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Meeting of MED POL Focal Points on LBS NAP update

Athens (Greece), 26-28 March 2014

MID-TERM EVALUATION OF SAP/NAP IMPLEMENTATION

Delegates are kindly requested to bring their documents to the meeting

UNEP/MAP
Athens, 2014

TABLE OF CONTENTS

I- INTRODUCTION

The Strategic Action Plan (SAP-MED) is a long term policy framework to combat pollution from land-based sources in the Mediterranean. SAP-MED was adopted by the Contracting Parties in their 10th Contracting parties meeting in Tunis, 1997 with the view to facilitate the implementation of the LBS Protocol of UNEP/MAP-Barcelona Convention.

SAP-MED consists of the following components:

a) Regional outputs to be implemented by the Secretariat under the guidance of MEDPOL Focal Points covering the elaboration of several sets of technical guidelines, undertaking a number of capacity building workshops, developing tools supporting monitoring, enforcement, reporting and public participation as well as supporting countries to enhance their implementation on the ground at national and local levels.

b) 33 regional pollution reduction targets covering a considerable number of substances and sectors in accordance with the LBS Protocol, including urban environment (municipal sewage, solid waste and air pollution), industrial development and physical alterations and destruction of habitats. Substances targeted in the SAP-MED include toxic, persistent and liable to bioaccumulate, heavy metals, organohalogens, radioactive substances, nutrients and suspended solids, and hazardous wastes.

c) Requirement to develop national action plans in accordance with Article 5 of the LBS Protocol with the view to breakdown SAP-MED requirements into national and local actions and to identify priority policy, legal, institutional and pollution reduction measures, including investment needs for meeting SAP MED targets.

d) Requirement to report on SAP and NAP implementation **on a periodical basis** (i.e. every five years). Reporting on NAP implementation effectiveness in accordance with Article 13 of the LBS Protocol should be made every two years.

In line with the above requirements and obligations the Contracting Parties to the Barcelona Convention elaborated their National Action Plans (NAP) following the NAP guidelines commonly agreed in 2004. The NAPs specify key actions (interventions of a policy and regulatory nature, as well as concrete investments in the field of pollution reduction); timetable for their implementation and associated costs. The measures provided for in the NAPs were envisaged to be accomplished by 2010 and 2015. However, some of the NAPs also included measures that generally took into account pollution reduction/abatement investments needs for the period beyond 2015.

In addition, a reporting system was established to track pollution reduction progress/trends and hotspot elimination, referred to as National Baseline Budget system (NBB). The aim of the SAP/MED NAP reporting system is accomplished through the establishment and submission every two and five years of national pollutant loads for a considerable number of categories of pollutants in line with LBS Protocol. Efforts were made to introduce PRTR as a tool supporting effectively the NBB reporting and build capacities of a number of the Contracting Parties as appropriate.

II- OBJECTIVES OF THE EVALUATION

Twelve years after the adoption of the SAP-MED and seven years after the endorsement of the NAPs, it is necessary to make an in depth evaluation of SAP-MED and NAPs with the view to assess the state of the art of their implementation and provide recommendations to address current and future challenges to enhance their sustainability. For that reason, the Contracting Parties approved the evaluation of SAP/NAP implementation as a key output for the 2012-2013 biennium of UNEP/MAP Programme of work in the framework of its MEDPOL programme.

The main objectives of this evaluation are:

a) Enhance the sustainability of the SAP MED/NAP implementation based on a forward-looking assessment of the status of implementation of SAP/NAP and the achievement of their targets.
b) Provide specific recommendations on ways and means to integrate into the ecosystem approach targets in the SAP/NAP process.
c) Extend the scope of SAP MED and NAP implementation to include the legally binding measures and obligations taken by the Contracting Parties under the seven regional plans adopted in 2009, 2012 and2013.
d) Identify the necessary measures at national, and where appropriate, regional levels required to meet the 2025 SAP-MED targets, as decided by the Contracting Parties.

The methodology followed for conducting the evaluation of SAP-MED/NAP implementation consisted of:

a) An exhaustive desk review of the legal framework, national strategies and plans and all the available information and data on the state of the environment of each Contracting Party with the view to assess the extent to which the Parties support NAP implementation, existing gaps and the way forward.
b) Analysis of reported data on releases of pollutants into the marine environment (mainly NBB and PRTR) by each country in order to track reduction trends in order to assess the status of achievement of SAP MED targets on substances reduction/phase out at regional level for group of substances and sectors.
c) Analysis of published data related to pollution from LBS sources in the Mediterranean collected through research and desk review.
d) Analysis of the status of implementation SAP regional outputs.

The present SAP-MED/NAP evaluation report is composed of two parts:

1. Status of SAP-MED implementation supported by two annexes:
    a) Meeting SAP-MED targets.
    b) Delivering SAP-MED Regional outputs.
2. Regional synopsis of NAP implementation

It should be noted that national data on pollutant releases into the marine environment (NBB) presented inconsistencies between reporting years, and with other reporting systems (PRTR), in those countries where different reporting systems were in use. Therefore, the variations within the scope of the reporting, different methods of calculation and lack of data validation hindered identification of reliable trends, and thus the extraction of solid conclusions and recommendations. For this purpose, a new cycle of NBB reporting is ongoing and its results will be incorporated in the final version of the SAP-MED/NAP evaluation report in 2015.

III. Meeting SAP-MED Targets

SAP-MED covers the following categories of substances selected as priorities. It covers urban environment and industrial development illustrated in the following table.

Sector	Category	Substances
Urban environment	Municipal wastewater Municipal solid waste Air pollutants	
Industrial development	Toxic, Persistent and Liable to Bioaccumulate (TPB)	Aldrine DDT Dieldrine Endrine Chlordane Heptachlor Mirex Toxaphene Hexachlorobenzene PCB/PCT PCDD/PCDF PAH Mercury Cadmium Lead Organometallic compounds
	Other heavy metals	Zinc Copper Chrome
	Organohalogen compounds	Chlorinated solvents Chlorinated paraffins Chlorobenzenes Polychlorinated naphtalenes (PCNs) Polybrominated diphenyl ethers and polybrominated biphenyls Chlorophenols Lindane Chlorophenoxy acids
	Radioactive substances	-
	Nutrients and suspended solids	BOD_5 Nutrients Suspended solids
	Hazardous wastes	Obsolete chemicals Used lubricating oils Batteries

Furthermore, the adoption of 10 Regional Plans in the framework of Article 15 of the LBS Protocol presents an important added value to SAP as they further specify and strengthen the SAP MED with regards to industrial pollution sector (POPs, heavy

metals and food industry), urban development (BOD_5 from WWTP and marine litter), as well as enhance monitoring and reporting requirements.

The regional plans are the following:

- Elimination of Aldrin, Chlordane, Dieldrin, Endrin, Heptachlor, Mirex and Toxaphene.
- Phasing out of DDT (adopted in 2009)
- Reduction of BOD5 from urban wastewater (adopted in 2009).
- Reduction of inputs of Mercury (adopted in 2012).
- Reduction of BOD5 in the food sector (adopted in 2012).
- Phasing out of Hexabromodiphenyl ether, Heptabromodiphenyl ether, Tetrabromodiphenyl ether and Pentabromodiphenyl ether (adopted in 2012).
- Phasing out of Lindane and Endosulfan. (adopted in 2012)
- Phasing out of Perfluorooctane sulfonic acid, its salts and Perfluorooctane sulfonyl fluoride (adopted in 2012.
- Elimination of Alpha hexachlorocyclohexane, Beta hexachlorocyclohexane, Chlordecone, Hexabromobiphenyl, Pentachlorobenzene (adopted in 2012).
- Management of Marine Litter in the Mediterranean (adopted in 2013).

i. Urban environment: urban solid waste

One of the most relevant SAP targets within urban environment is related with urban solid waste; in particular, SAP sets **to base urban solid waste management on reduction at source, separate collection, recycling, composting and environmentally sound disposal by 2025**.

In addition, the regional plan on marine litter management boosts the application of the waste hierarchy as a priority order in waste prevention and management legislation and policy, i.e.: **prevention, preparing for re-use, recycling, other recovery, e.g. energy recovery and environmentally sound disposal.**

It has been difficult to assess such target achievement with comparable national data for the whole Mediterranean region. Most data on solid waste management have been extracted from World Bank[1] (17 Mediterranean countries available) and Eurostat[2] (10 Mediterranean countries). In addition, SWEEP-NET[3] reports (5 countries available), Report for RECO BALTIC 21 TECH and the SEIS report have been also helpful sources.

The following results have been obtained:

- Municipal Solid Waste generation: the figure below shows generation of MSW for 2003, 2008 and 2011 in some Mediterranean countries according to data available from Eurostat.
- Municipal Solid Waste generation: the figure below shows the current generation of MSW per capita per day in Mediterranean countries.

[1] Hoornweg, Daniel; Bhada-Tata, Perinaz. 2012. *What a waste : a global review of solid waste management*. Urban development series ; knowledge papers no. 15. Washington, DC: World Bank. http://documents.worldbank.org/curated/en/2012/03/16537275/waste-global-review-solid-waste-management

[2] http://epp.eurostat.ec.europa.eu/portal/page/portal/environment/data/database

[3] The Regional Solid Waste Exchange of Information and Expertise network in Mashreq and Maghreb countries.

- Municipal Solid Waste (MSW) collection rate: the figure below shows the current level (in %) of solid waste collection in Mediterranean countries.

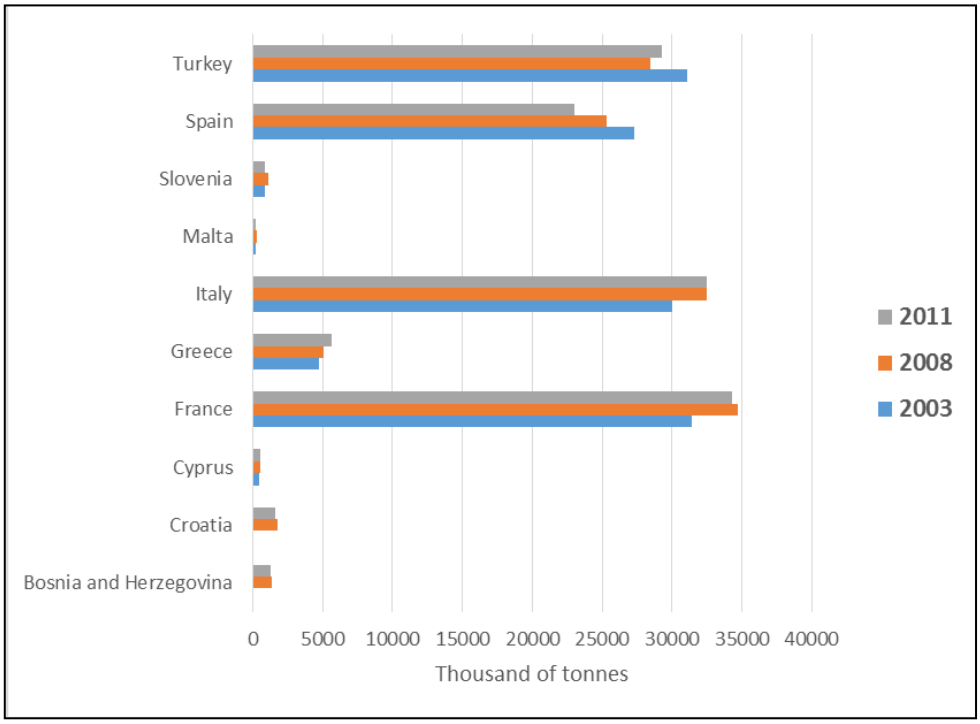


Figure 1. MSW generation in Mediterranean countries. *Source: Eurostat.*

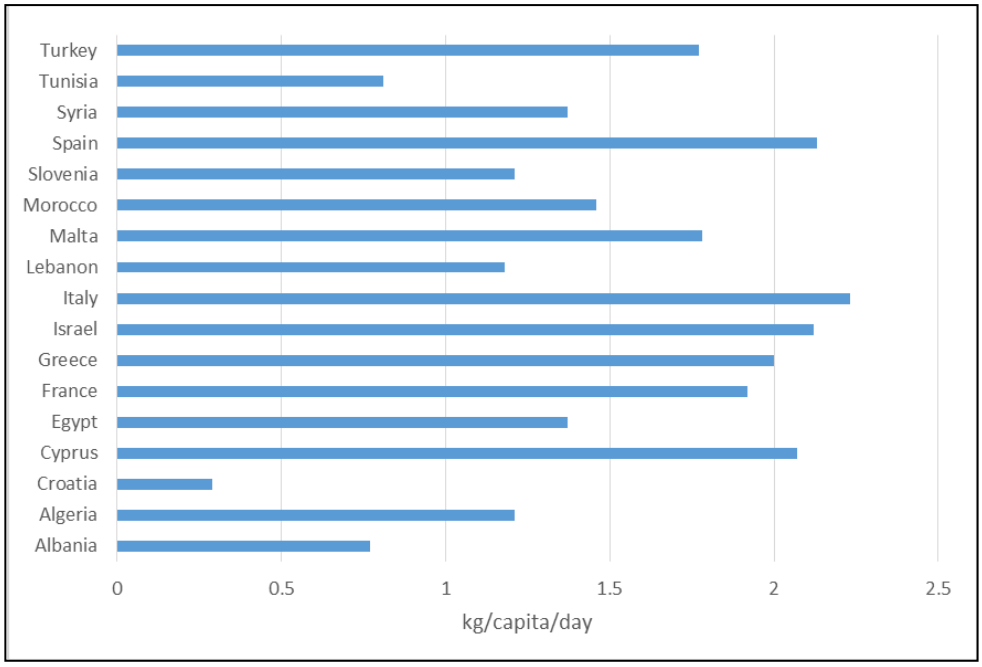


Figure 2. MSW generation per capita in Mediterranean countries. *Source: World Bank.*

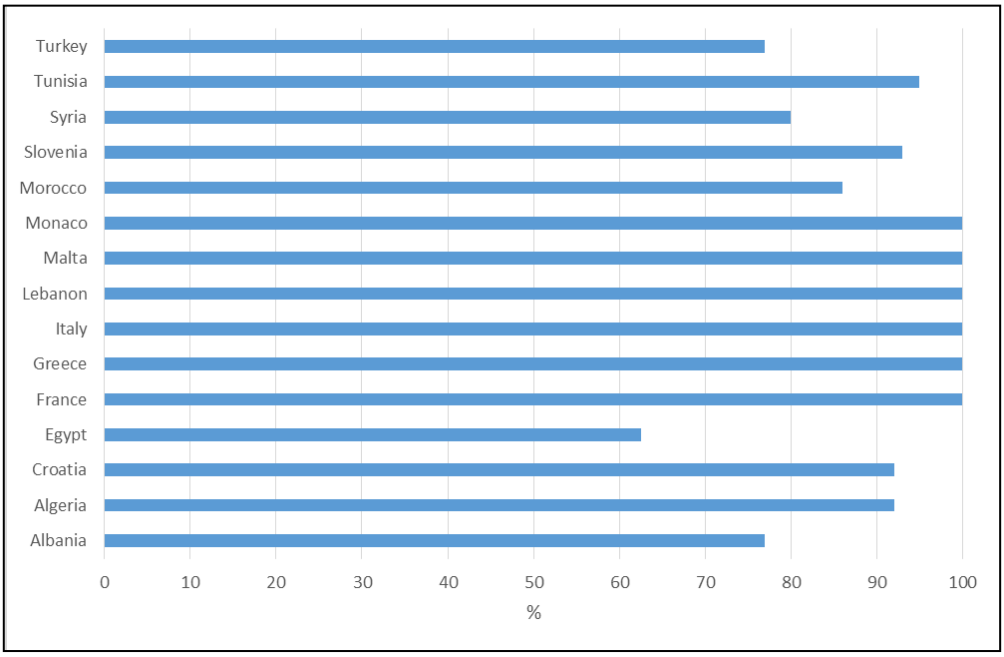


Figure 3. MSW collection rates in Mediterranean countries. *Source: World Bank*[4]

- Municipal Solid Waste (MSW) disposal methods: the figure below shows the disposal methods (in %) of solid waste in Mediterranean countries.

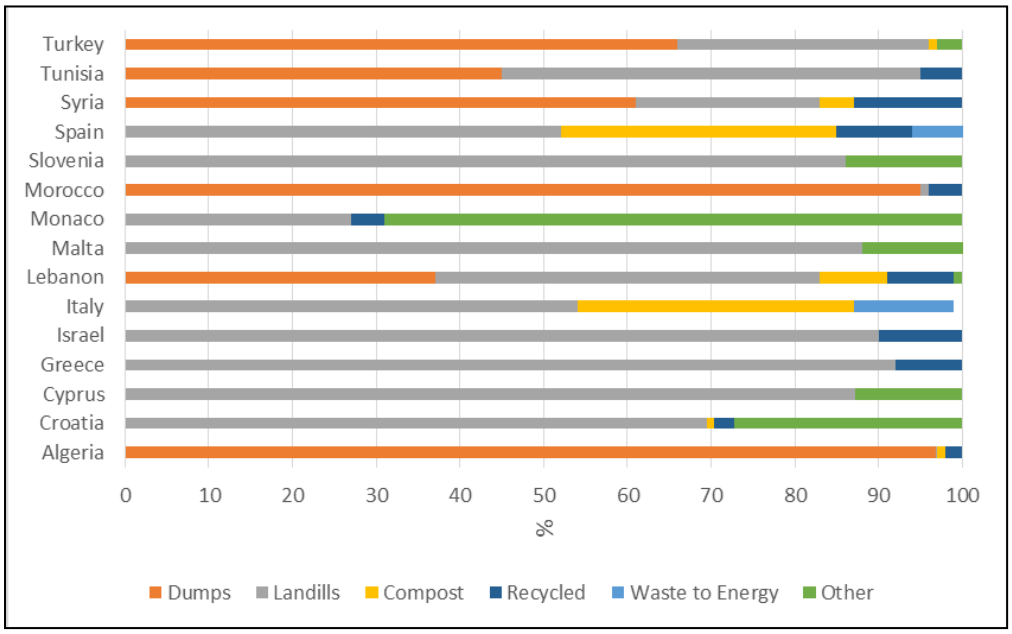


Figure 4. MSW disposal methods in Mediterranean countries. *Source: World Bank*[5]

[4] *Note that rates for Egypt and Morocco are mean values*
[5] *Note that rates for Monaco and Syria have been adjusted to 100%.*

Main general conclusions on solid waste management in the Mediterranean countries are as follows:

- Few reduction trends on MSW generation have been identified in Mediterranean countries; according to available data, only Spain shows a clear reduction for the period 2003-2011.
- According to World Bank, Cyprus, Greece, Italy, Israel and Spain show the highest MSW generation rates (over 2 kg/capita/day). On the contrary, Albania, Croatia and Tunisia show the lowest rates (below 1 kg/capita/day). However, such rates seem to be too high according to other sources, especially in rural areas, where SWEEP NET reports (Egypt, Lebanon and Algeria) show rates between 0.4 - 0.8 kg/capita/year.
- In general, MSW collection rates reported by World Bank are in line with SWEEP NET reports. Most EU countries show collection rates near 100% while Albania, Egypt, Morocco, Syria and Turkey show the lowest collection rates in the region.
  In particular, Egypt reported collection rates between 40 - 85% for urban population and between 0 - 35% for rural areas. Other countries present MSW collection rates near 80%, e.g. Albania (77%), Morocco (85%), Syria (80%) and Turkey (77%).
- Both reports also observe that dumps are significant disposal methods in several Mediterranean countries, e.g. Algeria, Egypt, Lebanon, Morocco, Syria, Tunisia and Turkey.
- Recycled and compost show low rates. Only Italy and Spain show significant composting rates (about 30%) but, at the same time, low recycling rates.

ii. Industrial development

ii.a. Releases of pollutants into the marine environment (NBB)

National Baseline Budget (NBB) is the reporting tool established to detect any possible reduction trend in the direct and indirect releases of pollutants into the marine environment which could result from the implementation of priority actions as described in the NAPs/SAP MED targets. NBB compiles national pollutant discharges to air and water for a large number of pollutants with a 5-year periodicity.

The level of detail for each **register** in the NBB database is:

Country–Region–Sector-Subsector- Process -Pollutant–Emission Value-Nature – Year -Group1 - Group2 -Unit weight

A comprehensive data analysis regarding 2003 and 2008 NBB has been developed; main results and information gaps are provided below:

- Countries: In 2003 all 21 countries reported data to the NBB, while in 2008 data is not available for two countries (Greece and Albania).
- Registers: In 2003, 7,509 registers were submitted while in 2008, the number of registers increased up to 12,560. Being Spain, Turkey, Croatia and Italy the major contributors to this increase.

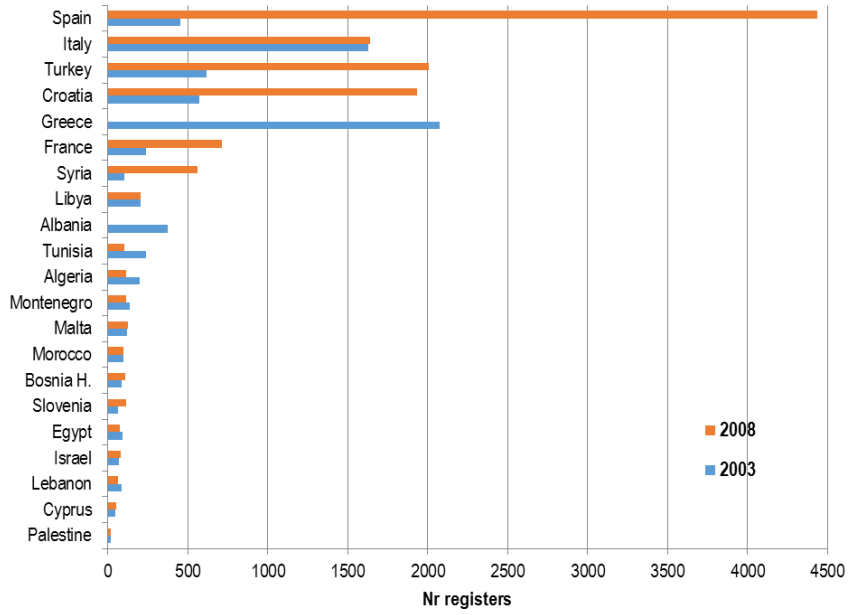


Figure 5. Number of registers by country (NBB 2003-2008).

- Nature of emissions: The number of air emission registers was 14% higher than the number of liquid discharge registers in 2003. On the contrary, in 2008, registers on water discharges were 8% higher than air registers.

  Three countries (Malta, Morocco, and Palestine) did not report atmospheric emissions in 2003 or 2008. France did neither report atmospheric emissions in 2008.

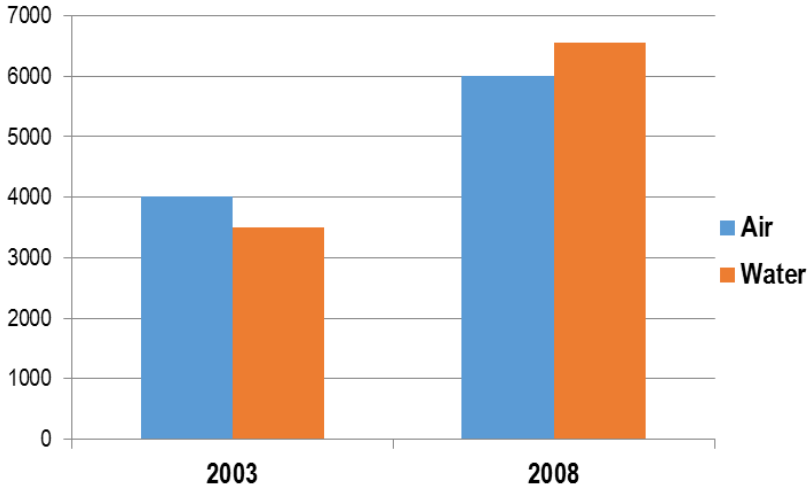


Figure 6. Number of registers by nature (NBB 2003 - 2008).

- Pollutants: About 75 different substances were included in the 2003 dataset, while in 2008 a total 103 pollutants were reported, including 70 of the substances reported in 2003. Therefore, the comparative analysis cannot be performed for 35 pollutants, as they are only included in the 2008 (32) or 2003 (3) dataset.

Table 1 Number of different sectors and pollutants reported by each country in 2003 and 2008.

	2003		2008	
Country	**nSectors**	**nPollutants**	**nSectors**	**nPollutants**
Albania	14	18	NA	NA
Algeria	13	30	15	20
Bosnia H.	8	23	6	18
Croatia	18	35	16	34
Cyprus	11	21	7	27
Egypt	10	30	10	29
France	14	17	21	54
Greece	21	24	NA	NA
Israel	7	35	8	27
Italy	20	48	13	47
Lebanon	14	38	14	17
Libya	8	27	7	27
Malta	6	25	6	25
Montenegro	7	24	6	28
Morocco	9	7	9	5
Palestine	1	10	1	10
Slovenia	11	20	12	18
Spain	0	31	22	80
Syria	14	27	14	26
Tunisia	10	29	9	16
Turkey	19	31	20	25
Total diff. n	30	75	30	103

On the other side, the different pollutants are not reported by all countries. In fact, there are some substances that are only reported by a very limited number of countries, e.g. a 34% of the pollutants in 2003 were reported by only 2-5 countries while this percentage increased to a 53% in 2008.

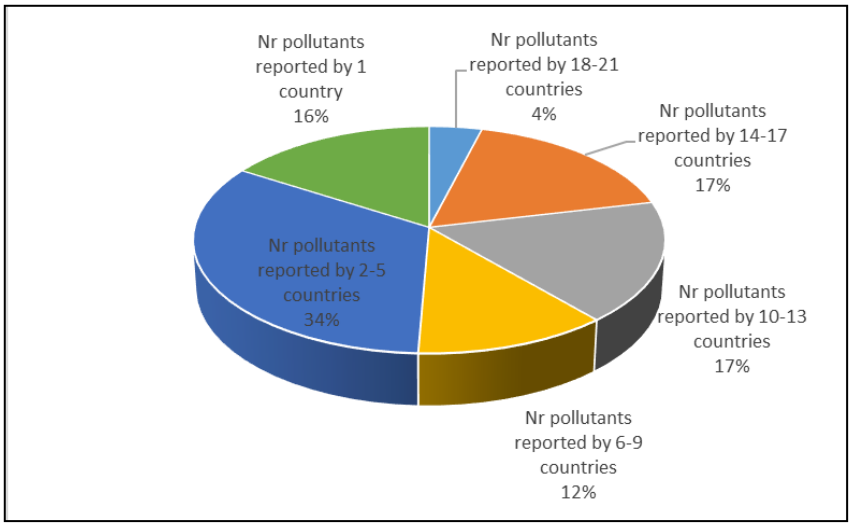


Figure 7. Number of pollutants reported by countries (NBB 2003).

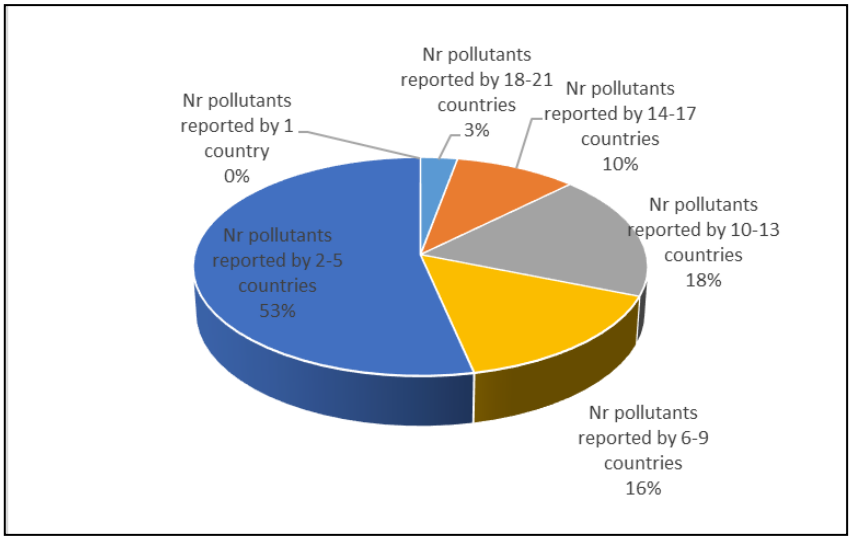


Figure 8. Number of pollutants reported by countries (NBB 2003).

As for pollutants most reported, BOD_5 is the pollutant with a major number of registers in both 2003 and 2008 (9% and 11%, respectively, of the total registers), followed by nitrogen oxide and VOC in 2003, and TSS and nitrogen oxide in 2008.

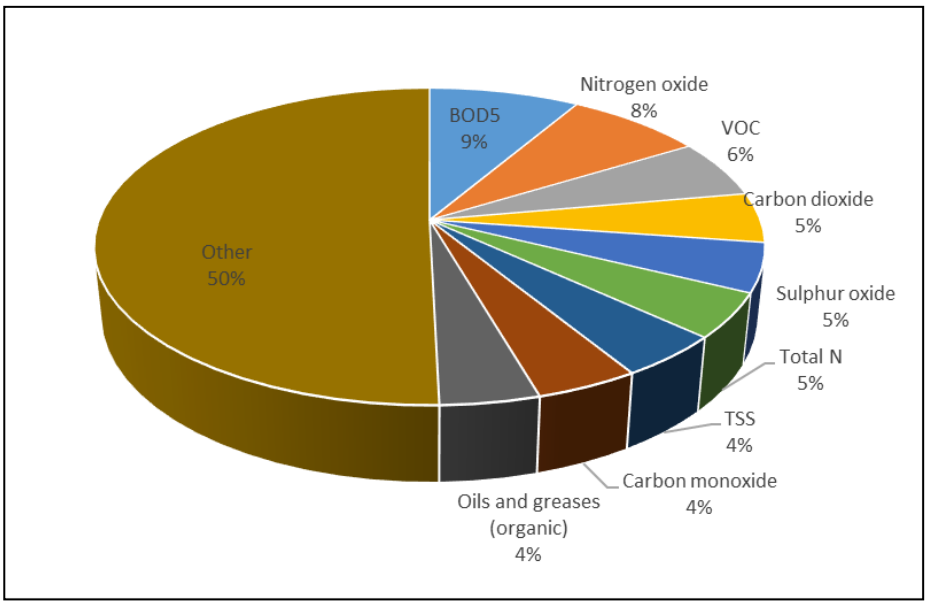


Figure 9. Top pollutants by number of registers (NBB 2003).

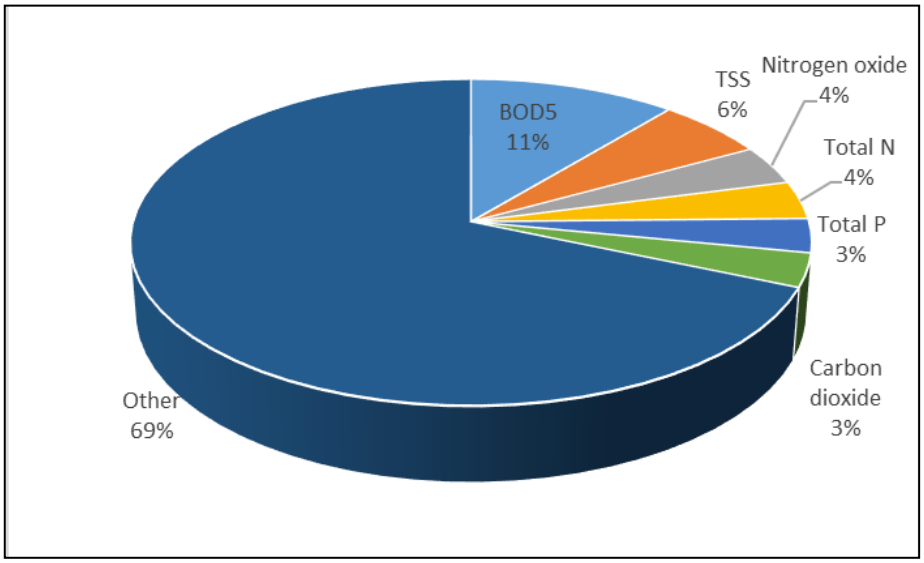


Figure 10. Top pollutants by number of registers (NBB 2008).

- Group of pollutants: Pollutants are classified into two different groups of pollutants, at two levels of detail.

Table 2. Groups 1 and 2 of pollutants in NBB 2003 - 2008.

Group1	**Hydrocarbons**	
	Aromatic HC	Group 2
	PAH	Group 2
	Petroleum HC and oils&greases	Group 2
	VOC	Group 2
Group1	**Metals and compounds**	
	Metallic compounds	Group 2
	Metals	Group 2
Group1	**Nutrients, SS and BOD/TOC**	
	BOD/COD/TOC	Group 2
	Nutrients and SS	Group 2
Group1	**Organohalogen**	
	Chlorinated pesticides	Group 2
	Halogenated Aliphatic HC	Group 2
	Halogenated Aromatic HC	Group 2
	Other halogenated compounds	Group 2
Group1	**Other atmospheric pollutants**	
	GHG	Group 2
	NH3	Group 2
	Other combustion gases	Group 2
	Particles	Group 2
Group1	**Other inorganic compounds**	
	Cyanures and fluorures	Group 2
Group1	**Other organic compounds**	
	Organic Oxigen Compounds	Group 2
	Phenols	Group 2

As for most reported groups of pollutants, metals accounts for the major number of registers in both 2003 and 2008 followed by other combustion gases. A significant increase in the number of registers for metals, BOD5/COD/TOC and nutrients and SS is observed in 2008.

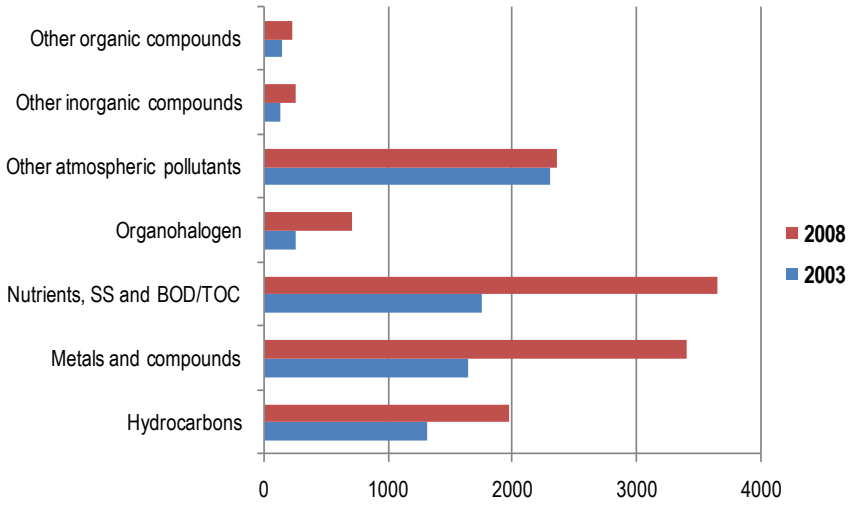


Figure 11 Number of registers in NBB 2003 and 2008, by groups of pollutants.

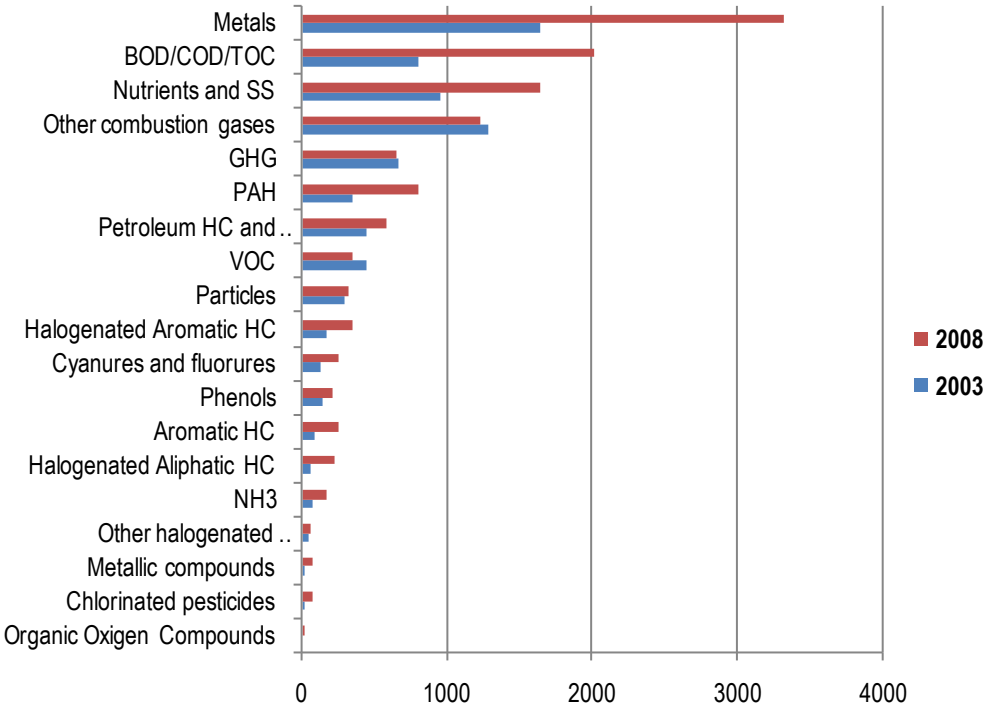


Figure 12. Number of registers by sub-groups of pollutants (NBB 2003 - 2008).

- Sectors and subsectors: sectors that have notably increased (in total and relative terms) the number of registers in the database are the management of urban solid waste (1670%), the inorganic and organic chemical industry (115% and 159%, respectively), the mining industry (390%), the production of energy (93%) or the

treatment of urban wastewater (293%). In contrast, other sectors have decreased the number of records, such as food packing (-11%), transport (-53%), tanning (-34%) or waste management activities (-40%).

Table 3 Number of records in 2003 and 2008, by sectors.

Sector	***2003***	***2008***	***Variation(n)***	***Variation(%)***
Agriculture	106	81	-25	-24%
Aquaculture	174	121	-53	-30%
Building and repairing of ships and boats	68	97	29	43%
Factories that cause physical changes to the environment	12	16	4	33%
Farming of animals	275	423	148	54%
Food packing	1142	1016	-126	-11%
Management of urban solid waste	10	177	167	1670%
Manufacture and formulation of biocides	32	24	-8	-25%
Manufacture of cement	521	816	295	57%
Manufacture of electronics products	34	39	5	15%
Manufacture of fertilizers	94	147	53	56%
Manufacture of metals	725	1136	411	57%
Manufacture of other inorganic chemicals	410	880	470	115%
Manufacture of other organic chemicals	367	951	584	159%
Manufacture of paper	177	369	192	108%
Manufacture of pharmaceuticals	132	160	28	21%
Manufacture of refined petroleum products	394	461	67	17%
Manufacture of textiles	252	456	204	81%
Mining and quarrying	41	201	160	390%
NA	523	635	112	21%
Other	35	150	115	329%
Port services	6	5	-1	-17%
Production of energy	856	1654	798	93%
Recycling activities	14	19	5	36%
Tanning and dressing of leather	218	143	-75	-34%
Tourism	99	542	443	447%
Transport	188	88	-100	-53%
Treatment and storage of hazardous wastes	5	198	193	3860%
Treatment of sewage sludge	50	1	-49	-98%
Treatment of urban wastewater	338	1328	990	293%
Waste incineration and management of its residues	8	105	97	1213%
Waste management activities	203	121	-82	-40%
Total	**7509**	**12560**	**5051**	**67%**

Food packing, production of energy and manufacture of metals are the most reported sectors in 2003 (15%, 11% and 10%, respectively, of the total number of registers) while production of energy, treatment of urban wastewater and manufacture of metals are the most reported sectors in 2008 (13%, 11% and 9%, respectively, of the total number of registers).

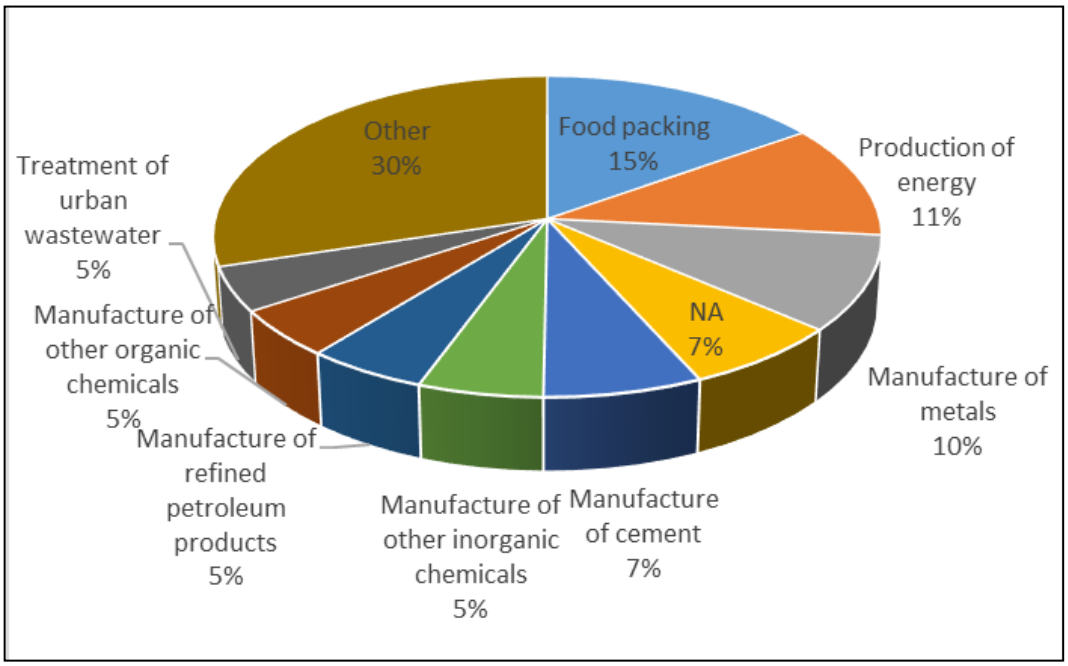


Figure 13. Top sectors by number of registers (NBB 2003).

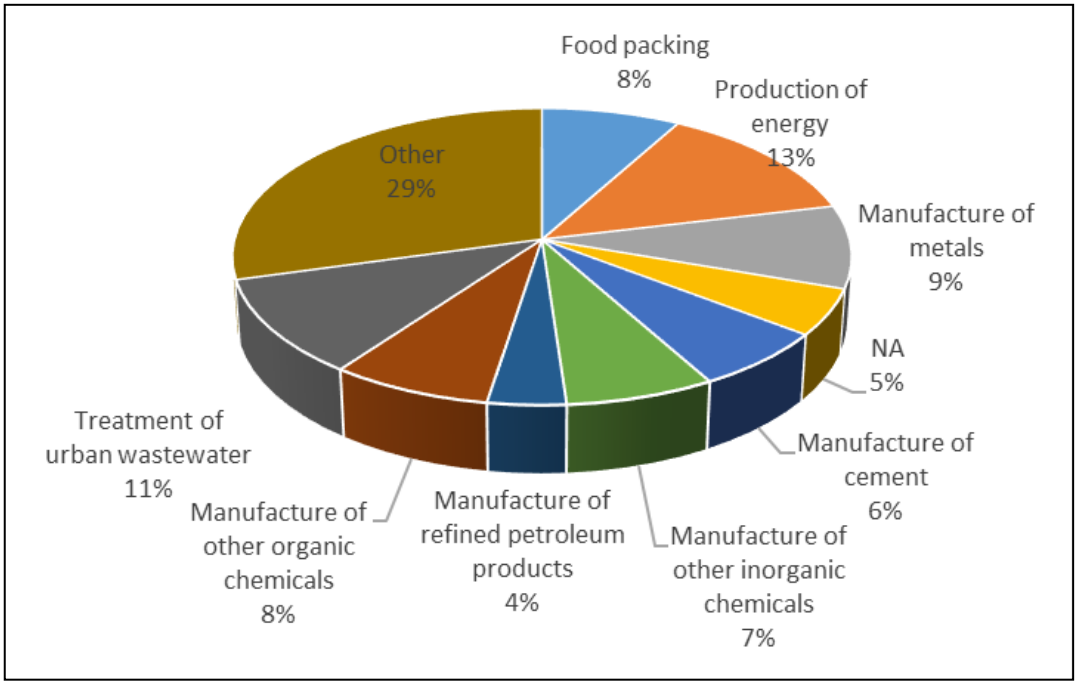


Figure 14. Top sectors by number of registers (NBB 2008).

As for pollutants, the availability of data at sector and subsector level is not homogeneous. Some sectors have been reported by a very limited number of countries, like agriculture, mining, manufacture of electronic products, or waste management related activities. Moreover, some countries account for the majority of records reported for a given sector, like Greece in the 2003 dataset, or Spain in the 2008 dataset. In fact, about 50% of countries (57% and 48% in 2003 and 2008,

respectively), have reported emissions in less than 15 sectors, out of the 30 NBB sectors.

- Geographical scope: countries might have been using different criteria to delimitate the geographic scope to build up the industrial inventory to be included in the NBB. For instance, France and Spain have considered the overall Mediterranean hydrological basin, even if the administrative regions are far away from the Mediterranean coast. On the other side, other countries might have just considered the Mediterranean coastal administrative regions.
- Emission value: emissions values for all pollutants have been reported in kg/year except for PCDD/PCDF, which have been mostly reported in mg/year. Trends on emission values and assessment on the achievement of SAP MED pollution reduction targets are described in the following sections.
- Direct *vs.* indirect emissions. Different criteria might also have been used to report water discharges. Some countries (e.g. E-PRTR reporting countries) differentiate between direct (after treatment, to rivers and coastal waters) and indirect (before treatment, to sewage systems) emissions, and in these cases direct discharges are only selected for the NBB database[6].
- Sector allocation: countries that have reported data based on the E-PRTR register (i.e. France, Spain) use a different classification of sectors-subsectors.
- Method of calculation: some countries have used emission factors and activity data to estimate atmospheric and water releases, while others combine estimated with monitored data. It must be noted that in those cases where all releases have been estimated using the same emission factors in 2003 and 2008, any change in emissions will be exclusively attributed to changes in the industrial inventory or geographic scope.

ii.b. Emission trends

In quantitative terms, pollutants most emitted/discharged in 2003 were hydrocarbons (minerals), BOD_5 and sulphur oxide, contributing with a 31%, 26% and 11%, respectively, of the total emissions. In 2008, pollutants most emitted/discharged were oils and greases (organic), carbon monoxide and nitrogen oxide with a 76%, 12% and 6%, respectively. This unexpected trend is due to an abnormal high value for oils and greases reported by paper sector from Algeria. In absolute terms, BOD_5 emissions slightly decrease from 2003 to 2008 while atmospheric gases (carbon monoxide, nitrogen oxide and sulphur oxide) show a significant increase.

[6] For Spain, this distinction has only been made in 2008, which therefore affects the comparability of data between 2003 and 2008.

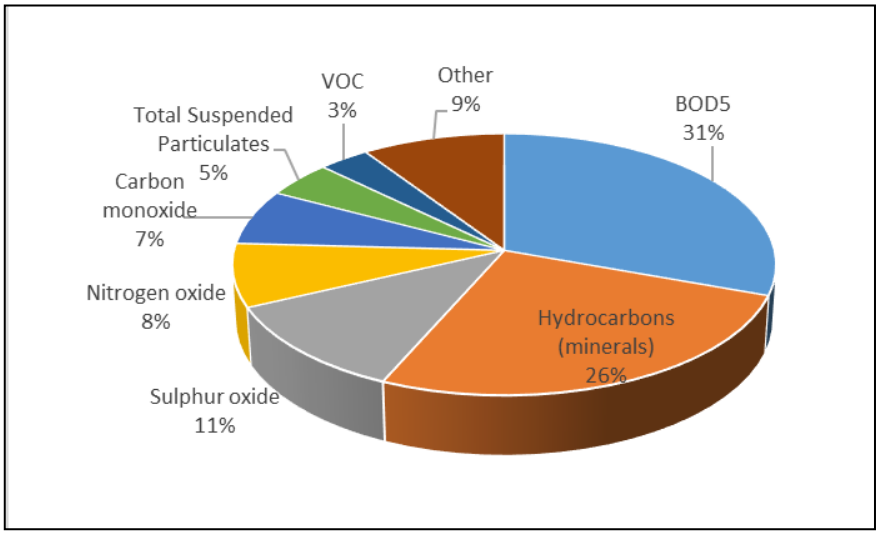


Figure 15. Top pollutants by emission values (NBB 2003)[7]

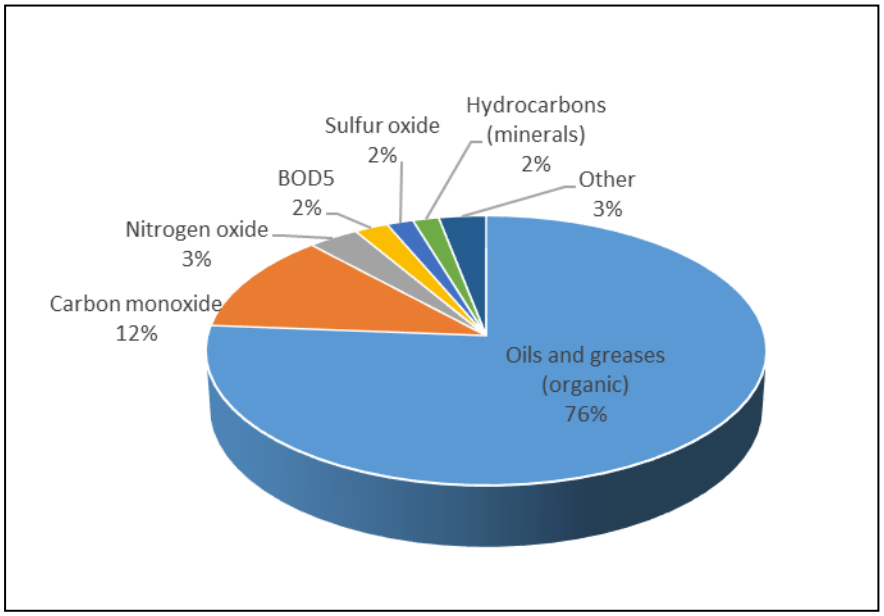


Figure 16. Top pollutants by emission values (NBB 2008)[8]

As for the nature of emissions, the sectors reporting major atmospheric emissions were: production of energy, manufacture of cement and manufacture of refined petroleum products with a 66%, 12% and 10%, respectively, of the total atmospheric emissions in 2003.

[7] *Note: CO2 emission values have been omitted*
[8] *Note: CO2 emission values have been omitted*

Main sectors emitting atmospheric pollutants in 2008 were manufacture of refined petroleum products and production of energy (58% and 25%, respectively). In absolute terms, atmospheric emissions have also increased significantly from 2003 to 2008.

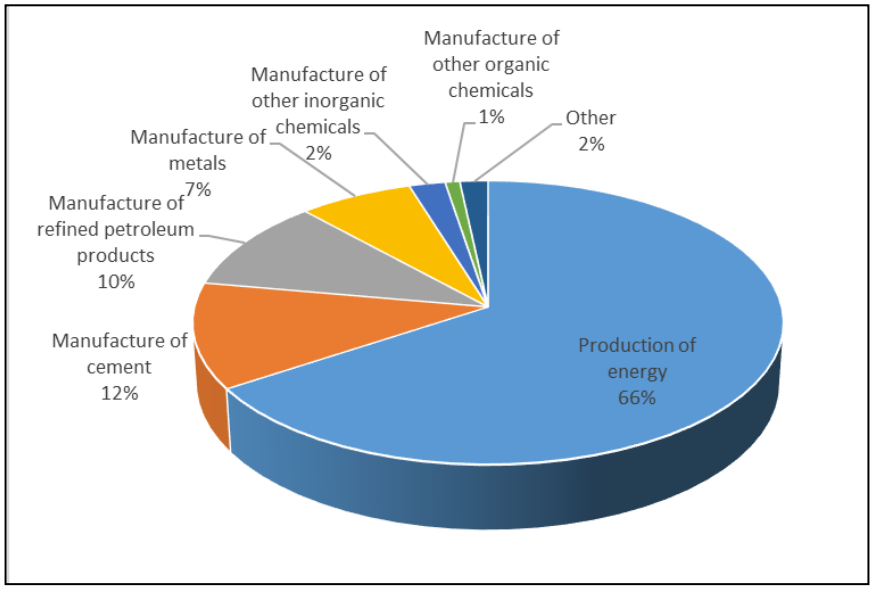


Figure 17. Top sectors by air emission values (NBB 2003)[9]

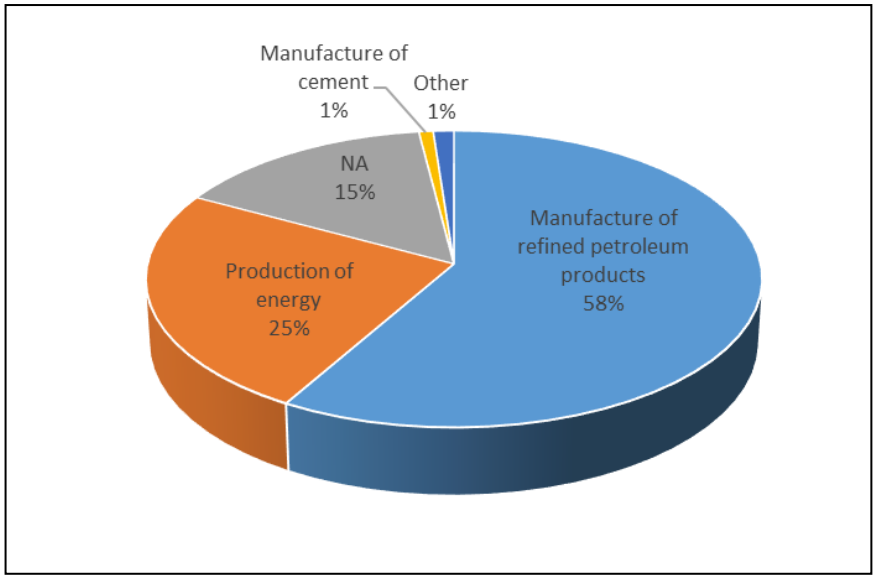


Figure 18. Top sectors by air emission values (NBB 2008)[10]

[9] *Note: CO2 emission values have been omitted*
[10] *Note: CO2 emission values have been omitted*

On the other side, the sectors reporting major liquid discharges in 2003 were the manufacture of refined petroleum products (72%) and food packing (11%). In 2008, main sectors discharging pollutants were manufacture of paper and manufacture of refined petroleum products (92% and 4%, respectively).

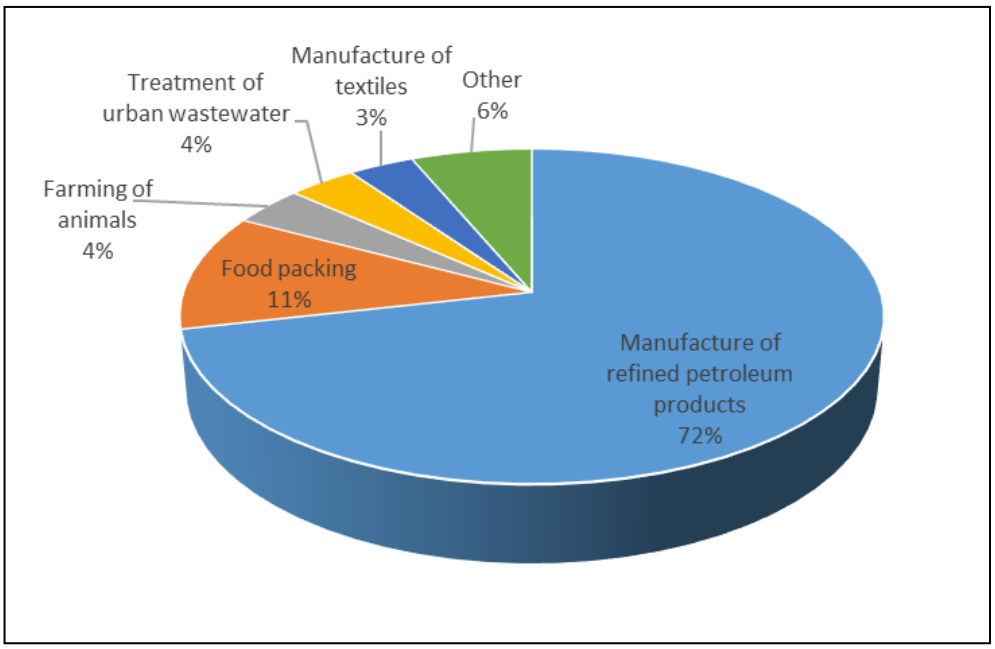


Figure 19. Top sectors by liquid discharge values (NBB 2003).

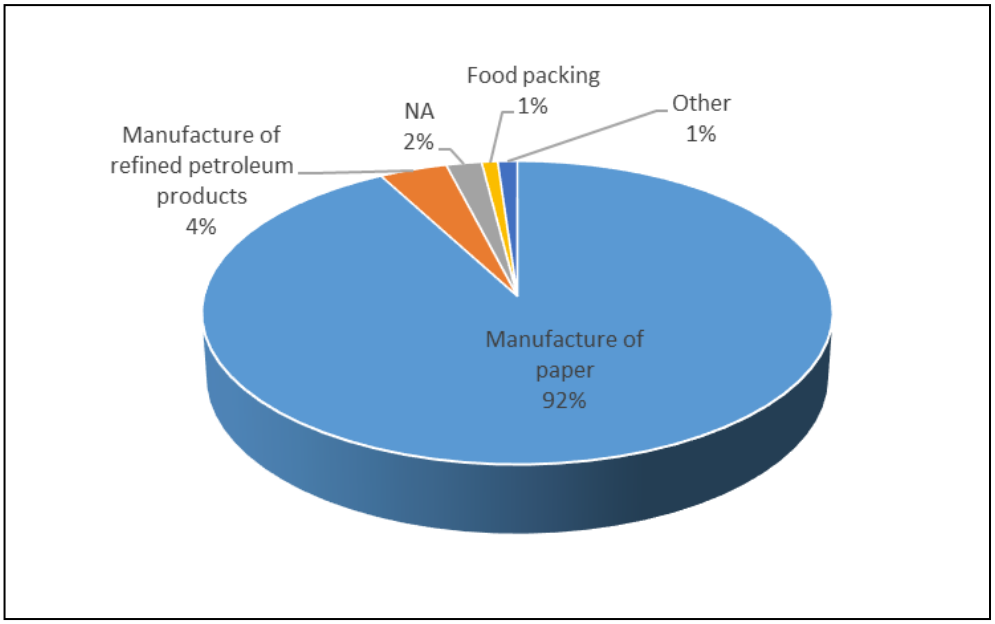


Figure 20. Top sectors by liquid discharge values (NBB 2008).

ii.c. Achievement of SAP MED targets

SAP MED sets specific pollution reduction targets for 33 different substances emitted from land based sources to be achieved by 2010 and 2025.

With this regard, Annex I shows the level of achievement, based on NBB 2003 and 2008 data, of such SAP MED targets for the whole Mediterranean region. In addition, for each substance the corresponding Regional Plans' targets and groups of pollutants defined by SAP MED and NBB are included.

At Mediterranean level, 6 reduction targets have been achieved, 7 have not been achieved and 20 could not be assessed:

- PAH, Mercury, Cadmium, Lead, Zinc and Chrome showed a significant reduction of discharges into the Mediterranean Sea. However, it is difficult to assess at what extent discharges have been phase out and whether further efforts must be made.
- BOD_5, PCB/PCT, Hexachlorobenzene, Hexachlorocyclohexane, PCDD/PCDDF, Butyltin compounds and Copper have not been achieved because an increase is observed.
- Other target substances, e.g. some POPs, could not be assessed due to the lack of NBB data for both years; however, it should be assumed that discharges must have followed a downward trend, as most of them should be banned.

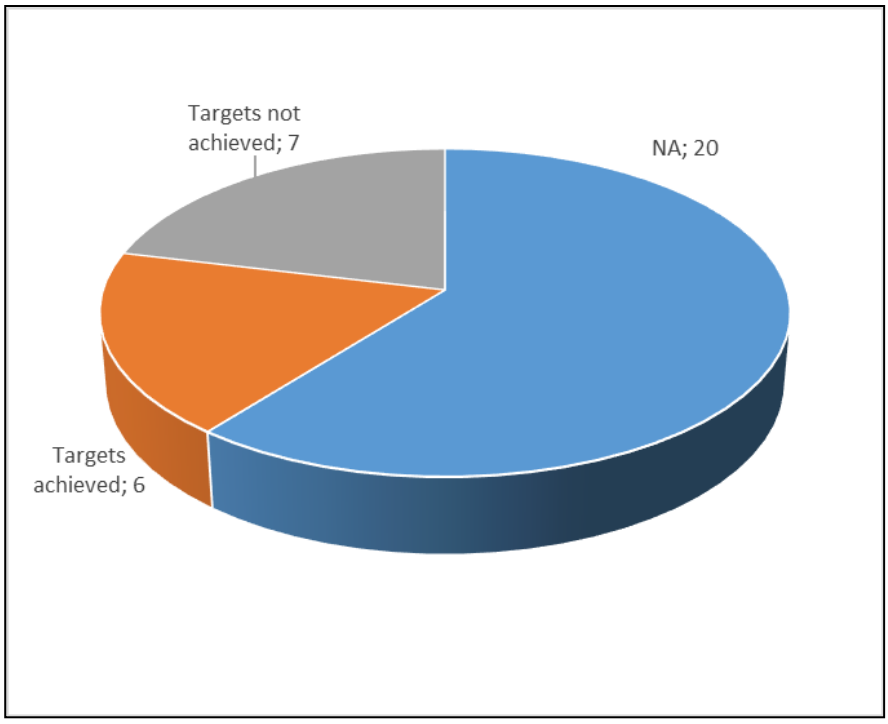


Figure 21. SAP targets on pollutant reduction achieved at regional level 2010/2025.

At country level, 7 countries have achieved 5 or more targets; 8 countries have achieved between 2 and 5 targets; 4 countries have achieved one or none target; and 2 countries could not be assessed.

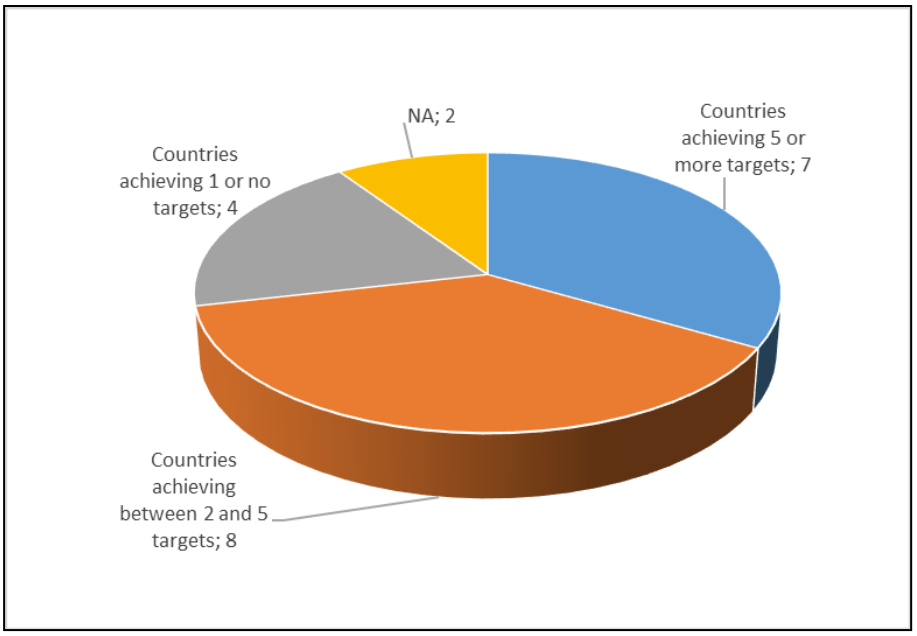


Figure 22. Level of SAP targets achievement per countries.

Major finding and recommendations regarding the evaluation of the achievement of SAP MED targets are the following:

- Pollution related reporting capabilities of the CP have improved and a recognized progress has been identified from 2003-2008.
- Main remaining challenges regarding pollution reporting are related with the harmonization of NBB scope and methodology among all countries. With regards E-PRTR, gaps need to be addresses and synergies enhanced. In particular, the following aspects should be clarified: geographical scope; sector categories and scope, direct/indirect emissions, method of calculation and data validation.
- A selected number of NAP implementation indicators need to be developed to cover the main SAP sectors (municipal solid waste, urban wastewater treatment, industrial development, physical alteration and destruction of habitats), the Regional Plans and ECAP target indicators including H2020 indicators and, as appropriate, other international indicators, e.g. Basel and Stockholm Conventions.
- The process for updating NAPs should be an opportunity to also improve the NAP reporting system at national and regional levels. The aim of the process is to streamline NBB and E-PRTR, to absorb H2020 indicators in the LBS/NAP reporting system and to integrate the reporting on the implementation of the Regional Plans into LBS Protocol reporting system; as well as, strengthen the on line reporting based on SEIS principles.
- In terms of pollution reduction, in spite of data gap and some successes it is obvious that pressures from land based sources remain high and measures

need to be taken. In a previous step, major pollutants and main sectors need to be confirmed to better focus actions in an effective manner.

- So far, production of energy, manufacture of refined petroleum products, treatment of urban wastewater, food packing, manufacture of cement and manufacture of metals seem to be key sectors to focus attention on.
- Regarding pollutants, toxic and persistent substances addressed by SAP MED and Regional Plans need to be specifically considered e.g. heavy metals, POPs, etc. On the other hand, pollutants discharged in large amounts, e.g. atmospheric pollutants, BOD_5 and nutrients need to concentrate efforts too.

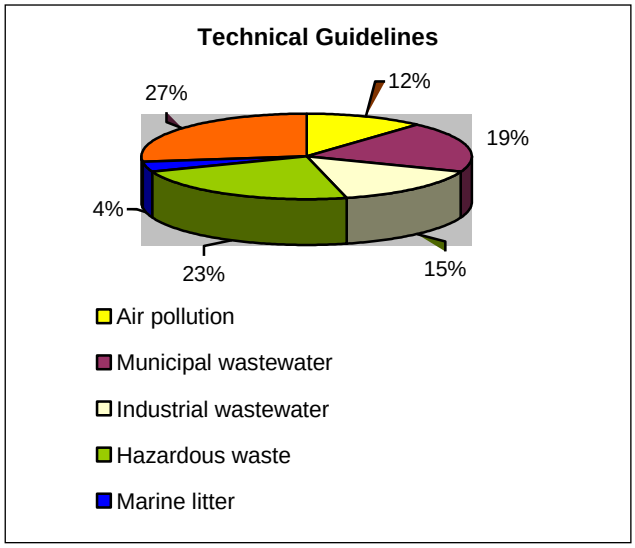
IV. SAP MED Regional Outputs

The scope of SAP-MED regional activities in the urban environment, industrial development and physical alterations and destruction of habitats consists of the following:

Scope of Activities	**Urban Environment**	**Industrial Development**	**Physical Alterations and Destruction of Habitats**
I. Technical guidelines	Guidelines for sewage and solid waste collection, treatment and disposal	Guidelines for industrial wastewater, application of BAT and BEP for management of pollutants such as BOD, PCB, hazardous wastes, organometallic and oganohalogen compounds	- Good agricultural practices - Preservation of habitats
II. Environmental quality objectives and criteria	Air quality objectives for atmospheric pollutants, bathing water quality criteria, etc.	Emission limit values for point source discharges (e.g. BOD, PAH, heavy metals, organometallic and oganohalogen compounds	- Sustainable agricultural and rural development including use of fertilizers and pesticides - Sound disposal of obsolete chemicals - Integrated coastal zone management, etc.
III. Programmes for sharing and exchanging technical information and advice	Wastewater treatment technologies, reduction and recycling of solid waste	Sound disposal of obsolete chemicals	
IV. Research programmes	Validation of treatment technologies		

Achievements of each of the above noted SAP-MED regional activities are detailed in Annex II and summarized below.

a. Technical guidelines: 26 regional guidelines were developed in various areas, as shown in the accompanying figure. These include management and reuse of municipal and industrial wastewater, management of coastal litter, hazardous wastes, air pollution, monitoring inspection, compliance and enforcement. In addition, a considerable number of reference methods and standards related to marine pollution and quality were published. As can be inferred from the accompanying figure, guidelines are mainly concentrated in three areas: municipal wastewater treatment, hazardous wastes and monitoring and inspection activities.



b. Environmental quality objectives and criteria: These include seven legally binding measures (regional plans) which were elaborated and adopted in the framework of the implementation of Articles 5 and 15 of the LBS Protocol. The origin of these measures can be traced back to the year 2008 when MED POL Focal Points agreed to establish a List of 'action' priority substances.[11] In principle, it was agreed that in order to propose measures, the substance:

a) is covered by regional and/or international instruments regulating its use, release or phasing out;
b) should have an Emission Limit Value (ELV) or its ELV is under development either at national or at regional levels;
c) and/or its high input could represent a risk to the marine environment or human health; and
d) Parties may propose additional substances at the Contracting Parties meeting.

Based on this process, the following Regional Plans were prepared and adopted in 2009 and 2012:

- Decision IG.19/7 "Regional Plan on the Reduction of BOD5 from Urban Wastewater".
- Decision IG.19/8 "Regional Plan on the Elimination of Aldrin, Chlordane, Dieldrin, Endrin, Heptachlor, Mirex and Toxaphene".
- Decision IG.19/9 "Regional Plan on the Phasing Out of DDT".
- Decision IG.20/8 "Regional Plan on the Reduction of Inputs of Mercury".
- Decision IG.20/9 "Criteria and Standards for bathing waters quality".
- Decision IG.21/7 "Regional Plan on Marine Litter Management in the Mediterranean".
- Decision IG.21/3 on the Ecosystems Approach including Adopting Definitions of Good Environmental Status (GES) and Targets.

Most of the regional plans call on the Contracting Party to adopt national emission level values for the relevant pollutants within agreed timetables. Deadlines are set for

[11] The 'action' priority substances consist of Nutrients, Metals, Organic metallic compounds, Polychlorinated Biphenyls (PCBs), Polychlorinated dibenzodioxins (PCDDs), Polychlorinated dibenzofurans (PCDFs), Total Suspended Particulates, Total Volatile Organic Compounds, Nitrogen Oxides, NH3, Sulfur Oxide, and POPs.

meeting the targets emission level values (where applicable). The Decisions also address the issue of monitoring discharges, implementing the necessary enforcement measures and reporting.

Status of implementation of the regional plans adopted in the framework of Article 15 of the LBS Protocol in 2009 and 2012 has not been assessed to date. It is therefore important to evaluate their implementation effectiveness in order to take the relevant findings into account while formulating new or updating existing measures.

***c. Programmes for sharing and exchanging technical information and advice**:* These programmes include:

a) Regional policies and plans,
b) Monitoring
c) Pollution assessment
d) Reporting
e) Capacity building
f) Public participation

i) Regional policies and plans

MED POL has prepared a number of policies and regional plans. Some of these plans were formally adopted by the different meetings of the Contracting Parties, including:

- Plan on reduction of input of BOD by 50% by 2010 from industrial sources for the Mediterranean region (COP 13, Catania, Italy, 2003).
- Plan for the reduction by 20% by 2010 of the generation of hazardous wastes from industrial installations for the Mediterranean region (COP 13, Catania, Italy, 2003).
- Plan for the management of hazardous waste, including inventory of hazardous waste in the Mediterranean region (COP 13, Catania, Italy, 2003).
- Plan for the management PCBs waste and nine pesticides for the Mediterranean Region (COP 13, Catania, Italy, 2003).
- Strategic framework on marine litter management (COP 17, Paris, France, 2012).

Status of implementation of the regional plans adopted in the framework of Article 15 of the LBS Protocol in 2009 and 2012 and of the other regional policies as explained above has not been assessed to date. It is therefore important to evaluate their implementation effectiveness in order to take the relevant findings into account while formulating new or updating existing measures.

ii) Monitoring

Starting with MED POL Phase I Programme (and Phase II), focus was on monitoring of the quality of the marine environment. MED POL's Phase III monitoring activities focused on the monitoring of contaminants at Mediterranean hot spots and coastal waters to attain site-specific temporal trends with appropriate and consistent monitoring strategy. Presently, MED POL Phase IV is following-up the implementation of national monitoring programmes consisting of state and trend monitoring, compliance monitoring, biological effects monitoring, and eutrophication monitoring.

The Contracting Parties with active monitoring programmes prepare and submit to MED POL yearly national monitoring reports.[12]

The first evaluation of the data collected in the MED POL database was made in 2003 to identify the sampling and analytical variances underlying each monitoring practice. In 2005 a second attempt was made mainly to identify the weakest parts of the adopted sampling strategy. In 2009, when the 10 years benchmark was reached a detailed analysis of variances and trends - where possible - for each monitoring site were performed.

It should be noted that MED POL Phase IV monitoring programme is already generating data for most of the indicators of EO5 (eutrophication) and EO9 (pollution), while no monitoring data exist on EO10 (marine litter) and EO11 (noise).

iii) Pollution assessment:

The MED POL programme undertook a number of specific assessments on the state of the marine and coastal environments. Assessments covered hot spots, marine quality, microbiological pollution, eutrophication, marine litter, persistent organic pollutants, persistent synthetic materials, heavy metals, organohalogen, organophosphorus and organtin compounds, petroleum hydrocarbons, anionic detergents and wastewater reuse practices.

In addition to the above, the MED POL Programme undertook in 2005 a regionally prepared transboundary diagnostic analysis that represents a regional synthesis of actions regarding the protection of the marine environment from land-based activities. MED POL also conducted assessments of the state of the Mediterranean marine environment in 2005, 2009 and 2012. And recently, as part of the Initial Integrated Assessment of the Mediterranean Sea,[13] four sub-regional reports containing information on ecology, status, and pressures affecting coastal and marine ecosystems throughout the four sub-regions of the Mediterranean were completed.[14]

In spite of the significant assessments undertaken by the MED POL programme thus far, it is important to further advance the process of undertaking systematic and regular assessments of the marine environment and pollutants' releases. These assessments should be based on reliable data which are documented and reported on a regular frequency. The assessments should focus on priority issues and substances/pollutants. In fact, assessment should become a principal tool for evaluating the effectiveness of implementation of the regional plans and other adopted national and regional measures.

[12] Details of analysis are included in the document "Achievements of the SAP MED targets and most representative contaminants based on NBB (2003 and 2008) analysis".

[13] UNEP/MAP (2012). Initial Integrated Assessment of the Mediterranean Sea: Fulfilling Step 3 of the Ecosystem Approach Process. UNEP(DEPI)/MED IG/Inf.8.

[14] The four sub-regions of the Mediterranean, as defined by the Contracting Parties for practical reasons and the unique purpose of the initial assessment, present a conglomerate of linked coastal and marine ecosystems, with many shared resources, species and common approaches to both environmental monitoring and management. The four sub-regions are the Western Mediterranean; the Central Mediterranean and Ionian; the Adriatic Sea; and the Eastern Mediterranean.

iv) Reporting

A new reporting format for implementation of the Barcelona Convention and its Protocol was devised. MED POL also coordinated the work undertaken by the Countries to prepare reports on the implementation of the LBS Protocol. MED POL also developed reports on status of municipal wastewater treatment plants in Mediterranean coastal cities and established PRTR for a number of Mediterranean Countries.

The quality of data provided in the process of reporting on measures in the framework of implementation of the Protocols, the SAP/NAPs and the Regional Plans, remains a challenge and needs to be addressed in the short-term. A second challenge is related to the linkage with other reporting systems in use in the region. This issue needs to be addressed in order to avoid duplication and to facilitate the work of the Contracting Parties. Therefore, the quality assurance system for data collection and reporting remains a major challenge.

v) Capacity building

A large capacity building and training programme was organized in cooperation with the World Health Organization (WHO). The purpose of this programme was for building capacities and competencies of representatives from public agencies involved in the protection of the Mediterranean Sea from pollution. In total over 35 training courses were conducted in the period from 1998 to 2012. Workshops topics covered pollution monitoring and inspection, wastewater treatment, water reclamation and reuse, inspection for bathing waters quality, in addition to inter-calibration exercises. Training targeted personnel with responsibilities for operation and maintenance of municipal wastewater treatment plants. Additional courses were also developed for management personnel in topics such as water demand management, sludge treatment and disposal, and sustainable development of coastal areas. Training also was conducted for laboratory technicians in cooperation with the IAEA for testing levels of priority pollutants in the marine environment.

Capacity building was also undertaken to assist public agencies in their task for identification and prioritization of hot spots based on a ranking system which was developed to show the severity of each of the effects on the identified hot spots. The scope of training included assistance for estimating costs for rehabilitation activities taking into account the transboundary effects on the environment and human health.

vi) Public participation

Achievements accomplished regarding SAP regional public participation activities include the development of the MEDPARTNERSHIP programme, H2020, in addition to UNEP/MAP’s decision on cooperation with the civil society whereby NGOs were involved in several activities with regards to pollution reduction. There is, however, insufficient information to assess the work carried out on campaigns.

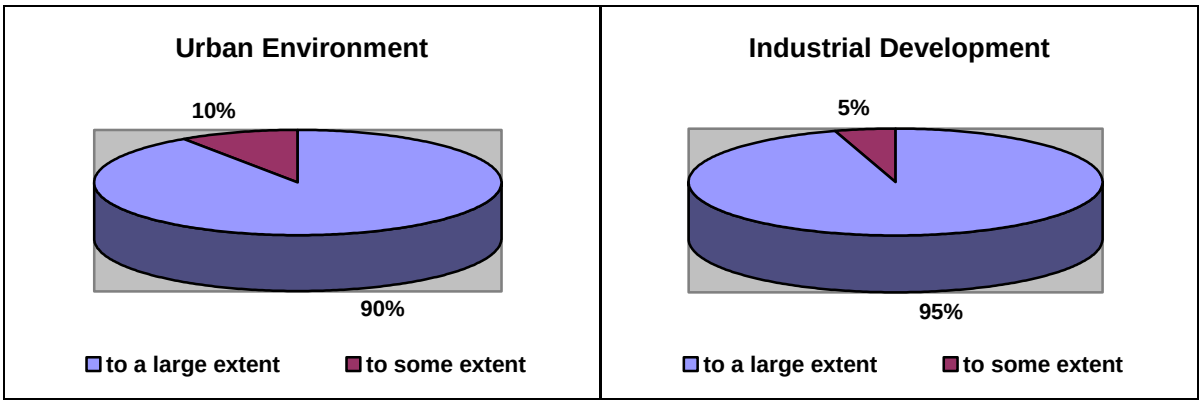
In addition, MED POL promotes public access to information by issuing the MED Waves publication and other sectorial and integrated publications. MED POL also provides access to pollution data on levels and sources of pollution through its information system.

***d. Research programmes**:* Achieved SAP regional activities concerning research programmes include research projects dealing with eutrophication problems from municipal sewage; research projects dealing with biological effects of industrial pollutants on marine organisms and communities, toxicity of pollutants, eutrophication, organohalogens, organophosphorus, mercury, in addition to ecosystem modifications due to effects of pollutants on marine communities. In general, there are good achievements in this domain.

In conclusion, Regional activities of the SAP MED have been in general fulfilled. There is a need however for follow-up and updating of certain achieved outputs such as technical guidelines, and for pursuing capacity building activities. There is also a need to strengthen and improve the existing reporting system to evaluate the effectiveness of NAP/SAP and Regional Plans implementation and ECAP targets. Finally, additional Regional Plans should be developed and implemented to gradually extend their scope to other sectors such as tanneries, desalination and agriculture, and substances in accordance with the priority list of pollutants and ECAP targets .

V. REGIONAL SYNOPSIS OF NAP IMPLEMENTATION

The NAPs were prepared by all Mediterranean countries during 2004-2005 with the aim of developing and implementing concrete pollution reduction measures that address priority sectors and substances included in Annex 1 of the LBS Protocol and SAP MED. The NAPs consider environmental and socio-economic issues, policy and legislative frameworks, and the management, institutional and technical infrastructure available in the country. They also incorporate mechanisms for information exchange, technology transfer and promotion of cleaner technology, public participation and sustainable financing. A close examination of the measures included in the individual NAPs shows that over 90% do indeed address all SAP priority substances regarding the sectors of “urban environment” and “industrial development”, as shown below.



However, to implement these measures effectively, the legal and policy frameworks and the supporting institutional structures must be well established within the Country. In this section, a policy assessment is undertaken to examine the following issues:

1. Ability of national environmental laws and legislation to legally support pollution reduction resulting from SAP priority substances;

2. Presence of policy frameworks that promote pollution reduction and prevention in line with the measures of the NAPs; and
3. Existence of institutional structures capable of supporting monitoring activities, inspection, permitting and enforcement; promoting public participation and ensuring access to information.

To undertake this assessment, a wide range of sources and reference materials were reviewed, including available national reports on the "Implementation of the Convention and its Protocols," in addition to national strategies and reports (e.g. NEAP, ICZM, Sustainable Development Strategies, environmental performance reviews, state of environment reports and related environmental agencies websites).

The criteria applied for the assessment are as follows:

- Meeting NAP requirements to **a large extent** whereby the Countries fulfill completely all requirements needed to support NAP implementation;
- Meeting NAP requirements to **some extent** whereby the Countries do not address all aspects required for supporting NAP implementation;
- **None at all** whereby the Countries do not address any aspect required for supporting NAP implementation; and
- **No evidence** is available whereby no decision could be made as reliable information could not be obtained from available sources.

Following are findings and conclusions of this assessment.

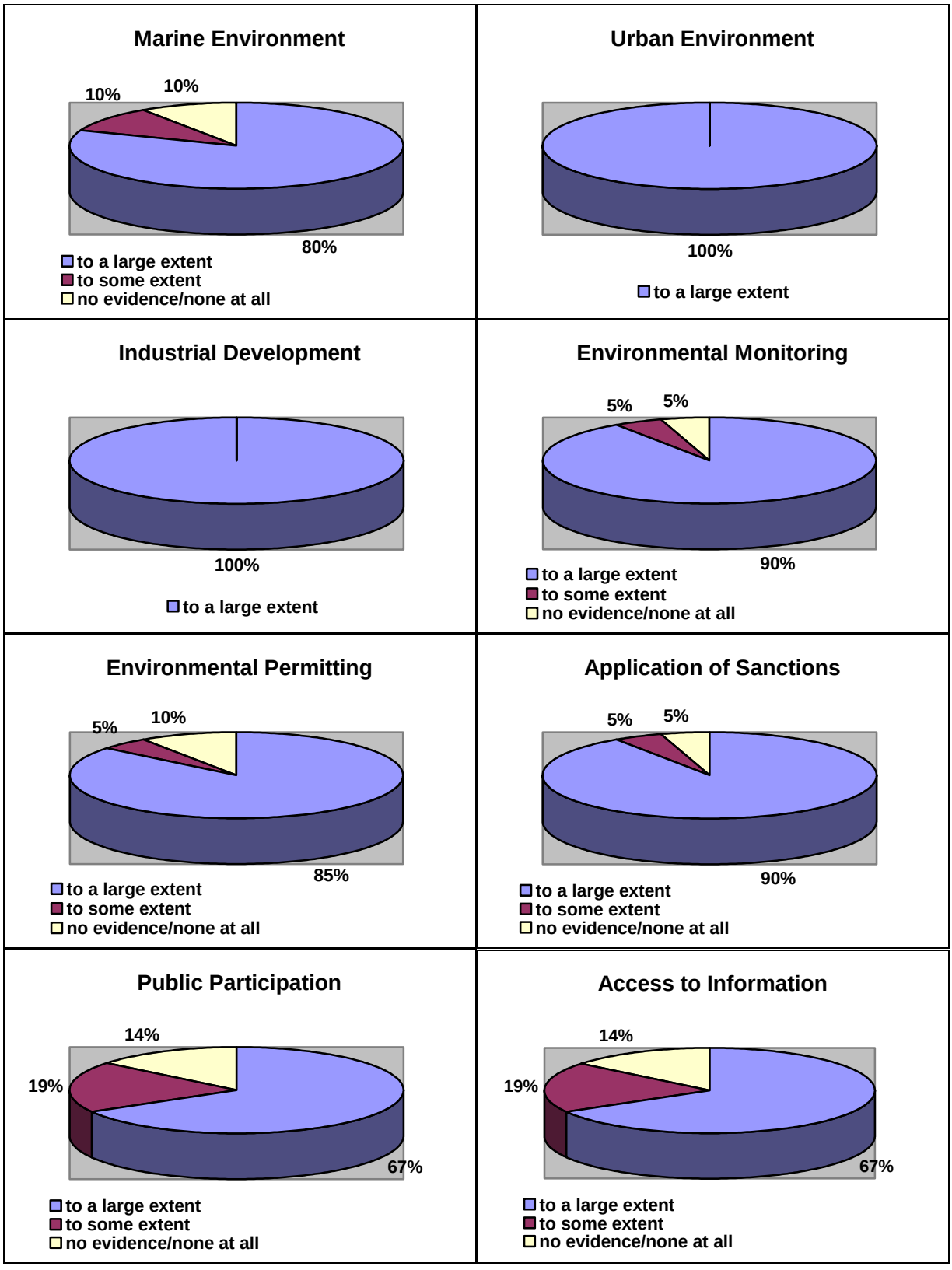
i) Environmental Legislation

National environmental legislation was examined regarding its ability to support NAP implementation by:

- Protecting the marine environment from pollution of land-based sources and activities;
- Protecting the urban environment from municipal wastewater, municipal solid waste, and urban air pollution;
- Protecting human health and the marine environment from priority pollutants discharged from industrial activities including POPs, heavy metals, organohalogens, hazardous wastes, etc.;
- Legislating systems for monitoring of inputs of priority pollutants and for regular reporting;
- Establishing environmental permitting of industrial establishments and applying sanctions in case on non-compliance;
- Introducing economic instruments vis-à-vis traditional pollution command and control tools.
- Ensuring public participation in environmental decision-making processes and right for access to environmental information.

As can be seen from the following charts, only 80% of national laws and legislation specifically address protection of the marine environment from land-based sources and activities. In contrast, all Countries have introduced legal measures for protection from SAP pollutants generated in the urban environment or discharged from industrial facilities/activities. Furthermore, 90% of legislation includes specific measures regarding the establishment of monitoring systems for SAP priority pollutants, regular reporting, authorization and regulation of discharges of wastewater and air emissions from industrial and urban installations, and implementation of sanctions in cases of

non-compliance. In that respect, legislation reflects the traditional pollution command and control tools, and is relatively weak on promoting economic instruments. Finally, only two thirds of the Countries have introduced measures to ensure public participation in environmental decision-making processes, and to protect public's right to access of environmental data and information.

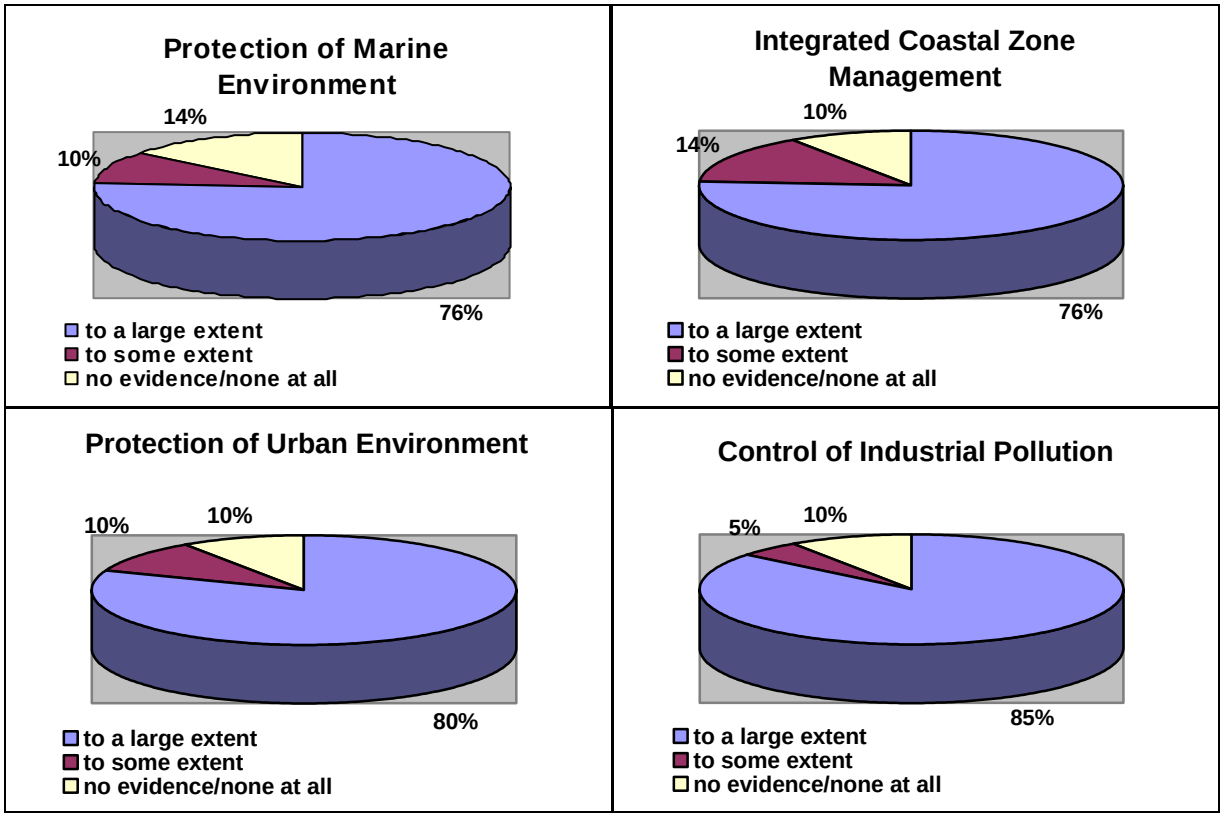


ii) Policy Framework

National policy framework was reviewed in relation to its support to NAP implementation by:

- Advocating policies for protection of the marine environment;
- Integrating coastal zone management into sectoral policies;
- Developing strategies for protecting the urban environment from municipal wastewater, solid waste, and air pollution; and
- Introducing policies for protecting human health and the marine environment from priority pollutants emitted from industrial activities such as POPs and heavy metals.

As can be seen from the following charts, only 75% of national Countries' policies address protection of the marine environment and incorporate integrated coastal zone management into sectoral strategies. In contrast, 80% to 85% of Countries advocate in their national strategies protection of the urban environment and control of industrial pollution from land-based sources of pollution and activities. On the country level, it is found that 15 Countries have developed specific strategies for dealing with wastewater treatment, solid waste management and abatement of air pollution, whereas three countries have incorporated these policies into framework strategies such as sustainable development, national environmental protection and integrated coastal zone management. Regarding industrial pollution, at least 9 countries have formulated specific strategies for dealing with the management of hazardous wastes such as PCB, heavy metals and POPs. Remaining Countries have incorporated these policies into their environmental protection and sustainable development strategies.

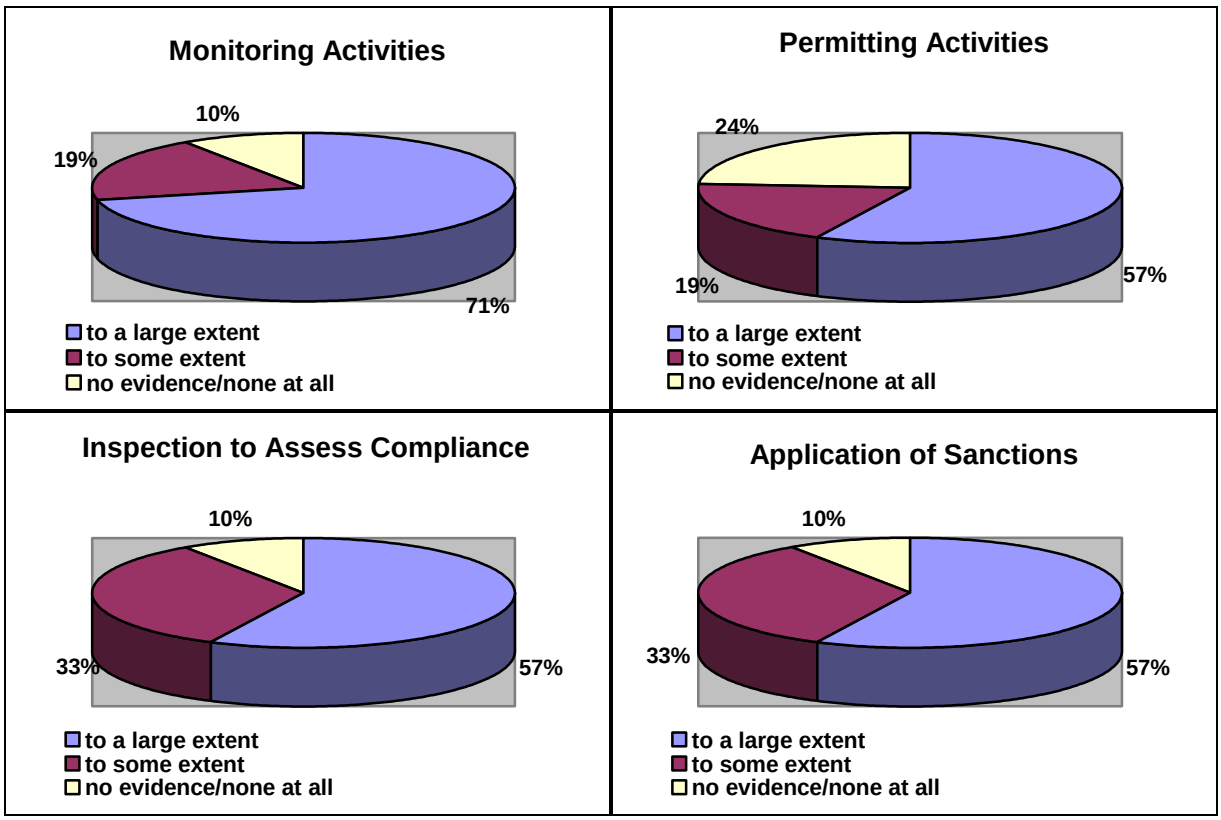


iii) Institutional Structures

National institutional structures were examined regarding their support to NAP implementation by providing proper structures for:

- Carrying out monitoring activities and regular reporting for priority substances under Annex 1 of the LBS Protocol;
- Implementing systems for authorization and regulation of discharges of wastewater and air emissions from industrial and urban installations;
- Enforcing inspections to assess compliance for industrial facilities; and
- Applying sanctions in case of non-compliance by industry.

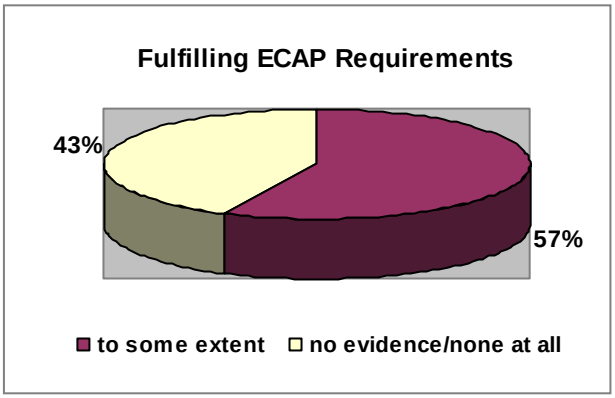
As can be seen from the following charts, 71% of existing institutional structures support implementation of monitoring activities. In contrast, only 57% provide support for carrying out permitting activities for polluting industries; enforcing inspections to assess compliance; and applying sanctions in case of non-compliance.



4. Major findings

Based on this assessment, the following conclusions are reached:

- Over 80% of national laws and policy frameworks for the Mediterranean Countries support NAP implementation regarding protection of the marine and urban environments, and control of pollution by industrial



development activities. However, 43% of these laws do not provide for integrated monitoring programmes based on the ecosystem approach indicators, or incorporate in their policies the main principles of the ecosystem approach.

- Whereas over 85% of national laws and legislation support monitoring, permitting, inspection and application of sanctions; however, supporting institutional structures for enforcement of permitting and compliance are only found in 57% to 71% of the Countries. This is manifested in:
    - Lack of systematic implementation of monitoring activities.
    - Inability to enforce permitting requirements.
    - Lack of transparent reporting measures taken and access by the general public.
- Environmental inspection processes should be strengthened. Compliance to permitting requirements should be assessed and requirements enforced. Capacity building programme to enhance the efficiency of environmental inspections and enforcement should be implemented.
- Threats from land-based sources as well as from other sources should be monitored in a regular and systematic manner. The interaction among and cumulative impacts of the various threats should be recognized.
- Legislation related to compliance and enforcement focuses on traditional pollution command and control tools and is relatively weak on using economic instruments for pollution reduction and prevention. Therefore the latter should be further promoted as an efficient complimentary tool to ensure pollution reduction.
- Only two thirds of the Countries promote in their national policies public participation in decision-making processes and protect public's right to access to environmental data and information. Further efforts should be made by the countries and the Secretariat in this respect.
- There is a need to make an in depth assessment of existing policy regulatory framework to assess the gaps and the needs for taking into considerations the obligations and measures provided for in the 10 LBS regional plans as well as ECAP requirements and commitments.
- NAP implementation was not monitored by the countries in a systematic manner therefore a proper monitoring plan should be introduced as early as possible through a common set of indicators.
- NAP documents doesn't have any public access, therefore it should be published as early as possible in the Ministry/Agency and UNEP/MAP website. Threats from land-based sources as well as from other sources should be monitored in a regular and systematic manner.
- The interaction among the various threats should be recognized environmental inspection processes should be strengthened. Compliance to permitting requirements should be assessed and requirements enforced.
- Traditional pollution command and control tools should be phased out and economic instruments for pollution reduction and control should be introduced.

Annex I

Level of achievement of SAP-MED targets based on 2003 and 2008 NBB data

NBB Group1 of pollutants	NBB Group2 of pollutants	SAP MED Category	Substance	SAP MED target	Regional Plans' targets	Current status 2008 vs 2003[15]
Nutrients, SS and BOD/TOC	BOD/COD/TOC	Nutrients and suspended solids	BOD5	Reduce 50% inputs of BOD by 2010	Emission Limit Values for Industrial Food Plants discharging more than 4 000 pe into water bodies: COD 160 mg/l; TOC 55 mg/l; BOD5 30 mg/l	**10.9%**
Organohalogen	Chlorinated pesticides	POPs	Aldrine	Phase out inputs of 9 pesticides and PCBs by 2010	Elimination by December 2012	N.a.
Organohalogen	Chlorinated pesticides	POPs	DDT	Phase out inputs of 9 pesticides and PCBs by 2010	Elimination with exemptions by December 2012	N.a.
Organohalogen	Chlorinated pesticides	POPs	Dieldrine	Phase out inputs of 9 pesticides and PCBs by 2010	Elimination by December 2012	N.a.
Organohalogen	Chlorinated pesticides	POPs	Endrine	Phase out inputs of 9 pesticides and PCBs by 2010	Elimination by December 2012	N.a.
Organohalogen	Chlorinated pesticides	POPs	Chlordane	Phase out inputs of 9 pesticides and PCBs by 2010	Elimination by December 2012	N.a.
Organohalogen	Chlorinated pesticides	POPs	Heptachlor	Phase out inputs of 9 pesticides and PCBs by 2010	Elimination by December 2012	N.a.
Organohalogen	Chlorinated pesticides	POPs	Mirex	Phase out inputs of 9 pesticides and PCBs by 2010	Elimination by December 2012	N.a.

[15] Current status (in %) has been calculated following the formula: (kg substance reported 2008-kg substance reported 2003)/kg substance reported 2003.Numbers in red mean a net increase from 2003 to 2008 while numbers in green mean a net reduction from 2003 to 2008.

NBB Group1 of pollutants	NBB Group2 of pollutants	SAP MED Category	Substance	SAP MED target	Regional Plans' targets	Current status 2008 vs 2003[15]
Organohalogen	Chlorinated pesticides	POPs	Toxaphene	Phase out inputs of 9 pesticides and PCBs by 2010	Elimination by December 2012	N.a.
Organohalogen	Chlorinated pesticides	POPs	Hexachlorobenzene	Phase out inputs of 9 pesticides and PCBs and reduce to the fullest possible extent hexachloro benzene, dioxins and furans by 2010		**8,113%**
Organohalogen	Halogenated aromatic hydrocarbons	POPs	PCB/PCT	Phase out inputs of 9 pesticides and PCBs by 2010		**187.2%**
Organohalogen	Halogenated aromatic hydrocarbons	POPs	PCDD/PCDF	Reduce to the fullest possible extent hexachloro benzene, dioxins and furans by 2010		**19,941%**
Hydrocarbons	PAHs	PAHs	PAH	Phase out to the fullest possible extent inputs of PAHs by 2010		**-17.8%**
Metals and compounds	Metals	Heavy metals (Hg, Cd, Pb) and organometallic compounds	Mercury	Phase out to the fullest possible extent discharges and emissions and losses of heavy metals (mercury, cadmium and lead) by 2025	Emission Limit Values: chloralkali industry 1.0 g/t Cl capacity; other industries 5 µg/l; incineration plants 0.05mg/Nm3	**-40.5%**
Metals and compounds	Metals	Heavy metals (Hg, Cd, Pb) and organometallic compounds	Cadmium	Phase out to the fullest possible extent discharges and emissions and losses of heavy metals (mercury, cadmium and lead) by 2025		**-46.1%**
Metals and compounds	Metals	Heavy metals (Hg, Cd, Pb) and organometallic compounds	Lead	Phase out to the fullest possible extent discharges and emissions and losses of heavy metals (mercury, cadmium and lead) by 2025		**-29.2%**

NBB Group1 of pollutants	NBB Group2 of pollutants	SAP MED Category	Substance	SAP MED target	Regional Plans' targets	Current status 2008 vs 2003[15]
Metals and compounds	Metallic compounds	Heavy metals (Hg, Cd, Pb) and organometallic compounds	Butyltin compounds	Phase out to the fullest possible extent discharges and emissions and losses of organotin compounds by 2010		**35,785%**
Metals and compounds	Metals	Other heavy metals	Zinc	Reduce discharges, emissions and losses of zinc, copper and chrome by 2010		**-59.9%**
Metals and compounds	Metals	Other heavy metals	Copper	Reduce discharges, emissions and losses of zinc, copper and chrome by 2010		**110.8%**
Metals and compounds	Metals	Other heavy metals	Chrome	Reduce discharges, emissions and losses of zinc, copper and chrome by 2010		**-38.5%**
Organohalogen	Halogenated aromatic hydrocarbons	Halogenated Aromatic Hydrocabons	Hexabromodiphenyl ether	Reduce discharges, emissions and lossess into the Mediterranean Sea by 2010	Elimination with exemptions by 2013	N.a.
Organohalogen	Halogenated aromatic hydrocarbons	Halogenated Aromatic Hydrocabons	Heptabromodiphenyl ether	Reduce discharges, emissions and lossess into the Mediterranean Sea by 2010	Elimination with exemptions by 2013	N.a.
Organohalogen	Halogenated aromatic hydrocarbons	Halogenated Aromatic Hydrocabons	Tetrabromodiphenyl ether	Reduce discharges, emissions and lossess into the Mediterranean Sea by 2010	Elimination with exemptions by 2013	N.a.
Organohalogen	Halogenated aromatic hydrocarbons	Halogenated Aromatic Hydrocabons	Pentabromodiphenyl ether	Reduce discharges, emissions and lossess into the Mediterranean Sea by 2010	Elimination with exemptions by 2013	N.a.
Organohalogen	Chlorinated pesticides	Organohalogenated pesticides	Lindane	Reduce discharges, emissions and lossess into the Mediterranean Sea by 2010	Elimination with exemptions by 2013	N.a.

NBB Group1 of pollutants	NBB Group2 of pollutants	SAP MED Category	Substance	SAP MED target	Regional Plans' targets	Current status 2008 vs 2003[15]
Organohalogen	Chlorinated pesticides	Organohalogenated pesticides	Endosulfan	Reduce discharges, emissions and lossess into the Mediterranean Sea by 2010	Elimination with exemptions by 2013	N.a.
Organohalogen	Halogenated alifatic hydrocarbons	Organohalogen compounds	Perfluorooctane sulfonic acid, its salts	Reduce discharges, emissions and lossess into the Mediterranean Sea by 2010	Elimination with exemptions by 2013	N.a.
Organohalogen	Halogenated alifatic hydrocarbons	Organohalogen compounds	Perfluorooctane sulfonyl fluoride	Reduce discharges, emissions and lossess into the Mediterranean Sea by 2010	Elimination with exemptions by 2013	N.a.
Organohalogen	Halogenated aromatic hydrocarbons	Organohalogen compounds	Pentachlorobenzene	Reduce discharges, emissions and lossess into the Mediterranean Sea by 2010	Elimination by 2013	N.a.
Organohalogen	Halogenated aromatic hydrocarbons	POPs	Hexabromobiphenyl	Reduce discharges, emissions and lossess into the Mediterranean Sea by 2010	Elimination by 2013	N.a.
Organohalogen	Chlorinated pesticides	POPs	Chlordecone	Reduce discharges, emissions and lossess into the Mediterranean Sea by 2010	Elimination by 2013	N.a.
Organohalogen	Chlorinated pesticides	Organohalogenated pesticides	Beta hexachlorocyclohexane	Reduce discharges, emissions and lossess into the Mediterranean Sea by 2010	Elimination by 2013	**892,255%**
Organohalogen	Chlorinated pesticides	Organohalogenated pesticides	Alpha hexachlorocyclohexane	Reduce discharges, emissions and lossess into the Mediterranean Sea by 2010	Elimination by 2013	

Annex II

Status of implementation of SAP MED regional outputs.

Urban environment	
Municipal sewage	**Status of implementation**
By the year 2000, to update and adopt the 1986 guidelines for sewage treatment and disposal and, as appropriate, environmental quality criteria and standards.	• Guidelines on Sewage Treatment and Disposal of sanitation systems in the Mediterranean region, MAP `Technical Reports Series No. 152. • UNEP-MAP Decision IG.20*-/9. Criteria and standards for bathing waters quality.
To develop programmes for sharing and exchanging technical information and advice regarding environmentally sound sewage treatment and facilities, including the use of treated waste water and of sewage sludge.	• UNEP-MAP Decision IG 19/7. Regional Plan on the reduction of BOD5 from urban wastewater in the framework of the implementation of Article 15 of the LBS Protocol. UNEP(DEPI)/MED IG.19/8. • Assessment of the state of microbiological pollution of the Mediterranean. MAP Technical Reports Series No. 108. • UNEP/MAP/MED POL/WHO: Assessment of the state of microbial pollution in the Mediterranean Sea. MAP Technical Reports Series No. 170, UNEP/MAP, Athens, 2008. • Assessment of the state of eutrophication in the Mediterranean Sea. MAP Technical Reports Series No. 106. • UNEP/MAP/UNESCO/FAO: Eutrophication in the Mediterranean Sea: Receiving capacity and monitoring of long-term effects. UNEP/MAP: Athens, 1988. • UNEP/MAP: State of the Marine and Coastal Environment in the Mediterranean Region. UNEP/MAP: Athens, 1996. • Guidelines for sewage sludge treatment, disposal and use in sanitation systems, Meeting of MED POL National Coordinators, Barcelona, Spain, 24-27 May 2005, UNEP(DEC)/MED WG.264/Inf.8. • Guidelines for submarine outfall structures for Mediterranean small and medium-sized coastal communities, MAP Technical Reports Series No. 112. • Development of Performance Indicators for the Operation and Maintenance of Wastewater Treatment Plants and Wastewater Reuse, Meeting of the MED POL Focal Point, Rhodes, Greece, 25-27 May 2011, UNEP(DEPI)/MED WG.357/Inf.9. • Guiding documents for sewage treatment in the Mediterranean, Meeting of MED POL National Coordinators, Hammamet, Tunisia, 25-28 June 2007, UNEP(DEPI)MED WG.316/Inf.4. • Appropriate sewage discharge for Mediterranean urban coastal agglomerates, Meeting of MED POL National Coordinators, Hammamet, Tunisia, 25-28 June 2007, UNEP(DEPI)MED WG.316/Inf.4a. • Guidance for choosing the appropriate wastewater treatment and reuse scheme for local authorities, Meeting of MED POL National Coordinators, Hammamet, Tunisia, 25-28 June 2007, UNEP(DEPI)MED WG.316/Inf.4b. • Strategic Action Programme – Guidelines on Municipal Wastewater Reuse for the Mediterranean region, Meeting of MED

	POL National Coordinators, Sangemini, Italy, 27-30 May 2003, UNEP(DEC)/MED WG.231/Inf.6. • Natural wastewater treatment systems for the Mediterranean region, Meeting of MED POL National Coordinators, Barcelona, Spain, 24-27 May 2005, UNEP(DEC)/MED WG.264/Inf.6. • Assessment of Wastewater Reuse Practices in the Mediterranean region, Meeting of MED POL National Coordinators, Sangemini, Italy, 27-30 May 2003, UNEP(DEC)/MED WG.231/Inf.5. • Report of the Second National Training Course on Water Reclamation and Reuse, Valletta, Malta, 27-29 April 2009, EUR/09/5078969/1. • Report of the National Training Course on Water Reclamation and Reuse, Aydin, Kusadasi, Turkey, 22-24 October 2007, EUR/07/5069427/1. • Report of the Regional Training Course for Trainers on Water Reclamation and Reuse, Barcelona, Spain, 22-25 November 2004, EUR/04/5047578/5. • UNEP/MAP/FAO/IOC: Proceedings of the FAO/UNEP/IOC Workshop on the Biological Effects of Pollutants on Marine Organisms (Malta, 10-14 September 1991), edited by G.P. Gabrielides. UNEP/MAP: Athens, 1992. • Training material and CD-Rom presentation for the course "Training the Trainers" – Municipal Wastewater Treatment Plant Operation and Management (Volumes I, II and instruction for lecturers).
To promote research programmes to identify and validate sewage treatment technologies.	• UNEP/MAP/FAO: Final reports on research projects dealing with eutrophication problems. UNEP/MAP: Athens, 1994.
Urban Solid Waste	**Status of implementation**
By the year 2000 to formulate and adopt guidelines for environmentally suitable and economically feasible systems of collection and disposal of urban solid waste.	• Guidelines for the safe management of Coastal Litter for the Mediterranean Region, MAP Technical Reports Series No. 148.
By the year 2005, to develop programmes for the reduction and recycling of urban solid waste.	• Assessment of the Status of Marine Litter in the Mediterranean, Meeting of the MED POL Focal Point, Rhodes, Greece, 25-27 May 2011, UNEP(DEPI)/MED WG.357/Inf.4. • Results of the assessment of the status of marine litter in the Mediterranean, Meeting of the MED POL Focal Points, Kalamata, Greece, 2-4 June 2009, UNEP(DEPI)/MED WG. 334/Inf.5. • Strategic Action Programme for the Management of Marine Litter in the Mediterranean – Financial Aspects of its implementation, Meeting of the MED POL Focal Point, Rhodes, Greece, 25-27 May 2011, UNEP(DEPI)/MED WG.357/Inf.5. • Strategic Action Programme for the Management of Marine Litter in the Mediterranean, Meeting of the MED POL Focal Point, Rhodes, Greece, 25-27 May 2011, UNEP(DEPI)/MED WG.357/7. • UNEP-MAP Decision IG.20/10. Marine litter management.

Air Pollution	Status of implementation
By the year 2005, to formulate and adopt air quality objectives for atmospheric pollutants.	• UNEP/MAP: Atmospheric Transport and Deposition of Pollutants into the Mediterranean Sea: Final Reports on Research Projects. UNEP/MAP: Athens, 2001. • UNEP/MAP: Meteorological and climatological data from surface and upper measurements for the assessment of atmospheric transport and deposition of pollutants in the Mediterranean Basin: A review. UNEP/MAP: Athens, 1989.
Industrial development	
By the year 2005, to formulate and adopt guidelines for industrial wastewater treatment and disposal.	• Guidelines for the safe management of industrial wastewater for the Mediterranean region, MAP Technical Reports Series No. 153. • Guidelines for treatment of effluents prior to discharge into the Mediterranean Sea, MAP Technical Reports Series No. 111.
By the year 2010, formulate and adopt environmental quality criteria and objectives, and emission limit values for point source discharges into water or air.	• UNEP-MAP Decision IG.20/8. Reduction of inputs of Mercury, BOD5 (from food industries) and ten POPs. • UNEP/MAP/WMO: The Input of Anthropogenic Airborne Nitrogen to the Mediterranean Sea through its Watershed. UNEP/MAP: Athens, 1997.
To develop programmes for sharing and exchanging technical information and advice regarding environmentally sound waste water treatment and facilities, including the use of treated waste water, sludge and waste.	• UNEP/MAP: Wastewater reuse for irrigation in the Mediterranean region. Priority Actions Programme, Regional Activity Centre, Split, 1990. • Guidelines on physical and chemical parameters for safe water use in irrigation, Meeting of MED POL National Coordinators, Barcelona, Spain, 24-27 May 2005, UNEP(DEC)/MED WG.264/Inf.10. • Guidance for treated wastewater use in irrigation, Meeting of MED POL National Coordinators, Barcelona, Spain, 24-27 May 2005, UNEP(DEC)/MED WG.264/Inf.11. • Promoting the use of reclaimed water in the Mediterranean: Planned water reuse in the Mediterranean, Meeting of MED POL National Coordinators, Hammamet, Tunisia, 25-28 June 2007, UNEP(DEPI)MED WG.316/Inf.4c. • UNEP/MAP/FAO: Study of ecosystem modifications in areas influenced by pollutants (Activity I). UNEP/MAP: Athens, 1988.
To promote research programmes to identify and validate waste water treatment technologies.	• UNEP/MAP/FAO: Final reports on research projects dealing with the effects of pollutants on marine organisms and communities. UNEP/MAP: Athens, 1994. • UNEP/MAP/FAO: Final reports on research projects dealing with toxicity of pollutants on marine organisms. UNEP/MAP: Athens, 1994. • UNEP/MAP/FAO: Final Reports on Research Projects Dealing with the Effects of Pollutants on Marine Communities and Organisms. UNEP/MAP: Athens, 1993.
To prepare guidelines for the application of BAT, BEP and clean technology for industries.	• UNEP/MAP/RAC/CP: Guidelines for the application of Best Available Techniques (BATs), Best Environmental Practices (BEPs) and Cleaner Technologies (CTs) in industries of the Mediterranean countries. UNEP/MAP: Athens, 2004.

To support the development and application of the Environmental Management and Audit Schema (EMAS and ISO 14000).	• No information is available
Substances that are Toxic, Persistent and liable to Bioaccumulate (TPB)	
12 Priority POPs.	**Status of implementation**
To provide Contracting Parties with technical information and advice on the nine pesticides and PCB substitutes and make appropriate recommendations.	• Substitutes to be used as alternatives to 12 priority Persistent Organic Pollutants, Meeting of MED POL National Coordinators, Barcelona, Spain, 24-27 May 2005, UNEP(DEC)/MED WG.264/Inf.13. • UNEP/MAP/FAO: Baseline studies and monitoring of DDT, PCBs and other chlorinated hydrocarbons in marine organisms (MED POL III). UNEP/MAP: Athens, 1986.
To develop programmes for sharing and exchanging technical information and advice regarding the environmentally sound disposal of the existing quantities of the nine pesticides and PCBs. These Programmes should consider their progressive elimination, including the decontamination of equipment and containers.	• UNEP/MAP/MED POL: Inventories of PCBs and nine pesticides. UNEP/MAP: Athens, 2004. • UNEP-MAP Decision IG 19/8. Regional Plan on the elimination of Aldrin, Chlordane, Dieldrin, Endrin, Heptachlor, Mirex and Toxaphene in the framework of the implementation of Article 15 of the LBS Protocol. UNEP(DEPI)/MED IG.19/8. • UNEP-MAP Decision IG.20/8. Reduction of inputs of Mercury, BOD5 (from food industries) and ten POPs. • UNEP/MAP/WMO: Atmospheric Input of Persistent Organic Pollutants to the Mediterranean Sea. UNEP/MAP: Athens, 2001.
To prepare guidelines for the application of BEP and if possible BAT by the point sources of dioxins and furans.	• UNEP/MAP/MED POL: Plan for the management PCBs waste and nine pesticides for the Mediterranean Region. UNEP/MAP: Athens, 2004.
Other POPs	**Status of implementation**
To prepare guidelines for the application of BEP and BAT by the point and diffuse sources of PAHs.	• UNEP/MAP/RAC/CP: Guidelines for the application of Best Available Techniques (BATs), Best Environmental Practices (BEPs) and Cleaner Technologies (CTs) in industries of the Mediterranean countries. UNEP/MAP: Athens, 2004.
By the year 2010, to formulate and adopt, as appropriate, emission values for point source discharges and emissions of PAHs.	• UNEP/MAP/WMO: Atmospheric Input of Persistent Organic Pollutants to the Mediterranean Sea. UNEP/MAP: Athens, 2001. • UNEP/MAP/IOC/FAO: Assessment of the state of pollution of the Mediterranean Sea by persistent synthetic materials, which may float, sink or remain in suspension. UNEP/MAP: Athens, 1991.

Heavy metals (Hg, Cd, Pb)	Status of implementation
To prepare guidelines for the application of BAT and BEP in the industrial installations that are sources of heavy metals (mercury, cadmium and lead).	• UNEP/MAP/RAC/CP: Guidelines for the application of Best Available Techniques (BATs), Best Environmental Practices (BEPs) and Cleaner Technologies (CTs) in industries of the Mediterranean countries. UNEP/MAP: Athens, 2004. • UNEP-MAP Decision IG.20/8. Reduction of inputs of Mercury, BOD5 (from food industries) and ten POPs.
By the year 2010, to formulate and adopt, as appropriate, environmental quality criteria and standards for point source discharges and emissions of heavy metals (mercury, cadmium and lead).	• UNEP/MAP/FAO: Baseline studies and monitoring of metals, particularly mercury and cadmium, in marine organisms (MED POL II). UNEP/MAP: Athens, 1986. • UNEP/MAP/FAO/WHO: Assessment of the state of pollution of the Mediterranean Sea by cadmium and cadmium compounds. UNEP/MAP: Athens, 1989. • UNEP/MAP/WMO: Atmospheric Input of Mercury to the Mediterranean Sea. UNEP/MAP: Athens, 1998. • UNEP/MAP/WMO: Assessment of Airborne Pollution of the Mediterranean Sea by Sulphur and Nitrogen Compounds and Heavy Metals in 1991. UNEP/MAP: Athens, 1994. • UNEP/MAP/FAO/WHO: Assessment of the state of pollution of the Mediterranean Sea by mercury and mercury compounds. UNEP/MAP: Athens, 1987.
Organometallic compounds	**Status of implementation**
To prepare guidelines for BAT and BEP in industrial installations that are sources of organometallic compounds.	• UNEP/MAP/RAC/CP: Guidelines for the application of Best Available Techniques (BATs), Best Environmental Practices (BEPs) and Cleaner Technologies (CTs) in industries of the Mediterranean countries. UNEP/MAP: Athens, 2004.
By the year 2010, to formulate and adopt, as appropriate, environmental quality criteria and standards for point source discharges and emissions of organometallic compounds.	• UNEP/MAP/FAO/WHO/IAEA: Assessment of organotin compounds as marine pollutants in the Mediterranean. UNEP/MAP: Athens, 1989.
Other heavy metals	**Status of implementation**
To prepare guidelines for the application of BAT and BEP in industrial installations which are sources of zinc, copper, chrome.	• UNEP/MAP/RAC/CP: Guidelines for the application of Best Available Techniques (BATs), Best Environmental Practices (BEPs) and Cleaner Technologies (CTs) in industries of the Mediterranean countries. UNEP/MAP: Athens, 2004.
By the year 2010, to formulate and adopt, as appropriate, environmental quality criteria and standards for point source discharges and emissions of zinc, copper and chrome.	• Assessment of the State of Pollution of the Mediterranean Sea by Zinc, Copper and their Compounds (MAP Technical Reports Series No. 105). • UNEP/MAP/FAO: Toxicity, persistence and bioaccumulation of selected substances to marine organisms (Activity G). UNEP/MAP: Athens, 1988.

Organohalogen compounds	**Status of implementation**
To prepare guidelines for the application of BAT and of BEP in industrial installations which are sources of organohalogen compounds.	• UNEP/MAP/RAC/CP: Guidelines for the application of Best Available Techniques (BATs), Best Environmental Practices (BEPs) and Cleaner Technologies (CTs) in industries of the Mediterranean countries. UNEP/MAP: Athens, 2004.
By the year 2010, to formulate and adopt, as appropriate, environmental quality criteria and standards for point source discharges and emissions of organohalogen compounds.	• UNEP/MAP/IAEA/IOC/FAO: Organohalogen Compounds in the Marine Environment: A Review. UNEP/MAP: Athens, 1992. • UNEP/MAP/FAO/WHO/IAEA: Assessment of the state of pollution of the Mediterranean Sea by organohalogen compounds. UNEP/MAP: Athens, 1990. • UNEP/MAP/FAO/WHO/IAEA: Assessment of the state of pollution of the Mediterranean Sea by organophosphorus compounds. UNEP/MAP: Athens, 1991.
Radioactive Substances	**Status of implementation**
To transmit to the Parties reports and other information received in accordance with the Convention and the Protocol.	• UNEP/MAP/IAEA: Assessment of the State of Pollution of the Mediterranean Sea by Radioactive Substances. UNEP/MAP: Athens, 1992.
Nutrients and Suspended Solids	
Industrial waste water	**Status of implementation**
To prepare guidelines for the application of BAT and BEP in industrial installations which are sources of BOD, nutrients and suspended solids.	• UNEP/MAP/RAC/CP: Guidelines for the application of Best Available Techniques (BATs) and Best Available Practices (BEPs) in industrial sources of BOD, nutrients and suspended solids for the Mediterranean region. UNEP/MAP: Athens, 2004.
By the year 2010, to formulate and adopt, as appropriate, environmental quality criteria and standards for point source discharges of BOD, nutrients and suspended solids.	• UNEP/MAP/MED POL: Plan on reduction of input of BOD by 50% by 2010 from industrial sources for the Mediterranean region. UNEP/MAP: Athens, 2004.
By the year 2010, to formulate and adopt guidelines for waste water treatment and waste disposal from industries which are sources of BOD, nutrients and suspended solids.	• Guidelines for the safe management of industrial wastewater for the Mediterranean region, MAP Technical Reports Series No. 153.

Agriculture	**Status of implementation**
To participate in the programmes and activities of international organizations, especially FAO, on sustainable agricultural and rural development in the Mediterranean.	• UNEP/MAP/BLUE PLAN: Rethinking rural development in the Mediterranean: Proceedings of the Regional Workshop on Sustainable Agriculture and Rural Development: Bari, Italy, May 8-11, 2008. MAP Technical Reports Series No. 172. UNEP/MAP, Athens, 2009.
To participate in the FAO programme on the sustainable use of fertilizers and to encourage the preparation of national and regional strategies based on the controlled, appropriate and rational use of seeds, fertilizers and pesticides.	• Work with FAO mainly focused on research projects and assessments related to biological effects of pollutants on marine organisms and communities, toxicity of pollutants, eutrophication, organohalgoens, organophosphorus, mercury, in addition to ecosystem modifications due to pollutants.
To prepare guidelines for the application of BEP (including good agricultural practices) for the rational use of fertilizers and the reduction of losses of nutrients from agriculture.	• UNEP/MAP/RAC/CP: Guidelines for the application of Best Environmental Practices (BEPs) for the rational use of fertilisers and the reduction of nutrient loss from agriculture for the Mediterranean region. UNEP/MAP: Athens, 2004.
Hazardous Wastes	**Status of implementation**
To prepare a Mediterranean Strategy for the Management of Hazardous Wastes.	• UNEP/MAP/MED POL: Plan for the management of hazardous waste, including inventory of hazardous waste in the Mediterranean region. UNEP/MAP: Athens, 2004. • UNEP/MAP/RAC/CP: Plan for the reduction by 20% by 2010 of the generation of hazardous wastes from industrial installations for the Mediterranean region. UNEP/MAP: Athens, 2004.
To formulate and adopt common anti-pollution measures for hazardous wastes.	• UNEP-MAP Decision IG 19/9. Regional Plan on the phasing out of DDT in the framework of the implementation of Article 15 of the LBS Protocol. UNEP(DEPI)/MED IG.19/8. • UNEP/MAP/WHO: Assessment of the State of Pollution in the Mediterranean Sea by Carcinogenic, Mutagenic and Teratogenic Substances. UNEP/MAP: Athens, 1995.
Obsolete Chemicals	**Status of implementation**
To develop programmes for sharing and exchanging technical information and advice regarding the environmentally sound disposal	• UNEP/MAP/IOC: Assessment of the state of pollution of the Mediterranean Sea by petroleum hydrocarbons. UNEP/MAP: Athens, 1988. • UNEP/MAP/IOC/WMO: Baseline studies and monitoring of oil and petroleum hydrocarbons in marine waters. UNEP/MAP: Athens, 1986.

of obsolete chemicals.	• Assessment of the state of pollution of the Mediterranean Sea by anionic detergents. MAP Technical Reports Series No. 110.
Used lubricating oil (luboil)	**Status of implementation**
To formulate and adopt a standard on the maximum amount of PCB an oil may contain before it is considered to be contaminated (i.e. 50 mg/k).	• UNEP/MAP/MED POL: Plan for the management PCBs waste and nine pesticides for the Mediterranean Region. UNEP/MAP: Athens, 2004.
Physical alterations and destruction of habitats	**Status of implementation**
To formulate guidelines for the preservation of habitats and normal ecosystem functions in coastal areas, particularly in the context of integrated coastal zone management.	• UNEP/MAP Integrated Planning and Management of the Mediterranean Coastal Zones. Documents produced in the first and second stage of the Priority Action (1985-1986). Priority Actions Programme, Regional Activity Centre, Split, 1991. • UNEP/MAP: Promotion of soil protection as an essential component of environmental protection in Mediterranean coastal zones. Selected documents (1985-1987). Priority Actions Programme, Regional Activity Centre, Split, 1987.
To develop programmes for integrated coastal zone management.	• UNEP/MAP/PAP RAC: MAP Coastal Area Management Programme (CAMP) Slovenia: Final Integrated Report. MAP Technical Series No. 171, UNEP/MAP, Athens, 2008. • UNEP/MAP: MAP CAMP Project "Lebanon": Final Integrated Project Document. UNEP/MAP, Athens, 2005. • UNEP/MAP/PAP: MAP CAMP Project "Malta": Final Integrated Project Document and Selected Thematic Documents. UNEP/MAP: Athens, 2003. • UNEP/MAP/PAP: MAP CAMP Project "Israel": Final Integrated Report and Selected Documents. UNEP/MAP: Athens, 2001. • UNEP/MAP: MAP CAMP Project "Fuka-Matrouh", Egypt: Final Integrated Report and Selected Documents. (2 Vols.), UNEP/MAP: Athens, 2001. • UNEP/MAP: Iskenderun Bay Project. Volume II. Systemic and Prospective Analysis. Sophia Antipolis, 1994. • UNEP/MAP: Iskenderun Bay Project. Volume I. Environmental Management within the Context of Environment-Development. Blue Plan Regional Activity Centre, Sophia Antipolis, 1994. • UNEP/MAP: Integrated Management Study for the Area of Izmir. Regional Activity Centre for Priority Actions Programme, Split, 1994.
Monitoring	**Status of implementation**
To prepare guidelines for **local air pollution monitoring programmes** in cities and	• UNEP/MAP/MED POL/WHO: Guidelines on environmental inspection systems for the Mediterranean region. UNEP/MAP: Athens, 2004. • UNEP/MAP/FAO/IAEA: Designing of monitoring programmes and management of data concerning chemical contaminants

urban agglomerations exceeding one million inhabitants.	in marine organisms. UNEP/MAP: Athens, 1993
To develop guidelines for river monitoring programmes.	• UNEP/MAP/MED POL/WHO: Guidelines on environmental inspection systems for the Mediterranean region. UNEP/MAP: Athens, 2004.
To promote the establishment of permanent registers of river quality and quantity accessible to all Parties for selected rivers (about fifty).	• No information is available
To promote the establishment of a data bank on socio-economic indicators related to sea and river quality and pollutant fluxes associated with the Geographic Information System (GIS).	• No information is available
To promote the establishment of an inventory of major point atmospheric sources following EMEP/CORINAIR guidelines.	• No information is available
Capacity Building	
To support, promote and facilitate programmes of assistance in the area of scientific, technical and human resources.	
To support the establishment of networks to improve the exchange of experience among Mediterranean experts, especially in the field of the priorities established in the SAP MED to prevent marine degradation.	• No information is available
To formulate and support programmes of cooperation for capacity-building and the	• Report of the National Training course on Municipal Wastewater Treatment Plants Operation, Maintenance and Reuse, Damascus, Syria, 21-23 February 2011, EUDHP1003944/6.1. • Report of the National Training course on Wastewater Treatment Plant Operation and Wastewater Reuse, Durres,

development of institutions, including relevant technology and management training, human resources (scientific and technical personal) and public education, etc.	Albania, 21-22 April 2011 EUALB1002831/28.1. • Report of the Twelfth National Training course on Wastewater Treatment Plants Operation and Management, Podgorica, Montenegro, 24-26 November 2009, EUR/09/5086374. • Report of the Eleventh National Training course on Municipal Wastewater Treatment Plants Management and Reuse of Wastewater, Damascus, Syria, 13-15 December 2009, EUR/09/5086619. • Report of the Tenth National Training course on Municipal Wastewater Treatment Plants Operation, Maintenance and Reuse of Wastewater, Beirut, Lebanon, 20-22 October 2009, EUR/09/5086619. • Report of the Ninth National Training course on Municipal Wastewater Treatment Plants Operation and Reuse of Wastewater, Ankara, Turkey, 30 June – 2 July 2009, EUR/09/5086618. • Report of the Eighth National Training course on Municipal Wastewater Treatment Plants Operation and Reuse of Wastewater, Vlora, Albania, 25-27 May 2009, EUR/09/5086620/1. • Report of the Seventh National Training course for Wastewater Treatment Plant Operation and Sludge Management, Beirut, Lebanon, 28-30 September 2005, EUR/05/5041704/7. • Report of the Sixth National Training course for Wastewater Treatment Plant Operation and Management, Mugla, Turkey, 6-9 October 2004, EUR/04/5041704/6. • Report of the Fifth National Training course for Wastewater Treatment Plant Operation and Management, Algiers, Algeria, 16-18 May 2004, EUR/04/5041704/5. • Report of the Fourth National Training Course on Municipal Wastewater Treatment Plant Operation and Management, Damascus, Syrian Arab Republic, 20-23 July 2003, EUR/03/5041704/4. • Report of the Third National Training course on municipal wastewater treatment, focusing on the use of natural systems, Tirana, Albania, 16-17 October 2002, EU/02/5041704/3. • Report of the Second National Training Course on Municipal Wastewater Treatment Plant Operation and Management, Rijeka, Croatia, 15-18 October 2002, EUR/02/5041704/2. • Report of the First National Training Course on Municipal Wastewater Treatment Plant Operation and Management, Tripoli, Libya, 12-15 May 2002, EUR/02/5041704/1. • Report of the Regional Training Course for Trainers on Municipal Wastewater Treatment Plant Operation and Management, Athens, Greece, 16-20 October 2001, EUR/01/5022121/5. • Report of the Regional Training course for Wastewater Treatment Plant Operators, Athens, Greece, 5-9 May 1998. • Report of the Regional Training courses for Wastewater Treatment Plant Managers, Sophia Antipolis, France, 21-24 April 1999. • Report of the National Training course for Wastewater Treatment Plant Operators, Alexandria, Egypt, 2-6 April 1999. • Report of the National Training course for Wastewater Treatment Plant Compliance Inspection, Haifa, Israel, 27 Nov. – 2 Dec. 1999.

To formulate and implement in the framework of MED POL capacity-building programmes related to the assessment and control of marine pollution.	• Report of the Fifth National training course on pollution monitoring and inspection, Nova Gorica, Slovenia, 18-20 November 2003, EU/03/5041703/5. • Report of the Fourth National training course on pollution monitoring and inspection, Teslic, Bosnia and Herzegovina, 29-31 October 2003, EU/03/5041703/4. • Report of the Third National training course on pollution monitoring and inspection, Opatija, Croatia, 29-31 October 2003, EU/03/5041703/3. • Report of the First and Second National training course on pollution monitoring and inspection, Tirana, Albania, 6-8 October 2003, EU/03/5041703/1. • Report of the First and Second National training course on pollution monitoring and inspection, Tirana, Albania, 9-11 October 2003, EU/03/5041703/2. • Report of the Regional "Train the trainers" course on pollution monitoring and inspection, Nicosia, Cyprus, 4-8 November 2002, EU/02/5041702/5.
To assist in the formulation of projects eligible to be financed by international donors.	• Task accomplished by MED POL
To assist and advise on policies, strategies and practices that may contribute to the implementation of the measures and targets included in the SAP MED.	• Task accomplished by MED POL
To prepare a general manual with guidelines on urban policies directed towards energy saving, non-polluting forms of transport, waste management, the sustainable use of water and the creation of town amenities.	• UNEP/MAP: Workshop on policies for sustainable development of Mediterranean coastal areas, Santorini Island, 26-27 April 1996. Presentation by a group of experts. UNEP/MAP: Athens, 1996. • UNEP/MAP/BLUE PLAN: Energy and Sustainable Development in the Mediterranean: Proceedings of the Regional Workshop, Monaco, 29 - 30 March 2007. MAP Technical Reports Series No. 167. UNEP/MAP, Athens, 2007. • UNEP/MAP/BLUE PLAN: Water demand management, progress and policies: Proceedings of the 3rd Regional Workshop on Water and Sustainable Development in the Mediterranean. Zaragoza, Spain, 19 - 21 March 2007. MAP Technical Reports Series No. 168. UNEP/MAP, Athens, 2007.
To prepare a river monitoring manual by the year 2000.	• UNEP/MAP/MED POL: Guidelines for river (including estuaries) pollution monitoring programme for the Mediterranean Region. UNEP/MAP: Athens, 2004.
To prepare guidelines on linking socio-economic indicators to water quality indicators through GIS to check pollution control.	• UNEP/MAP: MED POL Phase III. Programme for the Assessment and Control of Pollution in the Mediterranean Region (1996-2005). UNEP/MAP: Athens, 1998.

To support, promote and facilitate, as appropriate, the capacity to apply, develop and manage the access of cleaner production technologies as well as the Best Available Techniques (BAT) and the Best Environmental Practice (BEP)	**Status of implementation** **CP/RAC field of work (to be completed later)**
To facilitate and promote access, in particular for countries in need of assistance, to new and innovative technologies relevant to each selected land-based source and activity, including those causing physical degradation and the destruction of habitats.	The MED POL Programme organized in cooperation with other agencies numerous training courses for building capacities and competencies of representatives from public agencies involved in the protection of the Mediterranean Sea from pollution. Workshops were also organized to inform the public and non-governmental organizations. Training courses and workshops included: ▪ Three training courses on water reclamation and reuse. ▪ Fourteen training courses on Municipal Wastewater Treatment Plants Operation and Maintenance. ▪ Four training courses for operators and managers of wastewater treatment plants. ▪ Seven training courses on pollution monitoring and inspection. ▪ Two workshops on sustainable development of Mediterranean coastal areas. ▪ One training course on water demand management and policies.
To promote new information technologies that facilitate the transfer of knowledge within countries and between States, including, in particular, from developed countries to countries in need of assistance.	The MED POL Programme prepared in cooperation with other agencies and centres a number of technical guidelines as follows:[16] ▪ Six guidelines on municipal sewage and sludge treatment and disposal. ▪ Two guidelines for the safe management of industrial wastewater for the Mediterranean region. ▪ Two guidelines on wastewater use in irrigation. ▪ One guideline for river pollution monitoring programme for the Mediterranean Region. ▪ One guideline on safe management of coastal litter for the Mediterranean Region. ▪ Two guidelines for the application of Best Available Techniques (BATs) and Best Available Practices (BEPs) in industrial sources of BOD, nutrients and suspended solids and for rational use of fertilizers and the reduction of nutrient loss from agriculture for the Mediterranean region. ▪ One guideline on environmental inspection systems for the Mediterranean region.
To prepare a general manual with guidelines on implementing cleaner technologies, cleaner production and cleaner materials.	• UNEP/MAP/RAC/CP: Guidelines for the application of Best Available Techniques (BATs), Best Environmental Practices (BEPs) and Cleaner Technologies (CTs) in industries of the Mediterranean countries. UNEP/MAP: Athens, 2004.

[16] Detailed information can be found in the document on "Assessment of the SAP Regional Activities" attached to the annex of this report.

To prepare a general manual with guidelines on introducing alternatives to priority POPs.	• Substitutes to be used as alternatives to 12 priority Persistent Organic Pollutants, Meeting of MED POL National Coordinators, Barcelona, Spain, 24-27 May 2005, UNEP(DEC)/MED WG.264/Inf.13.
The establishment of networks to improve the exchange and transfer of environmentally sound technologies among Mediterranean experts, especially in the field of the priorities established in the SPA to prevent marine degradation.	• No information is available
Enhance access to and transfer of patent-protected environmentally sound technology, in particular to developing countries.	• No information is available
To promote collaborative arrangements between enterprises of developed and developing countries for the development of clean production technologies.	• No information is available
To promote joint ventures between suppliers and recipients of technologies, taking into account policy priorities and objectives of developing countries.	• No information is available
To assist and advise on environmental aspects of current technologies that may contribute to the implementation of the measures and targets included in the SAP MED.	• No information is available
To assist and advise on the preparation of reports that are required for the LBS Protocol.	• Task accomplished by MED POL

Public Participation	Status of implementation
To identify potential roles for Non-Governmental Organizations in the implementation of the SAP MED and to ensure that all relevant IGOs and NGOs have appropriate access to information concerning the SAP MED and its application;	• MEDPARTNERSHIP, H2020, UNEP/MAP decision on cooperation with the civil society, NGO involved in several activities with regards to pollution
To implement coordinated information campaigns and special activities on environmental protection;	• Further work is required to assess the work carried out on campaigns
To continue and expand publication and distribution of brochures, leaflets, posters, reports, newsletters and other information materials, as well as the use of the media in all its forms;	• MED Waves publication, other sectorial and integrated publications
To enhance and strengthen the exchange of information and experience on the environmental problems of the region, and to develop cooperation in this field.	• MED POL information system with data on levels and sources
Reporting	**Status of implementation**
To prepare and apply a unified reporting system on the application of the provisions of the Convention, the Protocols and the SAP MED.	• UNEP-MAP Decision IG 17/3. New Reporting Format for the Implementation of the Barcelona Convention and its Protocols. UNEP(DEPI)/MED IG.17/10.
To collect information on the levels and trends of loads of pollution reaching the Mediterranean Sea.	• Country reports on the implementation of the LBS Protocol

To collect information on the state of the treatment and the disposal of liquid and solid wastes in the Protocol Area and to present such information to the Contracting Parties.	• UNEP/MAP/MED POL/WHO: Municipal wastewater treatment plants in Mediterranean coastal cities – Inventory of treatment plants in cities of between 2,000 and 10,000 inhabitants. MAP Technical Reports Series No. 169, UNEP/MAP, Athens, 2008. • UNEP/MAP/MED POL/WHO: Municipal wastewater treatment plants in Mediterranean coastal cities (II) UNEP/MAP: Athens, 2004. • UNEP/MAP/MED POL/WHO: Municipal wastewater treatment plants in Mediterranean coastal cities (II) UNEP/MAP: Athens, 2004. • UNEP/MAP/MED POL/WHO: Municipal Wastewater Treatment Plants in Mediterranean Coastal Cities. UNEP/MAP: Athens, 2000.
To publish a report on the State and Evolution of the Mediterranean Environment at regular intervals.	• Draft Transboundary diagnostic analysis for the Mediterranean sea, UNEP(OCA)/MED WG.130/3. • (Revised) Draft Transboundary diagnostic analysis for the Mediterranean sea, UNEP(OCA)/MED IG.11/Inf.7
To develop public tracking and reporting systems of pollutants, known generically as Pollutant Release and Transfer Register (PRTRs), in cooperation with OECD.	• PRTR established for a number of Mediterranean Countries.