Plans and SAP-MED for Consideration in Setting Operational Targets	Related Ecological objectives	Timetable for implementation	Potential indicators
Hazardous wastes	Dispose all hazardous wastes in a safe and environmentally sound manner [SAP-MED Requirement]	EO9	2025	**HW01**. Amount of hazardous waste generated by Y categories. **HW02**. Amount of hazardous waste environmentally soundly managed or exported by Y categories and by disposal/recovery operation (D - disposal, R- recovery, as well as treated in waste to energy facilities). **HW03**. Number of illegal HW trafficking cases].[13]
Physical Alterations and Destruction of Habitats	Remove existing accumulated litter from Specially Protected Areas of Mediterranean Importance (SPAMI) and litter impacting endangered species [Regional Plan Requirement]	EO10	2019	**ECAP Common Indicator 18/[MW03]**. Trends in the amount of litter ingested by or entangling marine organisms focusing on selected mammals, marine birds and turtles (trial basis).

[13] Pending study reservation to ensure that is fully in line with Basel Convention.

ANNEX B: Requirements of the regional plans in the framework of SAP-MED regarding legal/policy issues

Applicable requirements extracted specifically for this exercise (for use with Tasks 1 and 2A)

Sector Substance	Requirements of Regional Plans and SAP-MED for consideration in Establishing/Reinforcing Existing Laws, Policies and Strategies	Timetable
Urban Environment	Enforce the adopted ELVs by monitoring discharges from municipal wastewater treatment plants into the environment [Regional Plan Requirement]	2015 or 2019
	Minimization of impacts related to properties and quantities of marine litter in the marine and coastal environments [Regional Plan Requirement]	2015
	Control of impacts of litter on marine life to the maximum extent practicable [Regional Plan Requirement]	2015
	Enforce measures to combat illegal dumping including littering on beaches and illegal sewage disposal in coastal zones and rivers [Regional Plan Requirement]	2020
Physical Alterations and Destruction of Habitats	Safeguard of the ecosystem function and maintenance of the integrity and biological diversity of species and habitats [SAP- MED Requirement]	Not specified
	Restore marine and coastal habitats that have been adversely affected by anthropogenic activities [SAP- MED Requirement]	Not specified
Monitoring and Inspection	Monitor releases of mercury into water, air and soil in order to verify compliance with the requirements [Regional Plan Requirement]	2015
	Monitor discharges from municipal wastewater treatment plants and take necessary measures to enforce national regulations [Regional Plan Requirement]	2015 or 2019
	Monitor bathing water quality [Regional Plan Requirement]	2016
	Design National Monitoring Programme on Marine Litter [Regional Plan Requirement]	2017
Public participation	Explore and implement National Marine Litter Cleanup Campaigns; participate in International Coastal Cleanup Campaigns and Programmes; apply “Adopt-a-Beach” or similar practices; and apply “Fishing for Litter” practices [Regional Plan Requirement]	2019
	Enhancement of public awareness and education of pollution, and involvement of various stakeholders with regard to marine litter management including activities related to prevention and promotion of sustainable consumption and production [Regional Plan Requirement]	2015
	Provision of information to the public about bathing water quality and implemented management measures [Regional Plan Requirement]	2016
Reporting	Prepare bathing water profiles or beach profiles [Regional Plan Requirement]	2016
	Establish Regional Data Bank on Marine Litter [Regional Plan Requirement]	2016
	Report on the implementation of the measures on the reduction of BOD5 from urban waste water and on their effectiveness [Regional Plan Requirement]	Biannually
	Report on the implementation of the National Marine Litter Monitoring Programme [Regional Plan Requirement]	Biannually

ANNEX C: Criteria for shortlisting and prioritizing pollution prevention and control measures *(for use with Task 3C)*

Criteria for Scoring Prioritization Criteria				
Prioritization categories	**Scoring criteria**			
	4	**3**	**2**	**1**
Achievement of pollution-related GES targets	Measure contributes more than 50% pressure reduction and substantial decreasing trends in GES targets	Measure contributes to 30% to 50% pressure reduction and decreasing trends in GES targets	Measure contributes to 10% to 30% pressure reduction or in maintaining the existing trends of GES targets	Measure contributes less than 10% to pressure reduction or no impact on GES target
Elimination of hotspots	The measure directly and significantly contributes to the elimination of hotspots of Category A[14]	The measure moderately contributes to the elimination of hotspots of Category B	The measure has weak and indirect contribution to the elimination of potential hotspots/ sensitive areas (Category C)	The measure has no contribution to the elimination of hotspots or sensitive areas
Contribution to other pollution-related ecological objectives	Contributes directly to ecological objective EO1 on biodiversity	Contributes to other pollution-related ecological objectives/ GES targets [15]	Contributes to other non-pollution-related ecological objectives (other than EO1)	No contribution
Technical feasibility	Technology is mature and capacity to implement the measure is sufficient (BAT, BEP and SCP)	Technology is mature but capacity to implement the measure is moderate	Technology is not mature or in trial phase	Technology is not available
Geographical scope	National with transboundary impacts	Within national boundaries	Within regional boundaries	Local level
Implementation timetable/ urgency in line with the agreed national operational targets [16]	Deadline has passed	Deadline earlier than 2017	Deadline is 2020	Deadline is 2025

[14] Categories of hotspots are included in Appendix C of the NAP Update Guidelines included in the Draft Report of the Second MED POL Focal Points meeting on NAP update [UNEP(DEPI)/MED WG.404/7].
[15] Pollution-related EOs are eutrophication (EO5), contaminants (EO9) and marine litter (EO10).
[16] These deadlines are provided for indicative purposes based on regional targets. However, the countries may adjust them based on their national operational targets.

MIDTERM BASELINE FACT SHEET (A) at the water basin/administrative region level				
Legally binding requirement/obligation *include ID number*	**Midterm baseline**	**Existing gap**	**Operational target**	
			Description	**ID**

POTENTIAL NEW MEASURES FACT SHEET (B) to fulfill a single operational target at the water basin/administrative region level									
Related ecological objective(s)	**Operational targets** *include ID number*	**ID Number** *of potential measure*	**Potential measures at regional level** *to close the gap identified in the assessment fact sheet (A)*	**Type of measure**					
				legal	Institutional	policy	economic	technical	
				L	**I**	**P**	**E**	**T**	

INTEGRATED MEASURES FACT SHEET (C) to fulfill the operational targets at the national level for inclusion in the NAPs				
Operational targets *include ID number*		**ID Numbers** *of aggregated measures*	**Potential measures at national level** *integrated based on "type" of measure shown in Fact Sheet (B)*	**Administrative hierarchy** *national, regional, local*
Legal				
Institutional				
Policy				
Economic				

PRIORITY FACT SHEET (D)											
ID No. *of measure*	**Technical Measures Leading Directly to Pollution Reduction and Control at the national level** *as tabulated in fact sheet (C)*	**Prioritization Criteria**									**Total Score**
		Geographical scope	Implementation timetable	Contribution to GES targets	Contribution to EO or policy	Technical feasibility	Effectiveness or impact	Hot spot, sensitive area	Cost for implementation	Cost effectiveness	

POLLUTION PREVENTION AND CONTROL FACT SHEET (E)			
Priority number	**Operational target**	**Programme of measures** *ranked based on total score in fact sheet (D)*	**Administrative hierarchy** *national, regional, local*