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EXECUTIVE SUMMARY

This document provides the basis for implementing the MED POL Phase IV Programme. Rather than replacing Phase III, the implementation plan should be seen as an evolution and expansion of ongoing activities. Although countries have indeed made important and concrete steps towards the control of land-based pollution during the last years, the lack of the necessary ratifications of the 1995 Dumping Protocol, the 1996 Land-based Protocol and the 1996 Hazardous Waste Protocol, which did not allow them to enter into force, remains a very negative mark for the Barcelona Convention system. In the specific context of the MED POL Phase IV Programme, their entry into force would in fact provide the activities with a more solid legal strength and better prospects of implementation. Any efforts should therefore be made by the countries with the assistance of the Secretariat to overcome possible problems and complete the ratification procedures as soon as possible.

Apart from maintaining, and as required improving, the implementation of activities initiated during Phase III, the evolution of the MED POL Programme into Phase IV will attempt to better integrate its activities (e.g. monitoring) into the Strategic Action Programme and the Protocols (Land Based Sources, Dumping, and Hazardous Waste), and to operationally link with relevant international initiatives (European Marine Strategy and the Horizon 2020 Initiative, the Stockholm, Basel and London Conventions, and the Global Marine Assessment). MED POL will participate in the implementation of the ecosystem approach by MAP. Progress in the implementation of the SAP and the Protocols will be measured through monitoring of relevant indicators while implementation tools (data quality assurance programme, training, capacity building) will be modified accordingly. The environmental data will be integrated into an Information System to facilitate better interpretation in order to assess the state of the marine environment, the efficacy of pollution control measures, and compliance with the Barcelona Convention and its Protocols.

The Secretariat will follow up and monitor the implementation of Sectoral Plans (SPs) and National Action Plans (NAPs) based on a continuous process of review and evaluation. MED POL will develop a policy and a mechanism to ensure the transfer of technology and know how, and consequently to facilitate the implementation of NAPs. Assistance will continue to be provided to the countries for the priority actions described in the NAPs and framework mechanisms will be developed for the implementation of medium to long-term actions, including a proposal for a region-wide mechanism to strengthen long-term sustainable financing.

Enhanced cooperation is envisaged between MED POL and private industry, stakeholders, civil society, competent international organizations. More in particular, closer links will be established with the MAP RACs and specific synergies will be set up to make better use of the available competencies within the MAP system and avoid overlaps. Phase IV anticipates improved collaboration between MED POL and the scientific community, a reciprocal relationship that will improve the interpretation of environmental monitoring data, thereby helping to elucidate gaps in the information, develop better predictive capabilities and improve the understanding of the marine and coastal ecosystems of the Mediterranean Sea in order to aid environmental policy makers and managers.

The Barcelona Convention and its Protocols stipulate a number of obligations that must be assumed by the Contracting Parties. Many tasks that were initiated during Phase III in fulfilment of such responsibilities will continue during Phase IV. Thus, countries will continue to ensure the coordination of policy-making, monitoring and pollution mitigation. Results from the monitoring programme will be integrated for purposes of environmental assessments and reporting to MED POL. MED POL Phase IV will increase the scope and importance of these activities.

The responsibilities of the MED POL Coordinating Unit have and will increase over time, particularly as the relevant Protocols will come into force. The management challenge of

Phase IV is to achieve better integration of the various components into which MED POL has grown and to react to the recommendations made as result of the review of MED POL Phase III. An information and communication strategy, aimed at increasing the visibility of the monitoring programme at the local and national levels, will be developed as an integral part of the ongoing development of the MAP Information Strategy and the MED POL Information System.

1 INTRODUCTION

The scope of MED POL Phase IV was adopted at the Meeting of the Contracting Parties held in Slovenia, 8-11 November 2005 (UNEP(DEC)/MED IG.16.5/Annex III). MED POL IV will retain most of the basic elements of MED POL III, and as such will continue to deal with marine and coastal pollution assessment and control by using the same tools (e.g. monitoring, capacity building, assessments, elaboration of control measures, etc.) that were successfully implemented in the past. However, considering the results of the evaluation of MED POL Phase III, based on the analysis of MAP's legislative framework and the contemporary initiatives and trends in environmental protection, and the recent policy developments at the region and the international levels, it appears that a number of important issues had not, or not adequately, been covered by the scope of MED POL III and will be gradually included in its Phase IV, as agreed by the Contracting Parties (see doc. UNEP(DEC)/MED IG.16.5/Annex III). In particular:

- a) Control of sources of pollution in river watersheds and ground waters, as related to the inputs into the marine environment (as advocated by WSSD and the European Union, and as envisaged by the relevant articles of the LBS Protocol¹). Initially it may be reasonable to cover only the estuaries, particularly if they are declared also as hot spots, and move gradually upstream only in this case;
- b) Plans and programmes to counter physical alteration and destruction of habitats in cooperation with the competent regional bodies (as advocated by Agenda 21, SAP);
- c) Inclusion of the analysis of relevant social and economic factors such as the analysis of the social and economic roots of environmental degradation into the assessment of the state of the marine environment;
- d) A wider use of preventive and precautionary actions in pollution control, especially by preparation of environmental impact assessments, BAT and BEP for planned activities that may be a major source of marine pollution (as envisaged by the LBS and Dumping Protocols, and the SAP);
- e) More integration between the monitoring programme and the legal instruments;
- f) Development of financial tools to support the implementation of SAP/NAPs including strengthening operational contacts with regional and international donors;
- g) Meaningful involvement of, and collaboration, with the private sector and other stakeholders in designing and implementation of pollution control programmes and in the evaluation of their results;
- h) Intensified dissemination of information on the problems associated with the Mediterranean; mobilisation of public support to the goals of MAP/MED POL; preparation and wide distribution of reports addressed to general public, by making effective use of information technology (IT);

¹ Article 3, paragraph (b) of the Protocol: The area to which Protocol applies shall be the hydrological basin of the Mediterranean Sea. Article 4, paragraph 1(a) of the Protocol: The Protocol shall apply to discharges from LBS point and diffuse sources and activities within the territories of the Contracting Parties that may affect directly or indirectly the Mediterranean Sea area. These discharges shall include those which reach the Mediterranean Area, as defined in Article 3(a), (c) and (d) of this Protocol, through coastal disposal, rivers, outfalls, canals, or other watercourses, including ground water flow, or through run-off and disposal under the seabed with access from land. Article 8 of the Protocol specifies that the Parties shall carry out at the earliest possible date monitoring activities, presumably covering the Protocol area, i.e. the hydrological basin of the Mediterranean.

- i) Intensified and well-structured programmes that may facilitate cooperation for the transfer of technology between countries in order to reduce the existing technological gaps in the pollution reduction processes;
- j) Treatment of the “marine environment” in a holistic way, *i.e.* as an integral whole consisting of the sea area and the adjacent terrestrial coastal area (as advocated by Agenda 21 and the WSSD, and as implied by the revised title of the Barcelona Convention and envisaged by the amended Article 1 of the Convention²);
- k) Application of the ecosystem approach to the management of human activities, including pollution control (as advocated by a large segment of scientific community, proposed by SAP³ and the European Union, advocated by the MED POL Phase III evaluation and adopted by a number of regional pollution control programmes⁴);
- l) Intensified collaboration with natural and social scientists, and better use of scientific understanding of marine and coastal ecosystems as a functional basis for sound decision-making;
- m) Monitoring and assessment of the environmental effects and ecological implications of fisheries management, including aquaculture, on ecosystems (as advocated by the ecosystem approach to the management of human activities and practised by other Europe-based regional seas programmes) as well as of sea water desalination activities;
- n) Monitoring and assessment of environmental effects associated with energy production and maritime transport, in cooperation with other competent international and regional bodies;
- o) Assessment of the health risk associated with the quality of bathing and shellfish-growing waters, tourist establishment and facilities.

Some of the above issues may appear as beyond the scope of a programme initially designed for marine pollution control. However, while sectoral and narrowly defined control of marine pollution may have been seen in 1975 as an effective remedy to the woes of the Mediterranean basin, the changes adopted since 1995 in MAP's legislative framework are a clear indication that the Parties to the Convention have shifted the focus of their attention. The focus is no longer only the protection of the Mediterranean Sea against pollution but extends to a broader and more ambitious goal: to the protection of the marine environment and the coastal region of the Mediterranean as a contribution to sustainable development. Agenda 21, the contemporary global and regional initiatives and trends in the approach to environmental protection, and the change in the philosophy underpinning the current legislative framework of MAP, justify certain adjustments in the present scope of MED POL.

² The title of the Convention: Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean. Article 1, paragraph 2 of the Convention: The application of the Convention may be extended to coastal areas as defined by each Contracting Party.

³ One of the targets proposed in the SAP is to safeguard the ecosystem function, maintain the integrity and biological diversity of species and habitats.

⁴ For instance: HELCOM and OSPAR.

2 PURPOSE OF THIS DOCUMENT

The MED POL Phase IV Programme (2006-2013) was adopted at the Contracting Parties in Slovenia, 8-11 November 2005. The text comprised Annex III to the recommendations for 2006-2007 UNEP(DEC)/MED IG.16.5/Annex III. With respect to MED POL Phase IV, this document outlined:

- i) Overall principles and goals
- ii) Basic principles and assumptions
- iii) Scope
- iv) Modalities of implementation

The operational details of implementation were to be elaborated during a transitional period (2006-2007). The purpose of this document is to provide a basis for formulating the implementation plan for MED POL Phase IV.

In preparing this document, the Secretariat has taken into account a number of events/documents/meetings related to some components or to the Programme as a whole. In particular, the Third Review Meeting on MED POL – Phase III Monitoring Activities held in Palermo (Sicily, Italy), 12-15 December 2005 (UNEP(DEC)/MED WG.282/5) that critically reviewed the implementation of the monitoring activities; the “Evaluation of MED POL Phase III Programme” (UNEP(DEC)/MED WG.264/3), a far-reaching report with several criticisms and recommendations; the initial results of the implementation of the Strategic Action Programme (SAP MED) and the preparation of NAPs, which ushered into the region an era of effective collective pollution reduction, along with specific deadlines; the recommendation made by the Contracting Parties to MAP and MED POL to explore the gradual application of the ecosystem approach to the management of human activities; and the recent initiatives of the European Commission, namely the Marine Strategy and the Horizon 2020.

While this document is expected to provide the Contracting Parties with concrete indications of how MED POL Phase IV will ensure the implementation of the agreed activities, it is anticipated that certain aspects of the Programme will need further elaboration. In particular, while a number of technical and scientific details of the monitoring programme will need to be gradually formulated through a consultative process together with national scientists, regional experts and MED POL Coordinators, it is evident that the possible application of the ecosystem approach, the formulation of a new legally-binding Strategic Action Programme and the possible agreement on the use of a differentiated approach to the pollution reduction process, if achieved, would necessarily imply a further evolution and an adaptation of the management of the activities that will be appropriately discussed at a later stage with MED POL National Coordinators and Contracting Parties.

3 SCOPE OF MED POL PHASE IV

3.1 Control and assessment

As agreed by the Contracting Parties, MED POL Phase IV will retain most of the basic elements of MED POL Phase III, and as such will continue to deal with marine and coastal pollution assessment and control by using the same tools (e.g. monitoring, capacity building, assessments, elaboration of control measures, etc.) that were successfully implemented in the past, as appropriately revised. The implementation of the LBS, Dumping and Hazardous Waste Protocols and the SAP will remain the backbone of the control and assessment activities.

3.1.1 Implementation of the LBS Protocol and the SAP MED

The Secretariat will follow up and monitor the implementation of the Sectoral Plans (SPs) and the National Action Plans (NAPs) based on a continuous process of review and evaluation of all draft SPs and NAPs. MED POL will make every effort to ensure that the process is completed satisfactorily in all countries through contacts and country visits. Additionally, in order to ensure the sustainable implementation of the NAPs, the Secretariat will strengthen information campaigns on NAPs throughout the region and will work to obtain the maximum political support for the Plans in each country. It will also work closely with national authorities and donors on the sustainable financing of NAPs and for the effective participation of civil society in their implementation.

MED POL, to complete the picture on potential diffuse sources of pollutants into the Mediterranean Sea, will initiate activities aiming at the estimation of (a) atmospheric inputs of pollutants, (b) pollutant inputs from submarine ground water discharges and (c) nutrient inputs from rivers (order of magnitude). It will also promote the use of modeling tools to facilitate estimation of inputs from diffuse sources, evaluation of the absorbing capacity of the marine environment and the preparation of state of the environment reports.

One of the pillars of the implementation of the NAPs is integrated pollution control, with an emphasis on cleaner production concept and tools. Whereas MED POL and CP/RAC have already tackled relevant technical aspects in the framework of the GEF Project, the issue of the acquisition by the national stakeholders of the necessary technology to perform pollution reduction remains critical. MED POL will develop a policy and a mechanism to ensure the transfer of technology and know how, and consequently to facilitate the implementation of NAPs in Mediterranean countries.

Based on the vast information obtained during the implementation of the SAP MED, the Secretariat, with the assistance of GEF, will undertake an assessment of the needs of individual countries for the development and implementation of policies and legislation aimed at addressing the sectoral causes of the environmental degradation of the Mediterranean. Public participation and information will be given priority in the assessment process.

As indicated in the SAP MED, "States have common and differentiated responsibilities" regarding the degradation of the marine environment. As a result of a number of activities and consultation meetings which indicated that the Mediterranean Countries are willing to cooperate in the framework of a differentiated mechanism to ensure the implementation of the NAPs in the most cost effective manner, MED POL will continue to develop the elements of the mechanism to reach a regional consensus to ensure the equity and fairness of national efforts to reduce inputs of pollution into the

marine environment. It is expected that through the implementation of a convenient differentiation mechanism, the Mediterranean Countries would cooperate in a meaningful way to respect their obligations under the current and the new legally binding SAP ensuring fairness, equity and benefits to their actions.

Sustainable financing is clearly critical to the process of the implementation of the NAPs. The Secretariat will continue to work with the GPA, the GEF-World Bank-MAP Strategic Partnership and the EC 2020 initiative to depollute the Mediterranean and other donors to facilitate the process of ensuring the financial sustainability of NAPs. Assistance will continue to be provided to the countries for the development of specific initiatives, focussing on the short-term arrangements for the financing of priority actions of NAPs in Hot Spots and priority actions for 2010 and the framework conditions developed for the implementation of medium to long-term actions. In this framework, a proposal to establish a sustainable finance mechanism/platform has been formulated in the framework of the GEF Strategic Partnership that is expected to offer an efficient bridging between countries/projects and donors/banks/opportunities and facilitate the mobilization of funds.

3.1.2 Implementation of the Dumping Protocol

MED POL will more actively assist countries to implement the Dumping Protocol. Following the positive results of the national meetings organized in 2006 by MED POL in a number of countries to review the institutional, legal and technical aspects of the management of dumping activities, MED POL will continue to assist countries in assessing national needs and facilitating the proper application of the Dumping Protocol and its adopted Guidelines. MED POL will prepare a methodology for the development of national limit values for contaminants in dredged materials.

In addition, MED POL will work towards the integration of the dumping sites in each of the Mediterranean countries into the conventional monitoring programme.

The Mediterranean region shows an upward trend in the offshore oil and gas exploration activities. As a result, the issue of dismantling and dumping offshore platforms will be given higher importance through close cooperation and awareness programmes for the proper implementation of the adopted Guidelines.

MED POL will strengthen cooperation with the London Convention Secretariat. Ongoing activities related to the exchange of data and information will continue. A new key requirement will be to ensure the harmonization of the respective reporting systems. Moreover MEDPOL will launch the on-line reporting system related to dumping Protocol.

On the basis of the outcome of on-going international developments, and in particular the related London Convention assessment, MED POL may advise the Contracting Parties, after the entry into force of the Dumping Protocol, to launch a process of amending the Protocol in relation to CO₂ injections into the sea to combat global climate change.

3.1.3 Implementation of the Hazardous Wastes Protocol

MED POL has strengthened cooperation with the Basel Convention Secretariat and its relevant Regional Centres (BCRCs). A joint pilot project has recently been launched in Bosnia and Herzegovina to set up national inventories of lubricating oils and assess

their impacts and to develop a national environmental sound management system for lubricating oils. The project will serve as a model for other Mediterranean countries.

In parallel with this project, MED POL will prepare an inventory of the quantities of batteries generated in countries and collect information on their management. The environmental sound management of batteries will be subject to a regional partnership with relevant producers and managers of communication companies. In addition, the issue of the management of obsolete chemicals will be addressed and assistance will be provided to countries, upon request, for the development of an appropriate management system and to facilitate their disposal. POPs and specifically PCBs will be of special interest due to the magnitude of the issue in the region and because of their special relevance to the implementation of the Stockholm Convention. Finally, MED POL will assess the feasibility for the development of guidelines to address the management of electronic waste, by-products from dismantling of ships and medical waste.

Noting the lack of ratifications of the Hazardous Wastes Protocol, MED POL, in cooperation with technical and legal experts, will endeavor to identify the reasons for the lack of progress and will propose specific measures to revitalize the Protocol.

MEDPOL will continue to improve its cooperation and coordination with the Basel Convention and its BCRC and any other UN office active in the region in matters related to illegal traffic of hazardous waste, management of e-waste and partnership with the private sector. The cooperation with CP/RAC will continue in the framework of the implementation of the Regional Plan for the reduction by 2010 of 20% of hazardous waste from industrial origin which was adopted by the Contracting Parties meeting in Catania in 2005.

3.1.4 Assessment of the Implementation of Protocols

3.1.4.1 Overview of Monitoring Activities in MED POL Phase III

As a basis for recognizing changes in the monitoring programme, it is useful to have an overview of the activities that comprised MEDPOL Phase III, as summarized in document UNEP(DEC)/MED WG.282/3.

According to Article 12 of the Barcelona Convention all Contracting Parties shall establish monitoring programmes and designate the competent authorities responsible for pollution monitoring. In addition, Article 8 of the Land-Based Sources Protocol stipulates that these monitoring programmes should aim:

- a) "Systematically to assess, as far as possible, the levels of pollution along their coasts, in particular with regard to the sectors of activity and categories of substances listed in Annex I, and periodically to provide information in this respect; and
- b) To evaluate the effectiveness of action plans, programmes and measures implemented under this Protocol to eliminate to the fullest possible extent pollution of the marine environment".

The monitoring activities in MED POL Phase III Programme (1996-2005) were designed in consideration of the above, and with the following specific objectives:

- to determine temporal trends of some selected contaminants in the coastal waters and specifically in hot-spot areas in order to assess the effectiveness of policy measures and actions taken ;

- to undertake periodical assessments of the state of the environment in hot spots and general coastal areas (needed to provide information for decision makers on the basic environmental status of the areas which are under anthropogenic pressures), and
- to control pollution by means of compliance to national / international regulatory limits.

Concerning the trend-monitoring component, its specific aim is to detect site-specific temporal trends of selected contaminants basically at the designated hot spot sites in the coastal marine environment. The aim is eventually to monitor the effectiveness of control measures taken at pollution hot spots with long-term data of several decades or more. Trends in pollutant or contaminant levels, in general, are also considered as “state” indicators of pollution and are included in most of the regional monitoring programmes to provide inputs to the assessments of the state of the marine environment.

Monitoring of loads aims to provide estimates of inputs of some major groups of pollutants (all listed in the Land Based-Sources Protocol) to the coastal marine environment via point (rivers, municipal and industrial effluents) and non-point (run off) land-based sources as well as through the atmosphere.

Compliance monitoring, covers health-related conditions in bathing and shellfish/aquaculture waters as well as contaminant concentrations in effluents, aiming at pollution control. In order to achieve fully the objectives of this type of monitoring, countries are encouraged to prepare compliance reports by comparing their results with the existing limit values of their national and/or international and regional legislation.

Biological effects monitoring (monitoring with biomarkers) was also included in the monitoring programmes as a pilot activity to test the methodology and its use as an early-warning tool to detect any destructive effects of pollutants on marine organisms at the initial stage of exposures. Biomarkers, in general, are considered as “impact” indicators used for the evaluation of toxic effects of pollutants on coastal marine life. They can in fact be considered as the most direct method to assess exposure to, and effects of, chemical contaminants at very early stages (at cellular or organism level).

Another component of the MED POL Phase III Programme is the monitoring of eutrophication that was mainly implemented through pilot studies. The monitoring sites are those where eutrophication phenomena are common and, in addition, potentially risk areas under the direct impact of anthropogenic nutrient and organic material inputs.

Another activity that has been initiated in Phase III is that of baseline studies with the participation of MED POL institutions in the Mytilos/Mytimed projects.

3.1.4.2 Programmatic Monitoring Components

As described in document UNEP(DEC)/MED WG.282/5, the principal programmatic components of MED POL Phase IV were discussed at the Third Review Meeting on MED POL – Phase III Monitoring Activities held in Palermo (Sicily, Italy), 12-15 December 2005.

The trend monitoring will continue following the same course as during MED POL Phase III, taking into account the recommendations of the relevant reviews but indicators may change based on the decisions taken within the ecosystem approach process.

The biological effects monitoring activity will continue to be a component of MED POL monitoring and assessment as an early warning tool for the effects of pollutants at the molecular/organism level. The programme will be further developed using caged organisms and the 2-tier approach which has been proposed by the Workshop on the MED POL Biological Effects Programme: Achievements and Future Orientations (Alessandria, Italy, 20-21 December 2006).

Pilot eutrophication monitoring studies at local problematic areas will continue to be implemented based provisionally on the TRIX index and phytoplankton determinants.

As the activities of the Mytilos/Mytmed projects are concentrated in the western Mediterranean an effort will be made to also cover the Eastern Mediterranean with participation of MED POL institutions of the region.

The strategy related to compliance monitoring will be revised to make this type of monitoring an even better tool for the implementation of the provisions of the LBS and Dumping Protocols, as well as the SAP. Notably, data will be gathered to estimate the magnitude of pollutant inputs via rivers and streams, and diffuse sources arriving directly to the sea.

The various programmatic elements relate either to quantifying inputs or assessing environmental quality. The nature of these two types of activities, essentially compliance and state monitoring, is described here.

a) Quantification of Pollutant Inputs (Compliance Monitoring)

The assessment of inputs from point sources will be implemented through periodic updating of the National Baseline Budgets of Pollutant Emissions and Releases (NBBs). To this end, information obtained from regularly updated national Pollutant Release and Transfer Registers (PRTRs) or similar systems would be most beneficial. The estimates of pollutant releases should eventually be verified, and the used estimation methods gradually replaced, by actual monitoring of direct effluent discharges into the sea.

The assessment of inputs from rivers and streams will be implemented on the basis of a monitoring programme which will be prepared through consultation with experts and National Coordinators. Sufficient temporal information of pollutant quantities, suspended sediment concentration, and water flow should be collected in order to make meaningful estimates of annual loads into the sea.

Diffuse sources notably comprise the atmosphere, run-off and submarine ground water discharges and watershed inputs. The relative importance of atmosphere inputs of pollutants to the Mediterranean Sea remains an important knowledge gap. In the first instance, this topic can be addressed as research project whereby an estimation of the role of atmospheric inputs can be made on the basis of a review of existing information, together with modelling as feasible. The assessment of inputs from diffuse sources may be gradually implemented through monitoring of atmospheric deposition. The monitoring of atmospheric deposition should be based on a network of coastal stations comprising at least one station in each country. Similarly, a research mechanism could be used to assess the importance of submarine ground water discharges as a source of pollutants to the marine environment. This could also take the form of a literature review, followed by pilot studies as required. As for inputs from watershed, MEDPOL will make use of the regional state-of-the-art in the matter e.g. the results of EuroHarp project to estimate the order of magnitude of inputs from watershed.

b) Monitoring and assessment of the quality of the marine environment (State Monitoring)

These activities will include ongoing monitoring of the levels and evaluation of temporal trends of pollutants in sediments and biota at 'hot spots' and coastal reference stations complemented with baseline surveys, together with monitoring of biological effects of pollution. The latter activity will consist of: (i) monitoring of biological effects at the organism level (biomarkers) and, where appropriate, also at the community level (species composition, abundance and biomass of benthic communities); and (ii) monitoring of eutrophication. Sub-regional surveys involving measurements of biomarkers in caged organisms deployed at selected sites will be carried out as a research project, with a view to extending the network throughout the Mediterranean Sea. The biomarkers and eutrophication monitoring will be based on the strategies developed by MED POL during Phase III and tested in pilot projects. These strategies will be re-evaluated and if necessary modified after further implementation. Finally, monitoring of health-related conditions in bathing waters and shellfish growing/aquaculture waters will continue.

3.1.4.3 Methodologies

The MED POL Programme has generated a wealth of information concerning monitoring procedures. Unfortunately, this material is scattered through a range of manuals, guidelines, MAP Technical Reports and other documents. Moreover, there has been some reliance placed on the UNEP Regional Seas Series entitled Reference Methods and Technical Bulletins for Marine Pollution Studies, many of which are now out of date. See <http://www-naweb.iaea.org/naml/aqcsmethodes.asp> for listing of the available methodologies and guidelines in this series. Thus, there is a pressing need to clarify and consolidate the monitoring procedures, and in some cases update the methodologies. Finally, more of the material should be translated into more of languages used in the Mediterranean region.

All documents relating to monitoring programme methodologies, including new and updated information, will be collated to create a more user-friendly and readily accessible resource for analytical chemists, as well as other scientists and environmental managers in the Mediterranean region. The consolidated manual for all monitoring will be developed as an internet-based system and become incorporated into the MED POL Internet Portal currently under development. The Internet-based manual of COMBINE provides a suitable example of this approach (www.helcom.fi). The design of the web-based system will enable easy updating of the monitoring methodologies whenever changes and additions are adopted.

For the most part, there is no need for absolute specificity with respect to all aspects of instrumentation or procedure for measurement. However, there are two fundamental requirements. Firstly, laboratories must be able to establish via supporting QA/QC documentation that their procedures are robust and reliable. Secondly, it is crucial to understand that the sample characteristics, or sample type in the broadest sense, under investigation remain uniform, regardless of when and where the sample is measured. In this vein, MED POL will provide guidelines for the measurement of eutrophication-related indicators and the sampling and handling of marine sediments.

A basic principle of MED POL Phase IV is that all methodologies should be harmonized with those utilized in other regional bodies to which a number of Contracting

Parties belong. To this end cooperation will be enhanced with the European Union, the OSPAR Commission and ICES.

3.1.4.4 Data Quality Assurance

Reliable and harmonized data quality is a fundamental prerequisite for the regional assessment of marine pollution. The MED POL Programme has been a pioneer in establishing a regional data quality assurance (DQA) programme, through a 30-year partnership with the IAEA Marine Environmental Studies Laboratory (MESL) in Monaco. The DQA programme comprises several components:

- Provision of reference methods and guidelines
- Provision of reference materials and standard solutions
- Training in the analysis of marine pollutants in sediments and biota
- Training in good laboratory practice, including notably QA/QC procedures
- Laboratory performance studies (LPS, also known as inter-comparison exercises, inter-calibration exercises or proficiency tests)
- Split sample analyses
- Quality assurance missions
- Provision of expert advice on monitoring and assessment of pollution issues
- Provision of expert advice on emerging pollution issues

The DQA programme in partnership with the IAEA - MESL focused on chemical contaminants in marine sediment and biota. MED POL will continue its cooperation with IAEA-MESL in view of the concrete results obtained (the quality of the data coming from Mediterranean countries has markedly improved), the confidence given to the Monaco laboratory by national Institutes considering the sensitive type of data, the verified cost/effectiveness of the MED POL/IAEA partnership and finally the large experience in the region and the scientific and technical quality of the laboratory. The University of Genoa and later that of Alessandria, Italy, served as a reference centre for biological effects studies. Various other monitoring activities (e.g., bathing water quality and eutrophication studies) have also incorporated some elements of DQA. In addition, in the field of eutrophication, two training programmes were organised in Italy (June 2003 and November 2004) in cooperation with the Italian research centre ICRAM. However, no uniformity in requirements has been mandated. Therefore, the data quality assurance programme will be revised to serve the anticipated needs of MED POL Phase IV, taking into account additional indicators and the wide range of monitoring activities.

Laboratory performance studies (LPS) will be implemented annually by the IAEA, with the test sample alternating between marine sediment and a biological material. One LPS will assess the analysis of many metals and methyl mercury, and another will test the determination of several organic pollutants. Whereas most of the indicators for sediments and biota in MED POL Phase IV are already being tested, an important exception, organotin compounds, will be added when a sufficient number of laboratories in the region is undertaking these measurements. The University of Alessandria, Italy, will continue to conduct LPS for the biological affects monitoring but cooperation will be enhanced with the International Council for the Exploration of the Sea (ICES) and the

programme Biological Effects Quality Assurance in Monitoring programmes (BEQUALM) aiming at harmonization. DQA for some of the other components of monitoring such as nutrients measured as part of the eutrophication investigations will be implemented through an operational agreement with QUASIMEME, the acronym for "Quality Assurance of Information for Marine Environmental Monitoring in Europe", at no cost for the participating Institutes.

Although the overall results of the data quality assurance programmes carried out as part of MED POL can be considered very satisfactory, efforts will be made to improve their follow up at the laboratory level and plan specific interventions where a need appears for training or control of the analytical instruments.

3.1.4.5 Data Interpretation and Utilization

The Secretariat will provide periodic syntheses of regional information based on the various national reports on monitoring and assessment of marine and coastal pollution. Such regional reports must not be only data compilation exercises, but require interpretation of the data with a view to providing policy advice to the Contracting Parties. MED POL will be responsible for synthesizing the results and providing, in consultation with MED POL National Coordinators, periodic assessments of the state of pollution in the Mediterranean Sea.

Several general issues will be addressed in the reports. Gaps in the data for both compliance and state monitoring with respect to spatial and temporal coverage, and completeness of the number indicators measured should be identified. Remedial action to address recognized data gaps should be suggested. An appraisal should be provided of the quality of chemical results, statistical treatment of data and overall assessment of pollution. Recommendations may be required to improve poor performance in these areas.

3.1.4.6 Indicators and data reporting

MEDPOL will continue to develop reliable, comprehensive indicators to be used for monitoring and evaluating the effectiveness of national and regional measures implemented in the framework of the LBS, Dumping and Hazardous Waste Protocols. It will also continue working closely with countries to facilitate the acquisition of relevant data and information to monitor the implementation of the MSSD. In addition, the gradual application of the ecosystem approach to the management of human activities will bring about the need for additional or specific indicators. Those relevant to marine pollution will be within the competence of MED POL that will develop them in cooperation with national and regional experts and National Coordinators.

The three-year activities on the development of marine pollution indicators have been very informative. The results showed that most of the Mediterranean countries exhibit differences in their capacities and capabilities of the generation of data to be used for the tested indicators. Therefore, MED POL will work closely with the national counterparts to improve and strengthen the national competences in issues related to indicators development, generation and use. Cooperation with EEA will continue to be a major milestone in this matter. It is expected that throughout MED POL Phase IV, the region will switch to **Drivers Pressures State Impacts Responses (DPSIR)** indicator based assessments.

The ongoing efforts to harmonize the MED POL procedures for collection, handling, reporting and assessment of monitoring data with those adopted by other appropriate regional and international organizations and bodies, will be intensified in the framework of the preparation of the MAP Reporting System. In view of the complexity of this issue as a whole, priority will be given to achieving functional harmonization of the data reporting requirements of the Monitoring Programme with those of other monitoring programmes to which some of the Mediterranean countries are committed.

3.1.5 Implementation tools

3.1.5.1 Capacity Building and technical assistance

Capacity building and technical assistance aim at improving the competence and capabilities of the countries undertaking the implementation of the Protocols including the SAP and the NAPs, and the monitoring and assessment of the marine and coastal environment of the Mediterranean Sea. Capacity building will improve human resources through training on technical, legal and financial aspects and, depending upon the availability of financial resources, augment physical resources through the procurement of supplies and instrumentation for the monitoring.

As a guiding principle, the activities will focus on:

a) National, regional and subregional programmes and expert missions to assist the implementation of the LBS, Dumping and Hazardous Waste Protocols. The MEDPOL capacity building strategy successfully implemented during the preparatory phase of the SAP/NAPs will continue to be the basis of the capacity building programme of MED POL Phase IV. As in the past, MED POL will make use of national and regional experts with valuable experience for the implementation of this strategy. MED POL will also focus on capacity building programmes related to the proper and adequate implementation of the adopted Dumping Guidelines, industrial management, cleaner production in cooperation with CP/RAC, hazardous waste management in cooperation with the Basel Convention and its BCRCs, management of coastal litter and Pollutant Release and Transfer Registers (PRTR).

b) A key role of IAEA-MESL will continue to be the implementation of training courses related to monitoring. MED POL will conduct a survey of countries to determine whether new or additional training courses are required. Clearly the additional indicators to be measured require an expansion of existing training activities.

With regard to health related aspects of pollution, collaboration with WHO will continue. It is foreseen that appropriate training courses on microbiological analyses of bathing and shellfish growing areas, as well as technical assistance on the subject will be provided upon request. In parallel, Quality Assurance activities for the laboratories involved in microbiological analyses will be conducted. Water shortage is steadily but firmly an emerging issue that an increasing number of countries are facing. Therefore, capacity building activities including training courses on wastewater treatment and feasibility of the safe use of treated wastewater will be carried out.

With regard to capacity building for eutrophication, cooperation with appropriate national or regional Institutes (such as the Italian Institutes ARPA-ER, CRM and ICRAM) and IAEA - MESL will continue in the fields of training, intercomparison studies and technical and scientific support. The University of Alessandria, Italy, will continue to

serve as the reference centre for biological effects studies, and will implement training and intercalibration as required.

c) The implementation of the inspection activities carried out during Phase III showed that, in addition to the continuous assistance to the existing inspection systems as well as technical and legal assistance to countries to establish such systems, appropriate training material will be prepared consisting of Guidelines and Manuals on how to perform technical and sanitary inspections, along with inspection check lists for each individual relevant industry as well as for those types of industries that, according to the NAPs, should perform significant reduction of pollutants.

d) The introduction of new indicators into MED POL Phase IV will be a gradual process, also in relation to the application of the ecosystem approach to the management of human activities. Some laboratories will be in a position to establish reliable analytical techniques more quickly than others. MED POL will explore options to establish regional centres for the analysis of new and / or difficult determinants, including biomarkers in order to avoid delays in the full and uniform implementation of the programme by all countries. This approach may thereby serve as a mechanism for technology transfer and facilitate the implementation of the full monitoring programme throughout the Mediterranean region.

e) MED POL will take a more proactive role in fostering interactions in the region in the scientific, technical, legal and financial fields through organizing meetings/expert missions to examine regional knowledge gaps and other issues of fundamental interest to Phase IV developments. Technical assistance to countries will be in the form of sponsoring participation at international conferences and workshops in the Mediterranean region.

3.1.5.2 Database and Information System

According to the Agreement signed between MED POL and INFO/RAC, MED POL will switch by 2008 into a fully online system of reporting for monitoring, implementation of LBS, Dumping and Hazardous Waste Protocols, inventory of emissions and information exchange between the secretariat, national coordinators, RACs and stakeholders. The MED POL information system is under development. Phase I will be operational by 2008. Meanwhile MED POL will continue to establish databases to store and handle data provided by the countries under different topics. The protocols of data exchange, storage and handling will be compatible with those of other RACs and EEA which would enable MED POL to access and exchange data and information in a simplified and more reliable manner.

3.1.5.3 Technology Transfer

MED POL will establish a well-structured programme and, as appropriate, a regional mechanism, that may facilitate cooperation for the transfer of technology and know how between countries in order to reduce the existing technological gaps. As feasible, all aspects related to the MED POL Phase IV activities will be taken into account, including legal, institutional, financial and technical issues. However, special attention will be given to the pollution reduction processes. The specific programmes and/or mechanisms, prepared in cooperation with CP/RAC, will be designed to facilitate the acquisition of technology and know how in the most effective manner. The gradual

application of the ecosystem approach to the management of human activities will also bring about new needs and specific knowledge that will be taken into account in the technology transfer mechanism to be established.

3.1.5.4 Compliance and enforcement

The implementation of the LBS Protocol priority actions and in particular of the SAP MED, include, *inter alia*, the introduction of new environmental tools including appropriate implementation of regulatory, economic and voluntary instruments, but it focuses on the reduction of certain pollutants from industrial and various facilities. Following this, and taking into consideration the status of permit, inspection and compliance systems in all Mediterranean countries, including policy and legislative gaps, there is a need to implement activities so as to enhance the inspectorate systems. Work will continue on issues of common interest like the indicators of inspections, which following the pilot phase, will be gradually implemented through the development of a programme of action. Periodic meetings of the network on compliance and enforcement will continue to be held to discuss issues of mutual interest and to exchange views on environmental inspections as well as to agree on common activities to be performed. At the same level, assistance to countries on issues related to environmental and sanitary inspections, including capacity building activities will continue.

The review that was made in 2005, based on existing data and information, of the status of permit, inspection and compliance systems in all Mediterranean countries including policy and legislative gaps, identified the basic subjects needing a more in depth study and the countries that would benefit from such activities. Therefore, following a proposal to GEF, it is expected that within a period of three years a number of countries will strengthen their existing mechanisms regarding inspections for compliance and enforcement. The set of national activities would include meetings among agencies responsible for permitting, inspecting and enforcement in order to set up the procedure, as it is indicated in the regulatory cycle, as well as a training workshop.

3.1.5.5 PRTR

The PRTR system, which is similar to EPER (European Pollutant Emissions Register) system, is an important tool of the compliance monitoring, which could assist national and local authorities to assess the state of local and national environment in relation to chemical releases as well as to adapt and tune their relative management plan.

MED POL will continue to assist countries in the implementation of PRTR through pilot projects and efficient replication strategies.

3.1.6 Physical alteration and destruction of habitats

Plans and programmes to counter physical alteration and destruction of habitats will be developed and implemented with special focus on sea water desalination practices in the region, coastal solid waste management and litter and dumping of matters covered by article 4.2 of the dumping Protocol.

MED POL will be actively involved in the activities of the European and International Desalination Societies to improve awareness of companies, engineers and technicians dealing with seawater desalination about environmental impacts of desalination process. As in the past, MED POL will actively participate at related events and initiatives to disseminate information on the possible negative environmental effects of desalination activities to ensure the creation of new environmentally friendly installations. In addition, MED POL will pursue the decision of the Contracting Parties to consider desalination activities under the provisions of the LBS Protocol and will collect and process the relevant data and information deriving from the reporting on the implementation of the Protocol.

Coastal solid waste and litter management is perceived as a serious issue in the Mediterranean. Following the preparation of an action plan and Guidelines as well as the successful initiative of MED POL together with RAMOGE and local actors in Lebanon in 2006, efforts will continue to be made in cooperation with local and national authorities and stakeholders such as maritime traffic authorities, fishermen and tourist associations and NGOs to improve the management of beach litter throughout the region. In particular, in cooperation with UNEP/Regional Seas, MED POL will launch specific initiative for the formulation of a comprehensive regional strategy and its implementation at the local level.

It is obvious that the proper implementation of Dumping Guidelines will significantly reduce the impacts of dumping activities on benthic habitat. As mentioned earlier, MED POL will actively assist countries in the proper implementation of the Guidelines.

3.1.7 Socio-economic roots of environmental degradation

In the implementation of Phase IV, the inclusion of an analysis of the relevant social and economic roots of environmental degradation will be essential as it will better guide the planning and the realistic launching of activities. In this connection, MED POL will foster the collaboration with the Blue Plan (e.g. their work on the identification of pressure indicators) and other regional and international actors such as METAP and OECD to obtain the relevant data and information. Particularly relevant to the pollution reduction process (i.e. the implementation of the NAPs) are the studies carried out by METAP on the cost of inaction. This collaboration will also provide an important contribution to the preparation of state of pollution reports.

3.1.8 Public Health

Activities related to the health risk associated with the quality of bathing and shellfish-growing waters, tourist establishment and facilities will continue to be carried out in close collaboration with WHO.

The draft Guidelines on coastal bathing waters criteria that are being prepared will require some preliminary work before the countries can implement them. Therefore, these guidelines should be finalized and gradually implemented by using the common methodology for developing beach profiles. In addition, possible problems related to their completion should be identified and capacity building needs will be addressed.

The implementation of the new criteria and standards, pilot studies of beach profiles and complementary activities on beach management are issues that need further

discussion, guidance and, above all, a detailed programme for the adoption and gradual implementation of bathing waters criteria. Regular consultation meetings of experts will be held every two years to examine the further implementation of bathing waters quality issues and to provide guidance and assistance to countries.

Periodic assessment of the quality of bathing waters as well as of the quality of shellfish growing areas will continue to be conducted. The evaluation of the state of the microbiological quality of the Mediterranean Sea, based on the compliance to the agreed and/or national criteria and standards for bathing waters and shellfish growing areas will be carried out every five years.

Tourism is a very important issue for development in the Mediterranean. Taking into account the link between the human health aspects of tourism and the provisions of the LBS Protocol, the assessment of health risks associated with tourist establishments in the region will provide scientific evidence of the major associated risks. It is foreseen that all environmental determinants to health, including food safety will be thoroughly examined in relation to tourist establishments and facilities, with a view to prepare an integrated action plan to reduce the burden of disease in Mediterranean tourist establishments. The implementation of the action plan to all concerned countries will focus on the country specific needs carrying out tailor-made activities. In parallel, issues related to wastewater management and treatment as well as reuse of treated wastewater, will be further developed and followed up.

3.2 Cooperation, Information and Public Participation

3.2.1 Cooperation

As it was successfully achieved during Phase III, the ongoing work of the Mediterranean scientific community on operational monitoring and observation systems, such as MOON and MED GOOS, will be closely followed up and cooperation will be strengthened on a practical basis, for example through the formulation of joint pilot exercises and initiatives.

As in the past, cooperation will continue with WHO and all other UN Agencies/Bodies carrying out work relevant to the various components of MED POL, with global and regional Convention Secretariats and International and Intergovernmental Organizations. Cooperation will also be strengthened with RACs on the basis of their respective competences.

Especially relevant for the Phase IV of MED POL will be an efficient and concrete cooperation with the European Commission in view of the relevance of its recent initiatives such as the Water Framework Directive, the Marine Strategy Directive and the 2020 Initiative. In fact, a close cooperation with the European Commission, in view of the similar and comparable objectives of its initiatives with those of MED POL, will result in a better harmony of efforts, an easier involvement of the EU member states in the MED POL activities and a better overall integration in the marine pollution reduction process of European and non-European countries for the benefit of the whole Mediterranean region.

Close cooperation will be kept with all the relevant regional actors in the field of reporting to facilitate the efforts of those countries with different reporting obligations. In

this connection, the successful work initiated with the European Environment Agency (EEA) in the framework of the signed joint work programme, will be continued.

NGOs will continue to play a key role in critically participating in the planning and implementation of the MED POL activities. As appropriate, NGOs will be invited to attend MED POL Meetings and specific partnerships will be established to facilitate the implementation of specific activities at the local level, such as those related to coastal litter management. A constructive role of NGOs is also expected in the long-term implementation of the NAPs, as they were successfully involved in the formulation of the NAPs in a large number of countries.

Contacts and operational links will be intensified with regional and international donors and banks, such as the World Bank and the European Investment Bank, as their involvement could facilitate the implementation of the NAPs by the countries.

As in the past, long-term partnerships will be sought with GEF and FFEM for projects and initiatives that could assist the implementation of the activities of MED POL.

3.2.2 Stakeholder Involvement

A meaningful involvement of, and collaboration with, the private sector and other stakeholders in designing and implementing the pollution control programmes and in evaluating their results is clearly essential. While MED POL recorded some success in the preparatory phase of the NAPs when the private sector did participate in a number of countries in the definition of the Plans, it is clear that a larger and better-planned effort should be made now that the NAPs are in the implementation phase. In this connection, MED POL, while planning to make use of the contacts already made, intends to foster its cooperation with CP/RAC in view of its wide and close contacts with the industrial sector and the already experimented collaboration with MED POL in the framework of SAP.

Additional stakeholders, such as local authorities, will be involved as appropriate to ensure ownership of programmes and activities that are implemented mostly at their level (e.g. construction and operation of sewage treatment plants, coastal litter management, preparation of PRTR, etc).

Countries are encouraged to promote partnerships with selected national private and public sectors to facilitate the implementation of NAPs. In turn, MEDPOL will work closely with regional and multinational industrial and business associations, e.g. EUROCHLOR, ASCAME, for the establishment of partnerships to disseminate the necessary information related to the implementation of NAPs, and with multinational companies working in the Mediterranean region to facilitate the implementation of MEDPOL programmes of activities related to the implementation of SAP and the Hazardous Wastes and Dumping Protocols.

3.2.3 Public Outreach

Public awareness and opinion are among powerful forces determining the success of any programme. In addition to the finalization of the MED POL Information System in cooperation with INFO/RAC (described earlier in this document), MED POL, with the assistance of the MAP Information Officer, will maintain and improve links with NGOs, stakeholders and media representatives. MED POL will regularly provide them with information that they could use to promote the goals of MED POL. To this end, an

information and communication strategy, aimed at increasing the visibility of the programme at the local and national levels, will be developed as an integral part of the ongoing development of the MAP Information Strategy and the MED POL Information System. Similar experiences, such as the information strategy developed by GEF in the Black Sea, will be taken into account. The strategy will address the needs of all potential users of the data and information products, including decision-makers, the scientific community, the general public and the media. The objective will be to increase national support for the programme and consequently the level of participation in its various components.

To complement the MED POL Information System and its Portal, the countries will be encouraged to establish national web sites delivering timely information on the monitoring activities, pollution assessments and outcomes. These national web sites should be written in the native language of each country and focus on the national significance of the monitoring information in the context of overall efforts to reduce pollution and promote sustainable development. To ensure the effectiveness of these web sites, media experts will be engaged in their development.

3.3 A Holistic Monitoring and Assessment Programme

As noted above, a key requirement is the development of a holistic approach for the monitoring and the assessment of human impacts on the marine and coastal environment. Many types of monitoring (*i.e.*, ambient, trend, hot spot, biological effects, eutrophication, and compliance) for a range of purposes have been conducted during MED POL Phase III. The philosophy underlying the holistic approach is that all monitoring activities are integrated for a single, well-defined aim – that of achieving a particular level of environmental quality in a specified ecosystem. Within the MED POL Programme, this means that uniform practices will be adopted across all types of monitoring activities and data management. Several facets will be standardized: indicators, methodologies for sample collection and chemical measurements, interpretation of results and assessment of pollution. All these tasks will be undertaken within a harmonized quality management scheme, with a view to integrating results into a common, regional database and using the scientific data to improve protection of the marine environment.

The ecosystem approach depends upon defining a desirable environmental quality to be attained. Mitigation and remediation of pollution requires an understanding of the major inputs of pollution, some of which have been measured under the SAP and NAPs. Some known gaps, notably relating to diffuse sources, exist and will be the focus of research during Phase IV. The SAP and NAPs aim to control point sources of pollution. Compliance monitoring will help verify that pollution regulations are in force. However, environmental monitoring and assessment are required to evaluate the efficacy of the pollution control strategies.

In this scheme, obtaining results from monitoring is a tool, not an end in itself. Data interpretation at various levels is essential, with outputs related to the creation of an accessible database, the dissemination of information about pollution and pollution control in the Mediterranean region, and policy advice to the Meeting of the Contracting Parties. Knowledge gaps can be examined in the short term through applied research projects, with the understanding that results of such investigations may lead to

modifications in the monitoring programme. In any case, a periodic evaluation of the overall monitoring programme is essential.

3.3.1 Application of the Ecosystem Approach to the management of human activities

Internationally, the ecosystem approach has been evolving as a concept since first gaining prominence at the UNCED (Rio de Janeiro 1992). Key recognition was gained when adopted by the Fifth Meeting of the Contracting parties of the Convention on Biological Diversity (Nairobi 2000) and endorsed by the World Summit on Sustainable Development (Johannesburg 2002). In fact the Johannesburg Plan of Implementation encourages its application by the year 2010. In a marine context, the ecosystem approach has been adopted by the HELCOM and OSPAR Commissions and will be a keystone in the European Marine Strategy. Following recommendations from the meetings of the Contracting Parties to the Barcelona Convention (Catania, 2003 and Portoroz, 2005), the MED POL Programme on behalf of the Mediterranean Action Plan has initiated a project in cooperation with the European Commission to study the implications of its application on MAP and propose a road map.

The project was recently concluded and the Meeting of Government designated experts decided to propose to the Contracting Parties a road map for its application as well as an ecological vision for the Mediterranean Sea and three strategic goals.

One of the strategic goals refers to the reduction of pollution and this is where MED POL will play a leading role. Following the expected adoption of strategic goals by the Contracting Parties in December 2007, experts' consultations will be organized to proceed to the next step, which is the definition of ecological objectives, indicators and target levels. While, as far as MED POL is concerned, the monitoring activities will have to be revised when the set of ecological indicators will be decided, it is obvious that the application of the ecosystem approach will require a very close cooperation among all RACs and MAP components. In particular, the monitoring and assessment activities that will be addressed in the future, call for a clear and effective cooperation among those MAP components that carry out that type of activities in their field of competence. Particularly relevant will be the joint work that MED POL and SPA/RAC will have to organize in collecting the relevant information needed for the establishment of strategic and ecological objectives.

3.4 Scientific Collaboration

MED POL Phase IV will see closer interactions between MED POL and the scientific community. This will be a mutually beneficial relationship. On the one hand, MED POL has a considerable amount of valuable information in the regional database. Once conditions for access to and use of data have been clarified, the results of the monitoring programme will be made available to the scientific community for more widespread and rigorous interpretation. On the other hand, a number of knowledge gaps have been highlighted in recent reviews of the MED POL monitoring programme and others will become apparent during the Phase IV in view of the enlarged scope of the Programme. The scientific community can help to provide some of the missing facts and understanding. Two mechanisms for such scientific interactions are envisaged, namely

through the organization of international conferences/workshops and by supporting research projects. Recognizing that financial constraints will play a role, MED POL will likely be limited to adopting a facilitative approach in these initiatives. Scientific conferences/workshops comprise a cost effective method for increasing public awareness of the MED POL programme, enhancing interactions with social and natural scientists, and consolidating available information to gain a regional understanding of some key issues and knowledge gaps. MED POL will take a leading role and collaborate with other competent regional and international organizations to highlight issues of fundamental interest to MED POL Phase IV developments.

Research has been in the past a vital component of the MED POL Programme. Research projects can take the form of data review and assessment, testing novel methodologies, and pilot studies to examine emerging issues. Keeping in mind the obvious financial constraints, these types of research activities will be supported in MED POL Phase IV. MED POL will be associated to and, as appropriate, will seek co-sponsorship from, competent national and international organizations to in order to optimize reciprocal research efforts.

3.5 Fisheries

As indicated in the MED POL Phase IV Programme, monitoring and assessment of the environmental effects and ecological implications of fisheries management, including aquaculture, on ecosystems should be, as appropriate, of concern when planning the activities. While some aspects of aquaculture –mostly related to human health- have been regularly dealt with during Phase III and will continue to be in the programme throughout Phase IV, the environmental effects of such activity should be planned *ex novo*. MED POL sees the subject in the context of the holistic approach to be adopted in Phase IV and in particular in the framework of the monitoring and assessment activities that will have to be carried out when the ecosystem approach will be implemented. Whenever it will occur, MED POL intends to plan the specific activities in close collaboration with SPA/RAC and as appropriate with GFCM of FAO for an adequate division of roles and tasks.

3.6 Energy Production and Maritime Transport

Some initial activities related to energy production and its effects on pollution linked to specific provisions of the SAP are at present ongoing. In particular a study is being carried out to review energy production in the region and to identify what type of activity MED POL could realistically deal with in the context of the pollution reduction process of the SAP and the NAPs. The results of the study will be presented to Contracting Parties together with specific proposal on activities for review and approval.

As a result, during the biennium 2008-2009, it is proposed to develop guidelines to facilitate the implementation of renewable energy (RE) and energy efficiency (EE) policies in an environmentally sound manner at national and local level and to prepare a pilot project portfolio for long-term implementation.

The implementation of selected pilot projects will be focused mainly on: a) Deployment of financing sources and mechanisms options for the financial support to implement the SAP related with Energy; b) Transfer EE & RE technology to recipient countries; c) Capacity building related to pilot projects.

Likewise, during next biennium a study on the environmental effects of maritime transport will be carried out in cooperation with REMPEC and specific proposals will be made to Contracting Parties for possible activities to be implemented in the long-term in the framework of Phase IV.

4 INSTITUTIONAL ARRANGEMENTS

4.1 National level

The Barcelona Convention and its Protocols stipulates a number of obligations that must be assumed by the Contracting Parties. Many tasks that were initiated during Phase III in fulfillment of such responsibilities will continue during Phase IV. Thus, countries will continue to ensure the coordination of policy-making, monitoring and pollution mitigation. Results from the monitoring programme will be integrated for purposes of environmental assessments and reporting to MED POL. MED POL Phase IV will increase the scope and importance of these activities. An adaptive management approach will help cope with change and will facilitate programme implementation. Modifications to the overall management strategy will entail the restructuring and clarification of coordination roles. New mechanisms can be explored with respect to providing translation services, promoting public awareness of MED POL and making in-kind contributions.

Coordination of MED POL activities at the national level: The Secretariat believes that, considering the multidisciplinary aspects of the pollution reduction process, the need to involve other national stakeholders (e.g. Ministries of finance, of public works, etc.) in addition to the Ministries of Environment could be the key to achieve concrete results. To that end, the use of existing mechanisms, or the creation of new ones, in each country to ensure appropriate coordination and integration in their national programmes of the MED POL activities, and in particular those of the SAP, would be very beneficial.

MED POL National Coordinators: Although each Mediterranean country has, to different extent, a national pollution control programme, operational mechanisms differ considerably from country to country. The Secretariat believes that the implementation of MED POL, including the SAP, at the national level can be successful only if it is implemented in the framework of its national pollution control programme and its national development plans. For this reason, the full integration of national MED POL activities, including the SAP, in the national pollution control programmes and national development plans should be sought. A procedure will be formulated to involve the Meeting of MED POL National Coordinators in the process of preparing the periodic assessments of the quality of the marine environment. The feasibility of establishing a procedure for the introduction of operational changes in the programme that would not require approval of the Contracting Parties (e.g. changes in monitoring guidelines) will be

examined. The role and the function of the MED POL National Coordinator is at present being reviewed by the MAP evaluation process which will be concluded by the end of 2007.

Novel In-kind Contributions to MED POL: New approaches to providing in-kind contributions to the MED POL Programme can be explored. National Coordinators or Collaborating Institutions may be able to provide assistance to the organization of training and capacity building activities, as well as the preparation of technical meetings, documents and guidelines. In particular, countries could assume the responsibility for translating specific MED POL documents, such as Guidelines, Manuals and promotional and information material, into their national language. In addition, countries could play a leading role in specific areas or issues of regional concern for the benefit of the whole region. This has been successfully experimented in other Regional Seas Programmes (such as OSPAR and HELCOM) where countries were responsible for the preparation of specific regional assessments or studies.

Public Awareness: In support of the MED POL information and communications strategy, as a follow up to the MAP information Strategy being prepared, countries should ensure to have national web sites written in their native language. The sites would present timely information on the monitoring activities, pollution assessments, and outcomes. These national web sites could highlight efforts, and especially successful case studies, aimed at pollution mitigation and remediation, e.g. information on the implementation of their NAP. They could also serve as mirrors sites for accessing MED POL documents, information and promotional material available in their native language.

4.2 MED POL Unit

The responsibilities of the MED POL Unit have increased over time. Changes were, of necessity, managed during Phase III chronologically in an incremental way. The management challenge of Phase IV is to achieve better integration of the various components into which MED POL has grown (e.g. the monitoring and the implementation of the SAP) and to react operationally to the recommendations made as result of the review of MED POL Phase III (UNEP(DEC)/MED WG.264/3). Moreover, following the results of the MAP evaluation to be finalized by the end of 2007, MED POL will adapt its management strategies according to the decisions of the Contracting Parties.

Coordination to harmonize national activities: Under the guidance and supervision of the relevant structures established under the MAP and the Barcelona Convention, the Secretariat will continue to play a central coordinating role for MED POL, ensuring the harmonization of national activities at the Mediterranean level, and effectively and meaningfully monitoring their implementation. Specific tasks for MED POL and the related RACs in relation to monitoring and assessment will be further identified at a later stage when the applying the ecosystem approach. WHO will continue to collaborate on a full time basis for the implementation of all health related aspects of the Programme. In the preparation of "guidance documents" for conducting MED POL activities (e.g., various technical and policy documents, guidelines), all efforts will be made to take into account the work already carried out by other regional and international bodies and special but critical attention will be paid to their harmonization with other relevant

documents developed at the regional and international levels by the European Commission and Union and other international organizations.

Provision of advice for obtaining external financial assistance: Sustainable financing is clearly critical to the process of the implementation of the NAPs. As indicated earlier in this document, the Secretariat has been working with GPA and other donors to facilitate the process of ensuring the financial sustainability of NAPs. Assistance will continue to be provided to the countries for the development of specific initiatives, building on the short-term arrangements for the financing of priority actions in NAPs and framework conditions developed for the implementation of medium to long-term actions, including a proposal for a region-wide mechanism/platform to strengthen long-term sustainable financing. Thus, a key ongoing role will be to catalyze and facilitate the mobilization of external funds (*i.e.* from the GPA, EU, private industry, and other donors) to assist Mediterranean countries in the implementation of NAPs.

New Collaboration: The Secretariat will examine how some of the functions and responsibilities could be assumed by or shared with the National Coordinators or Collaborating Institutions. By continuing a process initiated during Phase III, the Secretariat will explore new cooperation with relevant international and intergovernmental organizations, global conventions and programmes. The Secretariat will seek support from national structures hitherto not formally associated with MED POL, such as the tourism-based economic sector, local authorities and non-governmental organizations.

5 MONITORING AND EVALUATION OF MED POL PHASE IV IMPLEMENTATION

The importance of a review process was highlighted during Phase III. Regular review meetings have in the past facilitated the exchange of information between national experts, national authorities and the Secretariat and had a beneficial effect on the implementation of activities. Successful implementation of the MED POL Phase IV will require periodic monitoring and evaluation in order to respond to changing information needs and improve operational procedures. A strategy for prompt remedial action should be in hand for each component under review in the event that failures or weaknesses are identified.

The Table here below intends to create a platform for an easy monitoring of the implementation of the activities of Phase IV.

It should be noted that, under target date, the * placed after 2013 is used for activities intended as continuous throughout the Phase IV (2006-2013).

Policy Relevance	Activity	Expected results	Target date	Source of information and Verification	Responsibility Possible partnerships/related initiatives	
	Implementation of LBS Protocol					
-LBS Art.5 and 15 -SAP	Ensuring the financing of NAPs	50% of NAPs priority actions financed	2013*	National, EIB and WB implementation reports	CPs ensure financial resources. MEDPOL facilitate the contacts with potential donors and provides technical assistance with CP/RAC	-EU 2020 -GEF SP
-LBS Art.4	Estimation of the Inputs from diffuse sources	Models for the quantification of releases from rivers and watershed developed	2011	Reports prepared and published	MED POL with relevant Mediterranean institutions	-GEF SP
-Agenda 21 -JOP -MSSD -SAP	Development of a differentiation mechanism for pollution reduction	Differentiation mechanism based on ELVs	2009	Mechanism adopted by CPs	MED POL with regional experts	-Kyoto protocol -IPPC - EU emission trading directive
-LBS Art.5 and 15 -SAP	Implementation of MED POL-related activities of the GEF Strategic Partnership	Policy reforms related to tanneries, fertilizers, lubeoil, batteries are developed in selected countries	2012	Project Progress reports	MED POL in cooperation with CP/RAC and UNIDO and NCs	

	Implementation of the Dumping Protocol					
-Dumping Protocol Art.6.2	Implementation of adopted guidelines	Entry into force of dumping protocol. Reduction of number of dumping permits	2013*	National reports, Number.of MOUs between MEDPOL and CPs	MED POL in cooperation with relevant NCs and London Convention secretariat	London Convention
	Implementation of the Hazardous Waste Protocol					
-Hazardous Waste Protocol Art.4	Implementation of PCB component of GEF Strategic Partnership	Disposal of 1100 tons of PCBs from 5 countries. Strengthening the capacities and capabilities of Mediterranean countries	2012	Project progress reports, Number of authorizations for PCBs disposal in 5 countries	MED POL in cooperation with CP/RAC and UNEP/Chemicals	Basel Convention and its Centres (BCRCs)
-Hazardous Waste Protocol Art.5.5 and 8	Strengthening the Cooperation with Basel Convention Regional Centres through the implementation of joint projects	Regional model for management of hazardous wastes. Action Plan to combat illegal traffic of hazardous waste in Arabic world	2013*	Minutes of coordination meetings, Number of MoUs between MED POL and BCRCs	MED POL in cooperation with NCs , BC and BCRCs	Basel Convention and BCRCs
-Recc. CPs Meeting, Catania, 2003	Implementation of Regional Plan for the reduction of generation of hazardous wastes	Reduction of 20% of the generation hazardous waste from selected industrial sectors	2010	National reports	MEDPOL in cooperation with CP/RAC and NCs	
	Assessment of the implementation of the Protocols					

-Art. 12 of the Convention and art. 8 of LBS protocol	Establishment and implementation of national monitoring programmes in all countries	National and regional databases of results	2011	Number of NMPs and agreements signed; National reports	CPs in cooperation with MED POL	
-MED POL IV	State and trend monitoring	Data on chemical contaminants	2013*	National reports on the state of the marine environment	CPs with MED POL assistance	
-MED POL IV	Health-related monitoring	Data on bathing and shellfish growing waters	2013*	Relevant national reports	CPs with MED POL assistance	
-SAP -MED POL IV	Monitoring of loads	Updated NBBs	2012	Relevant national reports	CPs with MED POL assistance	
-MED POL IV	Monitoring of biological effects	Data on biological effects	2013*	Number of laboratories participating	CPs with MED POL assistance	
-MED POL IV	Eutrophication monitoring	Data on eutrophication	2013*	Number of laboratories participating	CPs with MED POL assistance	
-MED POL IV	Baseline studies	Data and reports	2010	Number of laboratories participating	CPs with MED POL assistance	EU projects e.g. MYTIMED
-MED POL IV	Development and/or updating of common monitoring and analytical methodologies	Common methodology available and posted in the website	2010	Document and website	MED POL in cooperation with IAEA	
-MED POL IV	Implementation of a Data Quality Assurance Programme	Good quality data	2013*	Number and reports on intercalibration exercises	MED POL in cooperation with IAEA, Alessandria University, QUASIMEME	-IAEA -QUASIMEME -Alessandria Univ. -BEQUALM
-Art. 12 of the Convention	Preparation of reports based on data interpretation	Status and trends reports	2010	Report on the state of marine environment	MED POL with CPs	EEA EMMA

-Recc. CPs Meeting, Catania 2003	Development of Marine Pollution Indicators MRIs	Strengthening the capacity and capability of the CPs to assess MRIs	2010	DPSIR Indicators-based assessment of the state of marine environment	MED POL in cooperation with EEA, BP , MedStat and NCs	-EEA -Blue Plan
-SAP	Regular updating of Pollution Hot Spots Report, taking into account all available data including NAPs and NBBs	Tracking countries' pollution reductions	2009 2013	Two reports on Hot Spots	MED POL in cooperation with NCs	

	<i>Use of implementation tools</i>					
-LBS Art. 10	Organisation and implementation of capacity building programmes	National capacity improved (capacity building)	2013*	Reports of the training courses on chemical and microbiological parameters	MED POL in cooperation with IAEA and WHO	
-Art 15 of Convention	Development of MED POL Information System	Intranet and online reporting system for MED POL	2009	System operational	MED POL with cooperation of Info/RAC and NCs	-EMWIS(SEMIDE) -EUWI-MED
-LBS Art .5,9,10	Establishment of transfer of technology mechanism	Mechanism for transfer of technology	2011	Mechanism agreed upon by CPs	MED POL	-CP/RAC
-LBS Art 6	Preparation of country tailored action to strengthen the inspectorate system; meetings of the network on compliance and enforcement	Establishment and/ or strengthening of Inspectorate systems in all countries; capacity building programmes	2013*	Reports of meetings of network Indicators based National reports on inspection; number of trained experts	CPs with WHO/MED POL assistance	GEF SP
Recc. CPs Meeting, Malta, 1999	Launching of PRTR in all countries	Reporting format and data base established in all countries	2011	MoUs and contracts between MED POL and CPs	MED POL in cooperation with ICS-UNIDO and NCs	-EC (EPER) -UNECE

	<i>Physical alteration and destruction of habitats</i>					
-Recc. CPs Meeting, Catania 2003 - LBS Art.5	Programmes related to environmental and permitting aspects of desalination	Increased number of EIA studies for sea water desalination plants; desalination activities treated as part of the LBS Protocol	2013*	National reports	MED POL in cooperation with NCs	-European desalination Society (EDS)
-Recc. CPs Meeting, Malta 1999 - LBS Art.5	Implementation of coastal litter management programmes	Strengthened capacity of CPs to deal with coastal litter management	2013*	MoUs and contracts between MEDPOL, CPs, NGOs	MED POL with NCs and NGOs	-UNEP-RS -GPA -NGOs
	<i>Socio-economic roots of environmental degradation</i>					
-LBS Art.7	Socio-economic aspects of environmental degradation taken into account throughout MED POL IV	Comprehensive assessment of SoE	2013*	DPSIR Indicator-based state of marine environment report	MED POL in cooperation with BP and EEA	-EEA -BP

	Public health					
-LBS Art. 7 -MED POL IV	Finalization and adoption of Guidelines on bathing waters	Agreed Guidelines; Beach profiles methodology agreed	2009 2011	Report of Meeting of NCs; Beach profiles in all countries	CPs with MED POL/WHO assistance	-WHO/EURO
-LBS Art. 7 -MED POL IV	Consultation meetings and inter-calibration exercises	Assessments of bathing water quality	2013*	Reports of the meetings; country reports on compliance	CPs with MED POL/WHO assistance	-WHO/EURO
-MED POL IV	Preparation of an Action plan related to health risks in tourist establishments	Pilot study prior to implementation; all components of the action plan implemented	2009 2013*	Integrated action plan; Report on the implementation of action plan	CPs with MED POL/WHO assistance	-WHO/EURO
-LBS, Art. 8 and Annex I - SAP	Enhancement of Wastewater treatment and management issues	Increase number of wastewater treatment plants in coastal Mediterranean cities and improvement of the quality of receiving waters	2013*	Assessment reports on the activities for improved sanitation	CPs with MED POL/WHO assistance	
-SAP	Implementation of the guidelines on the reuse of treated wastewaters; capacity building	Scientists trained; guidelines applied	2009	Progress Reports on the application of guidelines and on the training courses	CPs with MED POL/WHO assistance	-WHO/EURO

	Cooperation					
-MED POL IV	Continued cooperation with MOON	Access to additional and complementary data and information	2013*	MOU signed Common projects	MED POL	-MOON -MEDGOOS
-LBS Protocol	Continued involvement of WHO	Human health aspects properly treated in MED POL IV	2013*	Regular reports on activities	MEDPOL in cooperation with WHO/EURO	WHO/EURO
-Recc. CPs Meeting, Portoroz (2005)	Cooperation with RACs strengthened through specific joint activities	Shared information and experience; overlaps avoided	2013*	Minutes of coordination meetings; results of joint projects	MED POL and RACs	RACs
-LBS Art.5 and 15 -Recc. CPs Meeting, Portoroz (2005) -SAP -EU 2020 Initiative -MAP-EU work programme	Involvement of MED POL in the implementation of the EC Horizon 2020 Initiative and the European Marine Strategy	Implementation of investment projects listed in the NAPs	2013*	Minutes of meeting with EC and EIB. Number of project financed	MED POL in cooperation with EC, EIB and NCs	-EC -EIB -WB-METAP
-Recc. CPs Meeting, Catania 2003 -MAP-EEA cooperation programme	Cooperation with EEA in the field of reporting and indicators	Concise and harmonized set of indicators	2013*	DPSIR Indicators based state of marine environment report	MED POL in cooperation with EEA , BP and NCs	-EEA -BP -MEDSTAT
-MED POL IV	Involving NGOs in MED POL Phase IV activities	Larger participation of civil society in MED POL activities	2013*	Number of agreements between MEDPOL and NGOs	MED POL in cooperation with NCs and NGOs	NGOs
-LBS Art.5,15 -Recc. CPs Meeting, Portoroz 2005	Continuation of the cooperation with GEF and FFEM	Projects financed by GEF and FFEM	2013*	Minutes of coordination meetings	MED POL	-GEF -FFEM -WB

	Stakeholder involvement					
-Art.15 of Convention	Involvement of National and regional Stakeholders in the implementation of NAPs	Implementation of NAPs facilitated	2013*	National reports, number of agreement between MED POL and stakeholders	MED POL in cooperation with NCs and stakeholders	- BC - ASCAME - CP/RAC
-Art.15 of Convention	Strengthening the cooperation with private sector in cooperation with CP/RAC	Partnerships with industrial association	2013*	Minutes of meeting with CP/RAC, MAP-NFPs meeting reports	MED POL with NCs and industrial stakeholders	-Industrial associations -CP/RAC
	Public outreach					
-Art.15 of Convention	Establishment of MED POL Information System	Information system fully operational; better shared information on MED POL	2009	System operational	MED POL in cooperation with INFO/RAC	-INFO/RAC -EMWIS-SEMIDE -EUWI-MED
-Art.15 of Convention	Implementation of MAP Information Strategy by MED POL	Increased visibility of MEDPOL	2013*	National reports	MED POL with MAP and Info/RAC	-INFO/RAC -EMWIS-SEMIDE -EUWI-MED
-Art.15 of Convention	Preparation of National Web sites on MED POL activities and achievements	Increased visibility of MEDPOL at national level	2010	Websites operational	NCs assisted by MED POL	-INFO/RAC -EMWIS-SEMIDE -EUWI-MED

	Application of the ecosystem approach					
-Recc. CPs Meeting, Portoroz 2005	Assistance in the development of ecological objectives, ecological indicators and target levels in the framework of the application by MAP of the ecosystem approach to the management of human activities	Ecological objectives, ecological indicators and target levels	2011	Report of Meetings	MEDU and CPs in cooperation with MED POL and all RACs	-OSPAR -HELCOM -EU
	Scientific collaboration					
-Art 13 of Convention -Art. 9 of LBS -MED POL IV	Maintaining close contacts with the scientific community	MED POL is kept up-to-date on scientific developments and emerging issues; MED POL scientific work is shared with the scientific community	2013*	Scientists actively involved in MED POL activities (contracts, workshops, etc.)	MED POL in consultation with NCs	
-Art. 13 of Convention -Art. 9 of LBS -MED POL IV	Relevant research projects are carried out	Emerging issues are identified and assessed; monitoring is supported	2013*	Research contracts; reports published	MED POL and research Institutes	Research Institutes

	<i>Fisheries</i>					
-MED POL IV	Monitoring of environmental effects of fisheries carried out in conjunction with the application of the ecosystem approach	National monitoring programmes providing a more complete picture	2013*	Updated monitoring programmes	MED POL and participating institutes	-GFCM -FAO -SPA-RAC

	Energy production and maritime transport					
MED POL IV	1. Develop guidelines to implement in an environmental sound manner for marine and costal ecosystems the EE & RE at National and Local Level.	1. Policy and Measure to implement EE &RE in the Mediterranean (not only CO2 but to reduce pollution at sea and in air).	2009	1a. Document/ Report, test (adapt to countries needs), technical assistance 1b. Implementation in 5 countries in North Africa and Middle-East by 2015/Reports	MEDPOL in cooperation with CP/RAC and Plan Bleu	MEDREP, Italian Ministry for the Environment, Land and Sea, EU Energy Policy, CP/RAC activities, Plan Bleu Policy Energy
	2. Prepare a Pilot Project portfolio focused on: 2a. Deployment of financing sources and mechanisms options for the financial support to implement the SAP related with Energy; 2b. Transfer EE & RE technology to recipient countries; 2c. Capacity building related to pilot projects	2. Design a concept and logical framework of EE & RE: 2a. Create a financial facilities in two target Countries to support the implementation of EE & RE projects; 2b. Identify the BAT in the selected RE sectors and design the project document/Prepare a bid/call to implement the projects; 2c. Develop and implement a capacity building programme	2009	2. Preparation of documents on EE &RE of the overall project; Start up 8 projects in North Africa, Middle East and South Eastern EU. 2a. Start up 2 projects in North Africa, Middle-East and South Eastern EU by 2009 2b. Start up 3 projects in North Africa, Middle-East and South Eastern EU by 2009 2c. Handbook for EE & RE training program/ Twinning program	MEDPOL in cooperation with National and International Institutions/ Governments	
	3. Implementation of selected pilot projects	3. EE and RE implemented in selected countries	2013	3. Reports from countries	MED POL in cooperation with CP/RAC and national institutions	

	<i>Institutional arrangements</i>					
-MED POL IV	National contributions in kind and cash provided to MED POL activities	Better participation of countries in MED POL activities; possibility for a better and wider activity coverage; more country ownership	2013*	Amount of external assistance to MEDPOL	CPs	
-MED POL IV	Countries playing leading role in specific MED POL activities	Improvement of the cooperation between MED POL and CPs	2013*	Proposals made by countries for leading specific activities	CPs	-OSPAR
-MED POL IV	Coordination with regional and international stakeholders (including civil society) achieved by MED POL unit	More effective implementation of activities through participation of stakeholders	2013*	Progress Report on steps made by MED POL	MED POL	
-MED POL IV	Sustainable financing mechanism properly managed by MED POL unit	Countries better informed of finance opportunities; better links between countries 'needs and finance opportunities	2013*	Project proposals prepared and submitted by countries to donors and banks; projects implemented	MED POL	GEF-SP