



United Nations Environment Programme



UNEP(DEC)/MED/GEF WG.245/4
06 February 2004

ENGLISH



MEDITERRANEAN ACTION PLAN

Training course for the preparation of Sectoral Plans and
National Action Plans in the framework of the strategic Action Programme (SAP)

Izmit (Turkey), 4-6 March 2004

STRATEGIC ACTION PROGRAMME (SAP)

**WORKING DOCUMENT FOR THE TRAINING COURSE ON THE PREPARATION OF NATIONAL
ACTION PLANS AS PART OF THE SAP**

In cooperation with



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1. INTRODUCTION

The formulation of National Action Plans (NAPs) represents the operational long-term aim of the Strategic Action Programme (SAP), as the National Action Plans are expected to make use of the results of the individual activities identified in the SAP. According to the SAP Programme, the Contracting Parties will develop or review and adopt, by the end of 2003 at the latest, National Action Plans (NAPs) addressing pollution from land based sources. This implies the adoption of the targets and activities identified in the SAP. In order to facilitate the achievement of the SAP targets, a part of the NAP will be dedicated to the economic instruments to be introduced/adapted in order to address marine pollution from land-based activities. Action towards the implementation of the NAPs is to be pursued *inter alia* through bilateral, regional and international co-operation. Details on the conceptual as well as the institutional framework of the SAP are presented in the **Operational Document for the implementation of the SAP (UNEP,)**.

National Action Plans are iterative processes that call for the phased implementation of priorities identified within a cross-sectoral, participatory framework. By enabling long-term prioritisation, a country's national action plan becomes a cyclical process that enables stakeholders to progressively identify and address threats and impacts to the marine and coastal environments. Its fundamental goal is to develop concrete projects that:

- mobilise both stakeholders and resources,
- build upon National Diagnostic Analysis (NDA),
- are mainstreamed into relevant institutional, budgetary and policy frameworks,
- incorporate lessons learnt in the process.

National Action Plans are foreseen to focus on sustainable, pragmatic and integrated environmental management approaches and processes, such as integrated coastal area management, harmonized, as appropriate, with river basin management and land-use plans. Towards this end the work actually executed under the sustainability of the SAP MED on the development of economic instruments and on their implementation will play a significant role, as is capacity building of national professionals in the use of these instruments.

Set Integrated Management Objectives.

The present working document is prepared specially for the training course. It contains almost all information generated by GPA/MAP, MED POL, CP/RAC, PAP/RAC and other organizations which could be used in the framework of the preparation of SAP/NAP.

2. OBJECTIVES OF THE NAPS

The basic objectives of NAPS are to:

2.1 Set Integrated Management Objectives

For the priority problems identified in the NDA, it is important that integrated management objectives be defined via a process involving as many stakeholders as possible. Objectives should be set forth in terms of:

- overall goals, targets and timetables;
- specific targets and timetables for the geographical areas affected; and
- specific targets and timetables for industrial, agricultural, urban and other sectors.

Management objectives can be both quantitative and qualitative. They must be realistic. They should also demonstrate a commitment to action on the ground, and generate awareness, support, and incentives for the continued development of the national programme. Information on how to set management objectives can be found in the **SAP Operational Document for the implementation of the SAP (UNEP) and the specific regional priorities in each country are described in the Technical Report MTS No , on the Identification of the priority pollution hot spots and sensitive areas (UNEP/WHO**

2.2 Establish an Institutional Framework

The process of initiating a national action plan NAP should endeavour to build upon existing capacity and institutions. Therefore, the following activities should be carried out:

- An assessment of existing institutions, agencies and associations with relevant mandates, both in the private and public sectors;
- Evaluation existing capacity for the allocation of human, financial and technical resources; and,
- Assessment of the existing legislation, relevant for the foreseen activities and targets; and,
- Identification of capacity building requirements, at the national, sub-national and local levels. Capacity requirements that may be associated with specific projects, particularly at the local level, should continue to be identified within the programme development process.

Such an assessment should provide necessary information for mainstreaming the NAP into the relevant policy and strategy frameworks at the national and administrative region(s) level, into the institutional arrangements of relevant government agencies, and into budget definition processes. As a long-term process, a national programme of action should also have sustainability mechanisms built in. The institutional arrangements for the SAP (and the preparation of NAP) are described in the **Operational Document for the implementation of the SAP (UNEP)**. Taking into consideration this framework, the national authorities in each country will work out the most appropriate national institutional framework.

2.3. Formulate principles, approaches, measures, priority actions and deadlines for the implementation of SAP within the national framework

The definition and assignation of responsibilities for identified tasks and activities is an ongoing process that evolves in parallel with the development of the NAP. Using the information provided in the **SAP Operational Document (UNEP)**, the SAP team should ensure that responsibilities are clearly defined and assigned throughout the process,

with their respective timetables. Because of the multi-disciplinary and cross-sectoral approach of the NAP, a lack of clarity in the assignment of tasks may result in duplication or fragmentation of work, or oversight of given activities. The definition of a calendar of implementation or timetable will help participants to co-ordinate the delivery of various outputs. The overall deadlines are set by the Contacting Parties (**UNEP, 2001**), but specific priorities and relevant deadlines should be set by the SAP/NAP national authorities.

A national programme of action should incorporate a general framework for action in the industrial sector including guides for applying BATs, BEPs and CTs in industries, and especially guides for BATs and BEPs for controlling industrial sources of BOD, nutrients and suspended solids. This approach will facilitate the countries moving towards the 50% BOD input reduction addressing a variety of industrial sectors.

Regional plans for reduction of industrial hazardous wastes have to be prepared in order to provide a framework for action by setting priorities, present the status and trends in the region where specific problems to be tackled might be identified, and also, provide technical options for preventing pollution at source for some industrial sectors generating hazardous solids.

The NAP has to include a strong monitoring and evaluation component, because:

- Ongoing monitoring and assessment of activities under the national programme are essential for their sustainability and continued relevance;
- Evaluation is necessary both during the implementation of a project and once it is finalised; and,
- Evaluation of the effectiveness of proposed steps and projects sets the basis for the iterative process of adjusting and updating the NAP.

In the frame of the monitoring activities, the countries will have to report on hazardous waste, because otherwise, there would be no follow-up to the plan and progress achieved towards 20% reduction could not be assessed.

2.4. Prepare the resulting Investment Portfolio (IP)

A concrete financial strategy, that mobilises public-private partnerships, is required for:

- Development of the overall NAP framework; and
- Development and implementation of selected priority actions.

The Investment Portfolio must include:

i) Definition of financial resource needs

- Detailed cost estimates, including the cost of no action, whenever possible;
- Assessment of benefits derived from the project, both in general terms and in terms of specific stakeholder groups;
- Evaluation of relevant resources and environmental services;
- Technical / feasibility studies, if available;
- Pre-investment studies, if available;
- Identification of further investment opportunities;
- Identification of opportunities for promoting public-private partnerships (both domestic and foreign).

In addition, and as feasible, the financial strategy should also assess the cost of support elements such as capacity building, training, monitoring and evaluation, and enforcement.

ii) Identification and mobilisation of partners

The SAP/NAP national team should use the available PAP/RAC documentation in order to assess existing financial mechanisms and of the availability of financial resources for investment in the environment in the country. That will include:

- Assessment of the specific requirements, budget cycles, priorities, and financial services and products offered by each potential partner; and,
- Assessment of availability of funding sources for the private sector, through *inter alia*, development grants, subsidies, "soft loans", and/or new lending facilities that provide credit at preferential rates.

iii) Development of Public-Private Partnerships (PPP)

In this task, the capacity of the public sector to negotiate sustainable investment contracts with the private and financial sectors needs to be strengthened. It is recommended that:

- Checklists on issues to address when negotiating contracts be developed;
- Overviews of alternative options for each of these issues be prepared;
- Clear guidance on sustainable practices be developed; and,
- Projects that have a solid demonstration function be identified and developed.

2.5. Elaborate the proposals for introducing new or adapting the existing economic instruments

The objective of the economic instruments (EIs) to be introduced in the countries is to facilitate the realisation of the targets and objectives set up by the SAP. This can be achieved in 3 ways:

- a) encouraging the change of polluters' behaviour
- b) raising revenues through internalising environmental or depletion cost
- c) improving natural resources management

EIs to be introduced should be selected according to 2 major issues:

1. SAP targets and objectives; and
2. Major pollution issues and major areas of concern identified within the NDA. Useful information can also be found within the Document on Hot Spots and Endangered Areas (**UNEP MAP/WHO, 1999**) and the Document "Regionally based assessment of persistent toxic substances" (**UNEP Chemicals/GEF, 2002**).

In order to be in line with the SAP MED targets and objectives, EIs that are to be proposed for implementation in the framework of NAPs are divided into three groups: short-, medium- and long-term. Instruments that are to be introduced in the short term should be defined and elaborated in detail, while for the medium- and long-term instruments only the basic information about the EIs is requested. Since the chances for successful implementation of economic instruments depend on the numerous preconditions, institutional and legislative framework in particular, it is of utmost importance to realistically assess these preconditions, and to take them into account when proposing EIs to be introduced or adapted.

For the preparation of the proposals for introducing new or adapting the existing economic instruments "**Guidelines for the Preparation of National Action Plans for Economic Instruments to Address Marine Pollution from Land-Based Activities in GEF Eligible Countries**", are to be used. (**PAP/RAC , July 2003**). In this document a wide list of the EIs successfully used around the world is provided, and this list is to be used as the starting point.

2.6. Define the baselines and the priority activities for issues/actions of a transboundary nature

Because the NAP should build upon current information, NDA, databases and inventories, it is strongly recommended that a comprehensive evaluation be undertaken in order to evaluate current status, and identify research and information gaps. The evaluation should be carried out regardless of the number of existing assessments in order to gauge their quality and level. It is necessary to develop an integrated basis of analysis because assessments, databases or inventories can overlap, present gaps, or be impossible to compare and conciliate. Projects must be based on sound science. The identification of research gaps will assist in the definition of responsibilities and tasks.

In order to develop a comprehensive framework for action, the NAP should build upon the existing national policy framework. Therefore, an assessment of relevant policies, legislation, and regulations is essential.

For transboundary environmental problems in the Mediterranean region, the SAP/NAP national experts may use the Document on Transboundary Pollution (UNEP/WHO, 2003).

2.7. Identify NGOs' and stakeholders' role in the process, and encourage Regional Cooperation

In most instances, successful actions to protect the marine environment from land-based activities are dependent on regional and sub-regional co-operation. This is particularly relevant in enclosed or semi-enclosed seas. Regional co-operation supports an ecosystem approach to environmental management, and produces more efficient and cost-effective actions. Consequently, the activities and objectives of regional bodies, such as the respective Regional Seas programmes and regional economic organisations, must also be considered when determining national management objectives for the national programme of action.

Guidelines on Public Participation in the National Action Plans for the SAP/NAP, have been prepared by the MAP (UNEP/MAP) and are presented as a separate Document.

2.8. Elaborate monitoring and reporting system

Monitoring and the establishment of an environmental-quality reporting system imply not only the collection and analysis of information that can assist in evaluating project performance and decision making, but also mechanisms for ensuring that such results are communicated to all stakeholders, given that effective participation is based on access to sufficient and relevant information. Document (UNEP (DEC)/MED WG. : **Guidelines for the evaluation of the effectiveness of the Strategic Action Programme for the Mediterranean region**) describes the reporting system adopted by the CPs for the evaluation of the effectiveness and compliance to SAP. In order to ensure the feedback information, PAP/RAC has committed the experts and the teams preparing proposals on economic instruments to be introduced in the NAP to shortly report on the implementation of the planned EIs.

3. METHODOLOGY FOR THE PREPARATION OF THE NAP

The adoption of the SAP Operational Plan by the CPs in their 12th meeting in Monaco 2001 constituted a milestone in the implementation of the SAP through the elaboration and implementation of SAP/NAPs. The SAP Operational Plan was elaborated to increase the prospects of the SAP's success. It provides detailed flexible institutional and technical instructions, information and basic knowledge that would enable the SAP national and regional partners during the lengthy period of 25 years set out by the SAP to fulfil their commitments. Thus the elaboration of the NAPs passes through consecutive phases that should be performed to reach the phase of the formulation of the NAPs.

The general idea is to formulate Action Plans for each administrative region, targeting on the reduction/phasing out of specific pollutants. To prepare these Action Plans, the first step is to gather relevant information on the actual pollution problems from the National Diagnostic Analysis (NDA) and the Baseline Budget (BB) Reports, on administrative region level. Then the importance of these pollution sources will be evaluated using an issue/impact matrix, the priority issue will be identified and finally plans will be prepared to reduce pollutant's releases in the administrative region. A flow diagram for the formulation of the administrative region's plan is presented in Figure 1.

After the formulation of the administrative region plan, the national experts will use the available sectoral national plans in order to formulate the National Action Plan (NAP). The NAP will then be used to set up a list of priority actions in order to meet the country's targets on pollutant's releases from land-based sources for the year 2010. The flow diagram for the formulation of SAP/NAP is presented in Figure 2.

Therefore, the preparation of the NAP in every country will follow specific phases. A description of these phases are presented in the Document "**Guidelines for the preparation of NAP for the reduction of pollution of the Mediterranean from land based sources**" (UNEP/GEF). The outline of these guidelines has also been presented to the national experts for the NDA and BB preparation in 5 Regional meetings during 2002.

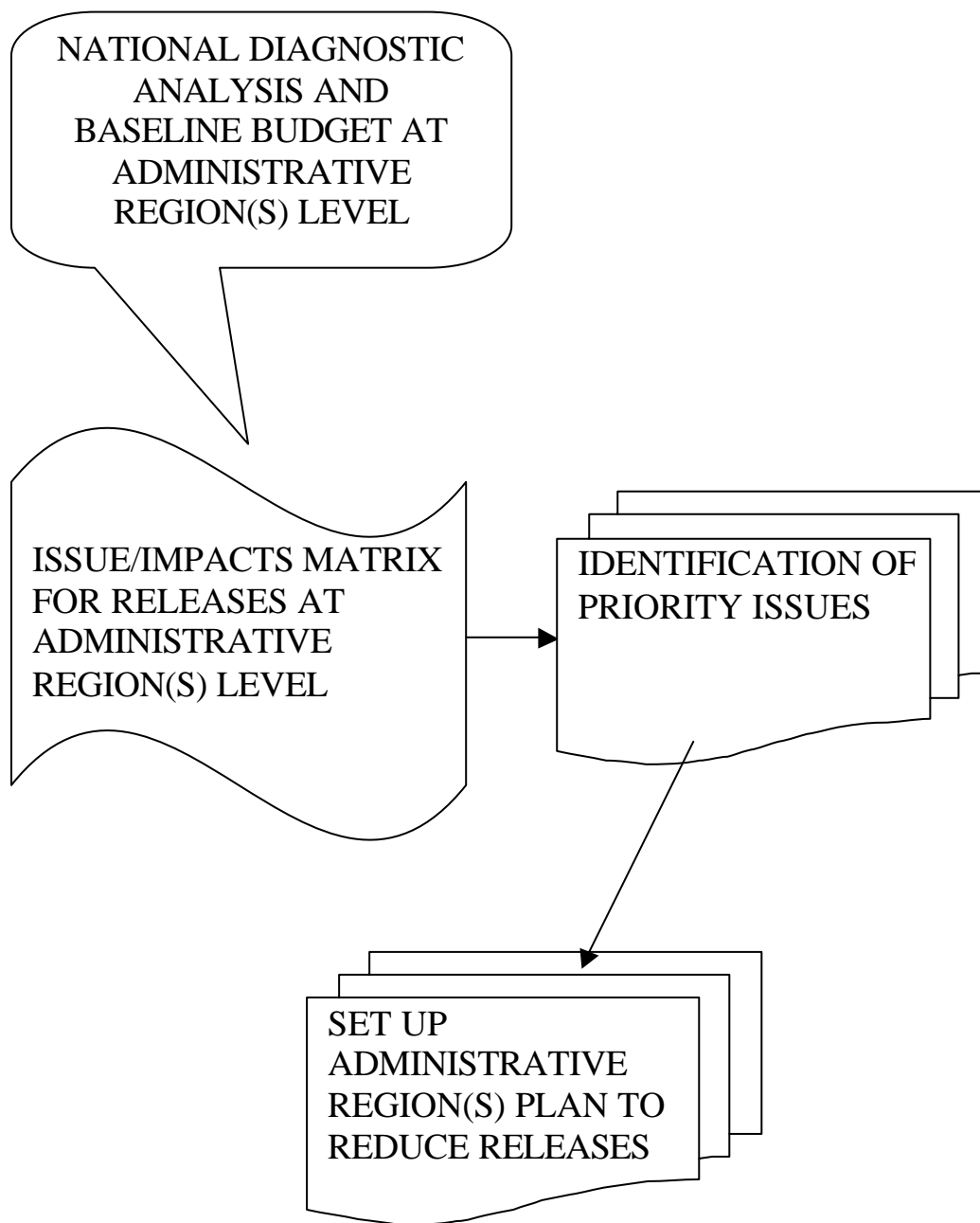


Fig. 1. Bottom – up approach for the formulation of the administrative region(s) plan

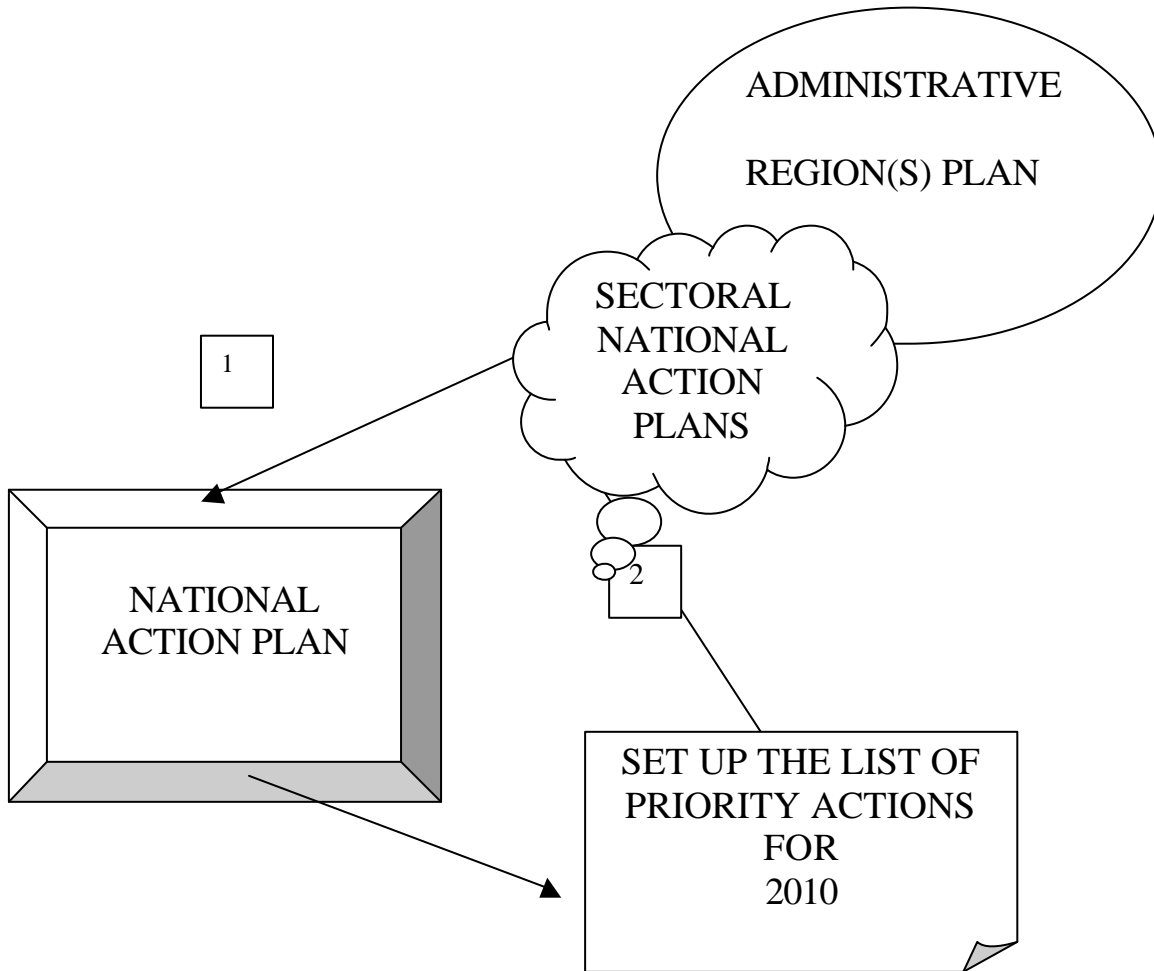


Fig. 2. Bottom-up approach for the formulation of the SAP/NAP

Phase-1-The National Diagnostic Analysis and Baseline Budget

The first phase is the preparation of the National Diagnostic Analysis (NDA) that covers all the sectors included in the SAP (see PHASE -4- of this document) and the calculation of the Baseline Budget (BB) for all SAP targeted pollutants.

As a result of the preparation of the NDA and Baseline Budget, countries will succeed to:

- identify the nature and severity of problems;
- identify the contaminants;
- identify the physical alterations and degradation of habitats;
- identify the sources of degradation;
- Identify the areas (spatial) of concern.

By the end of 2003, this phase has been almost completed. Sixteen (16) out of 21 Mediterranean countries have already prepared NDAs, which have been evaluated by the MED POL Secretariat. The remaining countries are expected to send their NDAs by the end of the year. A list of the NDAs already evaluated is presented at the end of the present Working Document (Available Documentation).

For the calculation of the Budget Baseline for industrial SAP targeted pollutants, a detailed methodology is given in the Document “**Guidelines for the preparation of Baseline Budget**” (UNEP/MAP). It is worthwhile to remind that the Baseline Budget for SAP targeted pollutant X is, by definition, the sum of the quantity of the releases of X from each coastal administrative region(s) in the national (jurisdiction) border. The Baseline Budget enables the country and the secretariat to fix a reference level of pollutant releases upon which tracking of the achievements (reductions) could be reliable and traceable. In order to help the countries calculate the BB for a variety of industrial sources, when no real measurements existed, a compilation of “emission factors” was proposed in an annex to the Guidelines. These emission factors were incorporated into an Access Data Base, which was able to calculate the releases of a series of SAP targeted pollutants using only production data and information on the production process, of a wide variety of industrial sectors of the Mediterranean Region. The BB calculation methodology and the use of the Access DataBase were presented to the national BB experts in 5 sub-regional meetings which were organised during 2002 by the MED POL Secretariat. National experts from almost all the Mediterranean countries took part in these meetings and the issues discussed helped harmonizing the calculation of pollutant’s releases from actual data or using the emission factors methodology.

Phase-2- National / Administrative Region(s) Issue/Impact Matrix

Following the preparation of a National Diagnostic Analysis (NDA) and the estimation of the Baseline Budget, the national authorities should perform a national matrix on the basis of administrative region(s) issues/impacts matrix. The matrix should be used to scale/score the environmental issues according to their relevance to the national socio-economic and environmental priorities and to the NEAP (National Environmental Action Plan), if available, taking into consideration the SAP targets and commitments.

The overall purpose of the matrix is to make the preliminary assessment of the relative importance of the different impacts on the coastal areas including marine environment. This information is needed to help in selecting the priority issues at national and administrative region(s) level for the final preparation of the NAP.

During the preparation of the NDA, the relative importance of different pollution issues on administrative region level has already been addressed (NDAs of Mediterranean countries).

A summary of the main pollution issues and areas of concern in the Mediterranean countries can be found in the Document on **Hot Spots and Sensitive Areas (UNEP MAP/WHO,)** and the Chapter 1 of the present Working Document. Also useful information can be found in the Document “**Regionally based assessment of persistent toxic substances (UNEP Chemicals/GEF,)**”. Every NDA includes information on the major pollution issues in the country, as well as the major areas of concern because of their environmental degradation. Additionally, the last chapter of the NDAs is devoted to the relative prioritization of the pollution issues on administrative region scale. This prioritization is made using, in many cases, an issue/impact matrix, which it has been proposed in the Document “**Guidelines for the preparation of NAP (UNEP/GEF,)**”. The issue/impact matrix is presented in **Annex I of the present Working Document**.

In order to achieve the matrix and the scoring/scaling exercise at the administrative region(s) level, the administrative region(s) local authority should consider setting up a management body (SAP Team) composed of administrators, technicians, scientists, representatives from local NGOs and other. The team would review the issue/impact matrix and impacts should be scored by each member of the SAP team using the information in **Annex (I)**.

Once the individual scoring of impacts is completed, the team would reassemble and, through discussion, reach a consensus on the scores and set up the list of priority issues for the concerned administrative region(s).

The scoring and scaling of issues should be based on existing data and NDA on impacts of individual environmental issue together with the administrative region expert's perception. The Interministerial Committee should consider the administrative region(s) plan as an integrated part of the National Action Plan. However, the already existing relative prioritization of the pollution issues, which is presented in the NDAs, can be used as initial information when scoring and scaling the issues.

Phase-3-Set up Administrative Region(s) plan

As presented in Figure , the Administrative region(s) SAP team should, score and scale the major issues that would be considered in 2010 administrative region(s) plan as it was adopted in the SAP operational strategy and guidelines for BB. For that purpose they can use the matrix presented in phase 2. The plan consists of a list of priority issues to be considered and a list of specific related actions that could ensure the reduction of releases of specific pollutants.

Phase-4- Set up National Sectoral Plans

Phase 4 consists of setting up sectoral programmes that will start to be prepared by small national working teams under the supervision of the interministerial committee. It will consist of plans necessary to fulfil the relevant provisions adopted on a regional level such as regional plans, guidelines, common measures, environmental quality criteria, emission/effluent limits, capacity building activities etc. and taking into consideration the administrative region(s) plans.

According to the SAP, sectoral programmes should cover the following:

- Sewage management
- Urban solid waste
- Air pollution
- Pollution caused by Hg, Cd, and Pb
- Organohalogenes: halogenated aliphatic hydrocarbons halogenated aromatic hydrocarbons, chlorinated phenolic compounds organohalogenated pesticides
- Wastewater and solid waste from industrial installations.

Sectoral programmes will form the basis of the National Action Plans and will therefore be prepared for all the priority areas for action to control pollution from land based sources identified in the SAP.

For all industries a series of documents are available from RAC/CP, including general guides such as: **Regional guide for the application of BATs, BEPs and CTs in industries; MOED: Minimisation Opportunities Environmental Diagnosis; Good Housekeeping Practices Programme – Design and application in industry**

MOED is a tool developed by RAC/CP for preliminary assessing of a company's situation in regard to environmental concerns, identifying the cleaner production measures that can be introduced in the company.

On a sectoral basis, RAC/CP documents are available on **industrial hazardous wastes reduction**, providing options for preventing pollution in several sectors such as **metal, oil refining, tanning, textiles, paper and used oils**. Also, **Regional guide for the application of BATs and BEPs in industrial sources of BOD, nutrients and suspended solids** provides options for preventing pollution in several sectors, such as food and beverages, textiles, tanning, paper, phosphatic fertilisers.

Other available documentation from RAC/CP include

- **Alternatives for preventing pollution in the surface treatment industry**
- **Pollution prevention in olive oil production**
- **Pollution prevention opportunities in the tanning sector industry within the Mediterranean region + KIT**
- **Pollution prevention in food canning processes (e.g. for Atlantis, fish canning and juice)**
- **Recycling possibilities and potential uses of used oils**
- **Pollution prevention in the textile industry within the Mediterranean region**
- **Regional guide for the application of BEPs for the rational use of fertilisers and reduction of nutrient loss from agriculture**
- **Database on cleaner technologies for the textile sector (available at RAC/CP web site)**
- **Database on cleaner technologies for the paper sector (available at RAC/CP web site)**

- **Med Clean case studies of companies from several sectors having adopted cleaner production measures, with information on economical implications.**
- **Guidelines for the management of industrial wastewater for the Mediterranean Region (UNEP MAP/WHO/GEF, 2003)**

Apart from those and other sources, highly valuable resources for the application of BATs are the **BREF documents** made for the European context and available at the web site of the **European IPPC Bureau** (<http://eippcb.jrc.es>), at different stages of development:

<ul style="list-style-type: none"> – Pulp and Paper manufacture – Iron and Steel production – Cement and Lime production – Cooling Systems – Chlor-Alkali manufacture – Ferrous Metal processing – Non-Ferrous Metal processes – Glass manufacture – Tanning of hides and skins – Textile processing – Monitoring systems – Refineries – Large Volume Organic Chemicals – Smitheries and Foundries – Intensive Livestock Farming – Emissions from storage of bulk or dangerous materials – Common waste water and waste gas treatment and management systems in the chemical sector 	<ul style="list-style-type: none"> – Economic and cross media issues under IPPC – Large Combustion Plant – Large Volume Inorganic Chemicals - Ammonia, Acids & Fertilisers – Large Volume Inorganic Chemicals - Solid & Others – Slaughterhouses and Animal By-products – Food, Drink and Milk processes – Ceramics – Management of Tailings and Waste-Rock in Mining Activities – Surface treatment of metals – Surface treatments using solvents – Waste Incineration – Waste Treatments – Speciality inorganic chemicals – Organic fine chemicals
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Proposed activities related to priority areas of particular relevance to the preparation of sectorial plans Programme are:

- The development of national programmes for the environmentally sound management of sewage.**
These programmes can be based on the Documents “Guidelines for sewage treatment and disposal in the Mediterranean region” (UNEP MAP/WHO/GEF, 2003) and “Guidelines for Municipal wastewater reuse for the Mediterranean Region” (UNEP MAP/WHO, 2003).
- The development of national programmes for the reduction at source and environmentally sound management of urban solid waste in coastal area.**
These programmes can be based on the Document “Guidelines on the Management of coastal litter for the Mediterranean Region” (UNEP MAP/WHO/GEF 2003).
- The development of national programmes to control air pollution from mobile sources**
- To prepare national programmes for the reduction and control of pollution by the heavy metals, mercury, cadmium and lead.**

These sectorial plans can be based on the Documents such as:

“Draft Regional Plan for the reduction of the generation of hazardous waste from industrial installations” (UNEP MAP 2003), “Regional Plan for the management of

hazardous waste including inventory of hazardous waste in the Mediterranean Region” (UNEP MAP/GEF, 2003), “State of cleaner production in the Mediterranean Action Plan countries” (RAC/CP, 2001).

- v) To prepare national programmes for the reduction and control of pollution by the following organohalogen compounds: Halogenated Aliphatic Hydrocarbons (chlorinated solvents, chlorinated paraffins), Halogenated Aromatic Hydrocarbons [Chlorobenzenes, polychlorinated naphthalenes, polybrominated diphenyl ethers (PBDEs) and polybrominated biphenyls (PBBs)], Chlorinated Phenolic compounds, Organohalogenated pesticides.

These Sectorial Plans can be based on the Documents such as:

- “Regional Plan on the management of PCBs and nine pesticides for the Mediterranean Region” (UNEP MAP/GEF 2003),
- “Draft Regional Plan for the reduction of the generation of hazardous waste from industrial installations” (UNEP MAP 2003),
- “Regional Plan for the management of hazardous waste including inventory of hazardous waste in the Mediterranean Region” (UNEP MAP/GEF, 2003), “State of cleaner production in the Mediterranean Action Plan countries” (UNEP MAP/RAC/CP, 2001),
- “Recycling possibilities and potential uses of used oils” UNEP MAP/RAC/CP, 2000).

- vi) To develop national programmes for the environmentally sound management of wastewater and solid waste from industrial installations which are sources of BOD.

These programmes can be based on the Document

“Regional Plan for the reduction of input BOD by 50 percent by the year 2005 from industrial sources for the Mediterranean Region (UNEP MAP/GEF 2003).

- vii) Updating and adopting of national regulations on sewage discharges to the sea and rivers
- viii) Establishing a system of previous authorization by competent national authorities for works which cause physical alterations of the natural state of the coastline or the degradation of coastal habitats
- ix) Phasing out the use of the nine pesticides, except for those for which WHO recommendations related to the safeguarding of human life suggest otherwise

These programmes can be based on the Document:

“Regional Plan on the management of PCBs and nine pesticides for the Mediterranean Region” (UNEP MAP/GEF 2003).

- x) Prohibiting the manufacture, trade and new uses of PCBs

These programmes can be based on the Document:

“Regional Plan on the management of PCBs and nine pesticides for the Mediterranean Region” (UNEP MAP/GEF 2003).

Phase-5- National Action Plans

As stated in the SAP, Mediterranean countries should elaborate their NAP to comply with SAP commitments. In case that some Mediterranean countries adopt a sectorial environmental plan approach to combat the pollution rather than National Action Plans, sectorial plans should be considered at the same level as NAP.

In Phase 5 national experts, in consultation and with assistance from the MAP/GEF project, will, in 2003-2004, prepare, on the basis of the sectoral programmes, the **National Action Plans**, which are expected to be submitted to the interministerial committee for formal adoption.

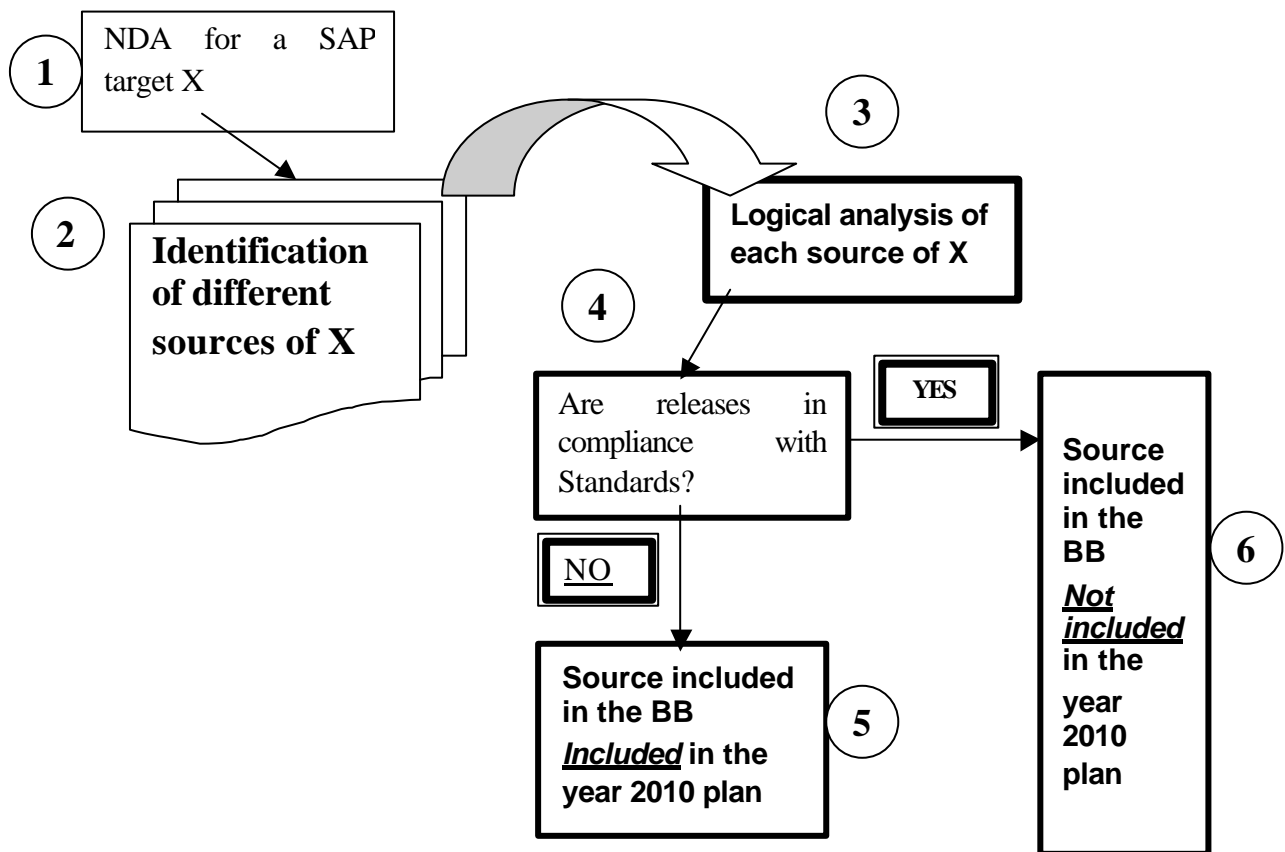
National Action Plans should be developed as a result of the NDA, BB and the sectoral programmes. Targets and activities identified by SAP should be respected as much as possible. In addition, national plan for action will take into account national reports on "pollution hot spots and sensitive areas" as well as the provisions of the LBS Protocol. All relative documents, which can be used in the preparation of the NAP, are included in the list of Available Documentation, at the end of the present Working Document.

In order to help the national experts who are preparing the NAP, a fictional case study of a NAP preparation is included Chapter 3 of the present Working Document.

Phase-6-Set up the National List of Priority Actions for 2010

Define Criteria for the Establishment of Priorities

The first goal of the S.A.P. (after the establishment of the Baseline Budget in 2003) is the reduction by 50% of the listed pollutants. For some pollutants this reduction should be achieved by the year 2005, while for most of them the same result should be achieved by the year 2010. The industries of the Mediterranean region can be categorized as those which have already implemented measures for the reduction of pollutants releases (to different degrees of success) and those which have done very little (or nothing) to prevent the pollutants releases to the environment. In order to deal with the above problem in a realistic manner, we could emphasize on the reduction of pollutant's releases from industries that do not use B.A.T. in their effluent treatment or to their production process. More specifically, we could consider two groups of industries; a) those which comply with national or/and international standards for the releases of pollutants and b) those which do not comply with the above mentioned standards. In the first phase of the implementation of SAP (year 2010) the goal will be the reduction by 50% of pollutants releases from industries that do not comply with the national/international standards. However, all industries (complying or non-complying with the standards) should be included in the list and their pollutant's releases reported: the Baseline Budget of the region (and the country) will then be calculated using all of them (**"Guidelines for the preparation of the Baseline Budget of pollutants releases"** [UNEP MAP,]).



NDA: National Diagnostic Analysis,
SAP: Strategic Action Programme
NAP: National Action Plan,
BB: Baseline Budget,
X: Specific pollutant

Fig. 3. Flow diagram presenting the logical flow chart for setting priority actions

The list of priority actions for 2010 is an important milestone in the implementation of the NAP. It should consider environmental and socio-economic issues, policy and legislative frameworks, and the management, institutional, and technical infrastructure available.

The list of priority actions (annex II) includes the actions or specific projects that would be implemented at the administrative region(s) level to reduce effectively the releases of a SAP targeted pollutants from a defined sources located in the administrative region(s). Actions could be of technical, institutional and management nature.

These actions should describe the following:

- the reduction that would be performed by the implementation of the action;
- identification of the stakeholders;
- the definition of the financial and administrative responsibilities of the stakeholders;
- identification of Economic Instruments
- the time framework for the implementation of the action;
- the reduction tracking method.

Identification of the Stakeholders

Over the recent years, Information, Awareness and Public Participation have gained an increasing relevance in the conception, preparation, adoption and implementation of any given activity or project aimed at protecting the environment while promoting sustainable development. The ultimate goal is to facilitate the participation of the concerned stakeholders in all stages of the process, and not limit their role to a mere collaboration in the phases of implementation of such activity or project. By doing so, stakeholders will be increasingly aware and thus more actively involved in the key issues affecting their daily lives. They will have the sense of ownership of decisions related to them and, consequently, their contribution to the process of implementation will be more efficient. At the same time, such involvement will also strongly help improve the substantive quality of decisions; increase trust in institutions; reduce eventual conflicts between these and stakeholders, and achieve cost-effectiveness.

As a result, actions are expected to be widely participatory and consultative. Therefore, the first objective of the core team is the identification and involvement, as early as possible, of key stakeholders, from both the public and private sectors, as well as civil society. The objectives are:

- To make potential investors and/or donors aware of the benefits and scope of the project;
- To ensure that the interests of all relevant stakeholders, including those of the private sector, are represented;
- To generate a sense of ownership, and of commitment, to the proposed activities and measures.

The UNEP/MAP Guidelines on Public Participation are targeted at ensuring the integration of the public participation component in the preparation, adoption, implementation and follow up of the National Action Plans (NAPs) within the Strategic Action Programme (SAP MED) to address pollution from land-based activities in the Mediterranean region.

These guidelines represent a general frame. Each country is expected to adapt and implement them according to its specificity. Each guideline includes a cluster of specific actions to be taken, depending on the situation in the country, and therefore they are neither inclusive, nor exclusive. In all cases, they intend to be integrated within the NAPs as an indivisible part of them.

Endorse Project at the National, and as appropriate, Sub-National Levels

Actions must have adequate political, institutional and financial support from relevant government authorities at all appropriate levels. The action should be officially endorsed by relevant authorities, and be integrated into existing planning and budgetary processes. Similarly, the action should be mainstreamed into relevant frameworks, including policy and legal provisions, enforcement mechanisms, and technical and scientific information and expertise.

In the short-term, domestic financial resources must be allocated to the actions from the annual budget; longer-term financial mechanisms should also be identified, earmarked or developed, that will ensure sustainability. Mainstreaming at all levels is a prerequisite for the effective implementation of an action.

Strengthen the Institutional & Policy Framework

The actions should be mainstreamed into, and build upon, existing national capacity and institutions. Therefore, key requirements are:

- Assessment of existing capacity for the allocation of human, financial and technical resources;
- Identification of possible capacity building requirements, particularly at the local level – depending on the type of project; and,
- Assessment of relevant policies, legislation, and regulations.

This exercise should be undertaken with a view to adequately providing for the sustainability of the actions. Aspects such as the need to harmonise legislation or clarify agency mandates may be decisive in the successful implementation of the actions.

Participation of the Private Sector

As key partners for sustainability, the private sector should be specifically targeted and engaged in the development of the proposed actions as early as possible. However, the private sector should not be approached merely as a potential source of financial resources, but as a partner that can benefit from the actions (in terms, for example, of corporate image, or of operational savings in possible fines for non-compliance with environmental regulations). Sectors such as tourism or fisheries, which depend directly on the health and sustainable development of coastal and marine resources, already have vested interests.

The participation of the private sector from the outset of the process creates solid public-private partnerships whereby:

- Specific interests, concerns and needs can be addressed;
- Ongoing or proposed projects and initiatives of the private sector can be built upon;
- Resources & expertise are maximised, and the duplication of initiatives is avoided; and,
- Potential sources of conflict can be resolved.

Consider Information Needs, Research & Monitoring

Given that actions will most likely build upon current information, assessments, databases and inventories, these should be analysed in order to:

- Evaluate their current state, and,
- Identify potential data-collection, information, and research needs.

The sustainability of the project may require the development of a monitoring and evaluation system (**“Guidelines on river (including estuaries) pollution monitoring programme for the Mediterranean region” [UNEP MAP/GEF 2003], “Development of ecological status and stress reduction indicators for the Mediterranean Region” [UNEP MAP/GEF, 2003]**).

Prepare a Financial Strategy

The financial strategy should:

- Assess existing domestic financial sources and mechanisms in order to identify solid funding possibilities for the specific project;

- Define concrete steps for the mobilisation of financial resources and partners (closely linked with the identification of stakeholders, during the actual definition phase of the project); and,
- Build upon existing projects and identify opportunities for linkages with ongoing initiatives/programmes

Financial resource needs should be defined in detail. Project proposals should have realistic, detailed and targeted budgets, which include, where feasible:

- Detailed cost estimates, including the cost of no action whenever possible;
- Assessment of benefits derived from the project, both in general terms and in terms of specific stakeholder groups; and,
- Valuation of relevant resources and environmental services.

A key objective of the financial strategy is the establishment of sustaining financial mechanisms.

If feasible, the financial strategy should also assess the cost of support elements such as capacity building, training, monitoring and evaluation, and enforcement.

The actions may provide an opportunity to develop or strengthen relevant feasibility and pre-investment studies. Similarly, efforts should be made to identify of further investment opportunities.

Potential financial partners include:

- Industry and Trade sectors
- Financial Institutions: National, Regional (regional development banks), and Global (e.g. World Bank and GEF)
- Bilateral donors
- Non-governmental organisations

Protection of the marine environment from land-based activities cannot be achieved through government action alone or by depending entirely on public funds. It is therefore important to also create an “enabling” scenario for private sector investments in actions. This is a fundamental component in the mobilisation of the private sector, at both domestic and international levels, as well as of international financial institutions.

Adoption of the NAP

NAPs, once prepared, will have to be officially adopted by the relevant national authorities and bodies, in order to ensure the necessary legal basis, resources and institutional arrangements for their implementation.

4. Simulation of a National Action Plan (NAP): “ATLANTIS”

Atlantis is a fictional country in the Mediterranean Sea All data of the country are fictional

4.1. Major environmental issues of Atlantis

General information

Atlantis is a small country in the Mediterranean Sea (185,000 Km²) with mild Mediterranean climate (Temperature range 6 to 38 °C). In the coastal areas the average recorded precipitations are 550 mm/y and in the inland 620 mm/year. The Atlantis population is 2,500,000 of which 1,400,000 are in the capital Atlantis City.

The terrain of Atlantis is generally flat, with scattered hills in the south. Mount Alba (to the North of the country) has a height of 1,200 m. Two major rivers flow in Atlantis, the river Saron and the river Albino. The river Albino dries completely during the summer months (July, August).

The resources of the country include minerals (mostly phosphates) in the mount Alba region, agriculture and livestock breeding in the plain of the river Saron and industrial plants mainly around the urban areas of Atlantic City, Dubrovo and Bakir. The road network is in relatively good condition. The two major commercial harbors are in Atlantis City and Dubrovo, while the major fishing harbor is Porto Buffo. The national airport of Atlantis is near Atlanis City. In Atlantis there is no cleaner production in the industrial sector and most of the industries do not apply BAT or BEP.

Main features of the Atlantis coast

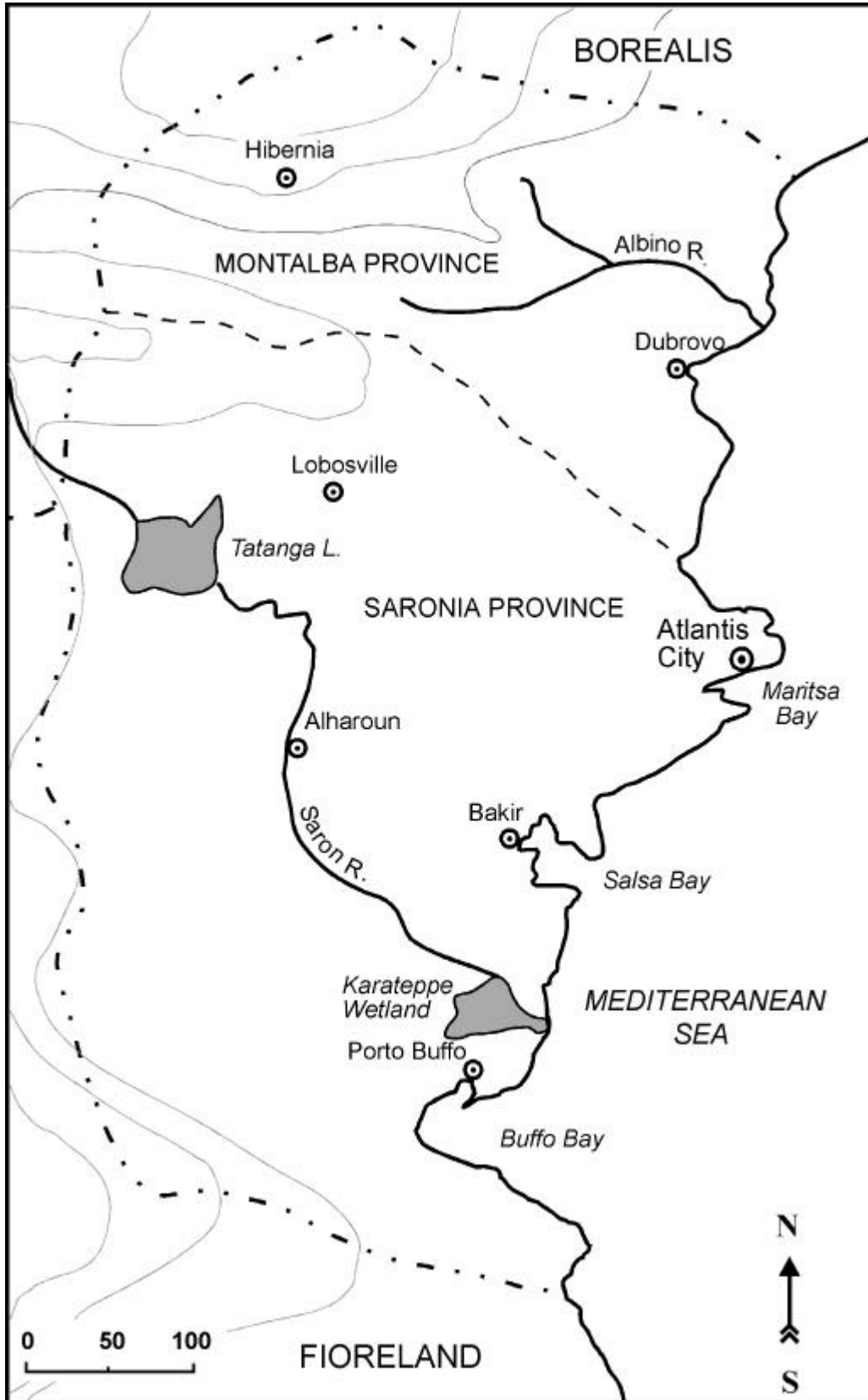
The coast of Atlantis has a length of 640 Km, and can be divided in two different areas: the northern coast, which is mostly located in the Province of Montalba and the southern coast, which is located in the Province of Saronia.

The Montalba coast, which runs for 250 Km, from the northern borders of Atlantis to the south, is an area with steep mountains plunging into the sea. The coastal zone is mainly rocky with many coves and bays, and a relatively narrow coastal plain. The only watercourse is the stream Albino, which has water usually during the rainy period (from October to May). The major urban centers in the Province are Dubrovo (340,000 pop) and Hibernia (80,000 pop). The continental self is narrow, only a few kilometers and then plunges for 900 m into the Mediterranean Sea.

The coast of the Province of Saronia is generally sandy and has a total length of 390 Km. The coastal area is a low-lying alluvial plain up to 35 Km wide. It comprises series of small Bays and the delta of the river Saron, which forms the Karateppe wetland. A dam built for irrigation purposes in the course of river Saron, (which resulted to the creation of artificial lake Tatanga), led to serious decrease of the river-transported material and to severe erosion at the river mouth and the neighboring beaches. The decrease of fresh water flow through the river also resulted to increased seawater intrusion to the Karteppe wetland. Actually, part of the wetland has become a salt marsh, leading to changes on the wetland ecosystem equilibrium. The low coast is divided by hills to a series of smaller drainage basins, where streams are formed during the rainy period (winter and spring). The major urban centres in the Province of Saronia are the capital Atlantis City (1,400,000 pop), Alharoun (180,000 pop), Bakir (60,000 pop), Lobosville (50,000 pop) and Porto Buffo (80,000 pop). The continental self is wide (up to 150 Km from the coast) especially in the central part

of the Province. The most important Bays in the area (from North to South) are Maritsa Bay, Salsa Bay, and Buffo Bay.

In Figure 4 is presented the map of Atlantis.



Nature and severity of environmental problems in Atlantis

In the present chapter the major environmental issues of Atlantis will be presented, on regional administrative regions. The two provinces of Atlantis (Montalba and Saronia) will be considered as administrative regions in the frame of this analysis.

A. Contaminants and sources

A.1. Province: MONTALBA

Sewage (urban wastewater)

In the Province of Montalba there are two major urban areas, the city of Dubrovo, on the coast, and the town of Hibernia at the plateau of the mount Alba.

Dubrovo is an industrialized harbor with important industrial development. The city does not operate yet a wastewater treatment plant for the urban effluents, but a primary settling system is actually under construction and is due to be completed soon (18 months from now, according to the plans). However, even after the completion of the Treatment Plant (TP) only 40% of the city will be served by the TP because there is no adequate sewer network to collect and transfer the urban effluents from the rest of the city. It is therefore important to complete the construction of the sewerage system in order to collect all the effluents, which are produced in the Dubrovo area. Actually there is no submarine marine outfall for the untreated effluents of the city, which are discharged to the sea on the surface, through 2 major and 23 smaller outfalls along the city coastal front. The outfalls transport mixed effluents and precipitation runoff, creating serious pollution problem along the coast of the inner part of the Dubrovo Bay. However, pollutants are dispersed because of the hydrodynamically active marine coastal environment of the area (strong north-to-south currents which prevails during most of the year). However, close to the shore water quality is not suitable for swimming, and during spring algal blooms have been often recorded in the marine areas in front of Dubrovo.

Table 1. Urban effluents and pollution load in the Province of Montalba

Province Montalba	Population	Pollution load (ton/year)								
		Wastewater m ³ /year	BOD ₅	COD	SS	Tot- N	Tot- P	T- coliform	Oil & grease	
Dubrovo	340,000	43,000,000	9,200	21,000	9,200	1700	350	4.4 10 ⁹	x	4,300
Hibernia	80,000	10,100,000	2,100	5,400	2,100	380	80	1.2 10 ⁹	x	1,200

Solid waste

According to estimations on the produced amount of municipal solid wastes, approximately 370,000 tons are produced per day in Dubrovo (solid waste generation rate 1.1. Kg waste/capita.day) and 80,000 tons are produced in Hibernia (1.0 Kg. Waste/capita.day). No organized landfill is operating in the province, but at least 3 large dump sites (two in the Dubrovo area and one in Hibernia area) receive the domestic wastes along with some industrial solid wastes. The delayed establishment of planned landfills for solid wastes in the Province of Montalba results in some cases that domestic solid wastes are disposed off in temporary sites near the coast. In the absence of any measure (clay or plastic lining) to

collect leachates, it is expected that seepage to groundwater and/or coastal seawater may have impacted the quality of the neighboring water bodies. No survey has been conducted in the possibly affected areas to identify the importance of contamination in groundwater of seawater at the vicinity of these dumps.

In addition to the possible release of leachates, coastal open dumps (especially near Dubrovo) are also the source of drifting debris and floating waste, which may sink to the bottom and cover the sea floor. There have been some reports from the Professional Divers Association that waste covers the floor at some locations off the coast suffocating benthic flora and fauna. Frequently observed waste include cans, tires, plastic materials, etc. Fishermen also reported a gradual decline of the existing corral reefs. Finally, aesthetic problem and nuisance because of the uncontrolled dumps in the Montalba province influence the land value, especially in the coastal area south of Dubrovo. These problems have already been described in the **country's NDA**.

Industrial Development

Dubrovo industrial area

The industrial estate near Dubrovo is hosting terminal facilities for petroleum hydrocarbon products (oil terminals and distilleries). In the area are also located smelters and a large phosphate fertilizer plant, as well as the only thermoelectric plant of Atlantis for power generation (National Electricity Company).

- Oil distillery (Atlantoil S.A.) and terminal facilities
- National Electricity Company (power generation)
- Dubralumina SA (secondary Al smelting and profiling)
- Plombino (secondary Pb smelting)
- Phosphorofertil Ltd (Phosphoric fertilizers and phosphoric acid)

Hibernia industrial activity

In the mountainous plain around the city of Hibernia, are located mining activities for the extraction of phosphate minerals, used in the fertilizer plants of Phosphorofertil (in Dubrovo) and Fertilor (at Bakir, now closed).

- Phosphomines Ltd (phosphate minerals extraction)

More detailed data on the pollutants emitted from the different industrial plants of the Montalba Province are presented in the **Budget Baseline Report of ATLANTIS (2003)**. In short the available information on the pollutants emitted in the Province of Montalba from Industrial activity is presented in Chapter 3.2. (Pollutants emitted from the industrial activity in Atlantis).

A.2. Province of SARONIA

Sewage (urban wastewater)

In the Province of Saronia, there are five major urban centres: Atlantis City (the capital), Alharoun, Bakir, Lobsville and Porto Buffo. Data on the urban population as well as the pollution load of the urban effluents discharged from the cities are presented in the following Table. Atlantis City, Bakir and Porto Buffo are on the coast, discharging their effluents directly to the sea, while Alharoun and Lobosville are discharging directly or indirectly their effluents to the river Saron.

In Atlantis City a primary settling system is in operation, reducing the initial pollution load of the domestic effluents. However, no all areas of the city are connected to the Wastewater Treatment Plant (WTP) due to ill-designed sewerage system. Parts of the city are still served by a combined sewerage system, which transports both domestic effluents and precipitation runoff. The primary treated effluents of the city are disposed off to the sea through the Atlantis City Sewerage Outfall (ACSO), on a depth of 4 m. The submarine effluent's outfall is located on a relatively shallow coastal area at a short distance from the shore. Due to the important pollution load discharged to the sea, the marine coastal environment at the ACSO mouth area is been seriously polluted. Eutrophication signs (turbid water, occasional phytoplanktonic blooms) can be detected to a great distance from the shore. On the sea-front algal proliferation is apparent and swimming is prohibited in all beaches at the vicinity of the ACSO.

At Alharoun the sewerage system covers only 20% of the city and the rest of the houses are using septic tanks. Domestic effluents are directly or indirectly reaching the river Saron. The collected effluents are disposed off directly to the river, while the collected septage is also disposed off illegally to the river. Unfortunately, there is no facility to receive and treat the content of the septic tanks in the area.

At Bakir, domestic effluents are collected and mixed with industrial wastewater form smaller industrial plants. A primary settling system is in place at Bakir, but with poor efficiency. The domestic effluents are discharged to the sea leading to eutrophic conditions in the coastal marine area.

Lobosville effluents are not treated and are disposed off in a neighboring dry stream. During winter the effluents are transported by the water flow and end up (diluted) to the river Saron. During summer months no fresh water is flowing into the streams and therefore urban effluents form stagnating pools of wastewater with negative impact to the local environment (odors, health problems).

At Porto Buffo domestic effluents from the 30% of the city are treated with a primary settling system and are discharged into the sea through a main sewage outfall. Additionally, 12 smaller outfalls located along the city's seafront transport mixed effluent and runoff discharges from the city. Eutrophication problems in the northern coastlines of Buffo Bay have often been recorded but no impact has been yet recorded on the southern beaches of the Bay, where important touristic development occurred during last decade.

Table 2. Urban effluents and pollution load in the Province of Saronia

Province Saronia	Population	Pollution load (tons/year)							
		Wastewater m3/year	BOD ₅	COD	SS	Tot-N	Tot-P	T-coliform	Oil & grease
Alharoun	180,000	23,580,000	4,100	11,000	4,100	900	190	2.3 x 10 ⁹	2,300
Atlantis City	1,400,000	185,400,000	23,100	64,500	23,100	5,500	1,160	12.8x10 ⁹	14,200
Bakir	60,000	78,600,000	1,320	3,700	1,320	300	62	0.78x10 ⁹	760
Lobosville	50,000	65,000,000	1,100	3,100	1,100	250	52	0.65x10 ⁹	630
Porto Buffo	80,000	11,600,000	1,760	5,000	1,760	400	83	1.04x10 ⁹	1,010

Solid wastes

According to estimations on the produced amount of municipal solid wastes, approximately 1,540,000 tons are produced per day in Atlantis City (solid waste generation rate 1.1. Kg

waste/capita.day), while in the other urban areas are produced the following amounts of municipal solid wastes yearly (0.95 - 1.0 Kg. waste/capita.day): Alharoun 65,000 tons, Bakir 22,000 tons, Lobosville 18,000 tons and Porto Buffo 29,000 tons. Only in Atlantis City operates a partially organized landfill. In the other cities and towns of the Province, there are no organized landfills.

Serious problems with solid wastes are encountered in Bakir, where after the closure of industrial plants, stockpiles of obsolete chemicals have been deposited near the coast. These problems are presented in the following Chapter 3.2.

Industrial development

Atlantis City

The industrial activity in the industrial area near the Atlantis City includes:

- Chemofar Ltd (chemicals)
- Papierblanc (writing and sanitary paper)
- Atlas Cement (cement)
- Podouce (tannery)
- Durotan (tannery)
- Atlantis Iron and Steel (AIS) (iron and steel casting)
- Halix (cold and hot steel rolling)
- Bebekcotton (textiles bleaching and dying)

Alharoun

The town is located on the river Saron, on the fertile plain of southern Saronia. Agriculture is the main activity in the area, the major crops being cereals to the south and oranges to the central plain (near the river). In the northern part of the plain, towards the city Lobosville, there is also cotton cultivation. Approximately 50 Km upstream from Alharoun is located the artificial lake Tatanga, formed by the Tatanga Great Dam, which was constructed during the 60's for irrigation purposes. The water is been used for the irrigation of the oranges and peaches cultivation (in the south) and cotton (in the north of the Saronia plain). In the area around Alharoun olive trees are also cultivated, for the production of olive oil.

The major industries in the greater Saronia plain, around the city Alharoun, are:

- Oranga (orange juice)
- Seedoil (production of cotton seed oil)
- Oleagineux (production and refinery of kernel olive oil)
- Also many small olive oil mills (approximately 36)

Bakir

Bakir is a coastal town, which is mostly hosting metallurgical and chemical industries. However, the local chemical industry declined recently, because of the competition of the industries located in the capital (Atlantis City). For that reason some industries of these sectors were relocated to Atlantis City and some other closed leaving important stockpiles of obsolete chemicals behind. Now Bakir greater area (including the seabed of the semi-enclosed Bay of Salsa) is considered as a heavily polluted region.

The industries in Bakir area include:

- Bakirex Ltd (secondary Cu smelter)
- Bakirochlor Ltd (chloralkali and PVC plant – closed – stockpiles)

- Pestochem (pesticides – closed – stockpiles)
- Fertilor (phosphate fertilizers – closed – stockpiles)

Lobosville

Lobosville is located at the northern part of the plain of Saronia and hosts mostly agricultural and animal breeding activities as well as textiles and tanneries. The main industries include:

- Cottonella Ltd (textile production, bleaching)
- Aboubela Ltd (textile production, bleaching, dyeing)
- Lupogrosso S.A. (tanneries)
- Skinyrat Tanneries Ltd (tannery)
- Animal breeding in the greater area (cattle, sheep, chicken breeding)
- Lobosville Slaughterhouse (beef, chicken)

Porto Buffo

Porto Buffo is located at the most southern part of the Atlantis coast. It is a fishing harbor, and most of its activity is oriented to the fishing industry. In the town are operating 2 small fish processing plants (preparation of salted fish in conserves). Recently, tourism was developed in the area, because of the beautiful sandy beaches at the southern part of the Buffo Bay. Also at the proximity of the town is located the wetland of Karateppe, which is of great ecological significance and is included in the list of the Ramsar Convention Wetlands for its important nesting and migrating avifauna.

More detailed data on the pollutants emitted from the different industrial plants of the Saronia Province are presented in Chapter 3.2. "Pollutants emitted from industrial activity in Atlantis" (included in the Budget Baseline Report of Atlantis, 2003).

B. Physical alteration and destruction of habitat

B.1. Province of Montalba

Shoreline construction and alteration

The city of Dubrovo is expanding mostly along the coastline, which is under rapid urbanization. Also industrial development in the area affected the coastline character. As mentioned before, the un-controlled dumping of municipal wastes near the coast has created serious degradation of the marine coastal environment (litter on the beaches and the sea floor) near Dubrovo.

B.2. Province of Saronia

The coastline around the coastal cities Atlantis City, Bakir and Porto Buffo are suffering from intense illegal construction. Atlantis City and Porto Buffo are expanding cities (industry and tourism respectively) and there are needs for housing and development.

Porto Buffo (and the beaches of the Bay of Buffo) has been recently discovered as a tourist destination. The increase of the numbers of tourists in the area has resulted to an un-planned urban development on the coastline (summerhouses and hotels). Therefore the area is under a direct threat of losing its character because of this illegal building activity.

The construction of an irrigation Dam on the river Saron has resulted to a decrease of the fresh water and suspended material in the Karateppe wetland and the neighboring coastal zone. As a result sewer water invaded a great part of the wetland, leading to an increase of

salinity. On the other hand, the sandy beaches near the river mouth show signs of erosion (retreat of the beach width) caused by the reduction of river-transported material, now been trapped in the artificial Tatanga Lake. Furthermore, parts of the Karateppe wetland were dried during the early 70's, but the reclaimed areas were then abandoned because of high soil salinity. The wetland is in an immediate threat because of human activities, and action is needed for its salvation.

4.2. Pollutants emitted from industrial activity in Atlantis

The following survey is based on the Atlantis National Pollutants Baseline Budget, which has been prepared by national experts

1. Transport and marketing of refined petroleum products

A total of 900,000 liters of refined petroleum products are been transported and discharged at Dubrovo harbor and 600,000 liters at Atlantis City harbor. There are no available data on the liquid emissions from the two harbors, which both operate slop receiving and treating facilities. It is calculated that a total amount of 200 Kg of VOC are released yearly from the Dubrovo facility, while the VOC releases from the Atlantis City facility are estimated to be 130 Kg/year.

2. Petroleum refining

The petroleum refinery Atlantoil SA is located at the industrial area of Dubrovo and is processing 1,173,000 metric tons per year.

Montalba Province

<u>Industry</u>	Process	Raw materials (tons/year)	Pollutant	Total release (Kg/year)
Atlantoil SA	Total Refinery	1,173,000	Liquid emissions	
			BOD ₅	3988
			PAH	1275
			Phenols	40
			Cr	8
			Pb	6
			Cu	1200
			Zn	1200

3 Livestock industries

Animal breeding is mostly developed in the Province of Saronia, around the city of Lobosville.

Saronia Province

Industry	Process	Production (tons/year)	Pollutant	Total releases (Kg/year)
Animal breeding (total)	Beef	8,500	BOD ₅	3,900,000
	Sheep	5,150	BOD ₅	3,450,000
	Chicken	48,000	BOD ₅ N	76,800,000 13,920,000

Lobosville Slaughterhouse	Beef	8,500	BOD ₅	51,000
	Chicken	48,000	BOD ₅	720,000

4. Vegetable products

Olive oil and cotton seedoil are been produced in the Province of Saronia, in the area of Alharoun. Also in Alharoun is located the larger orange juice plant, which is processing the oranges produced in the greater Alharoun area.

Saronia Province

Industry	Process	Production (tons/year)	Pollutant	Total releases (Kg/year)
Seedoil	Cotton seed oil	27,200	BOD ₅	27,200
Oleagineux	Olive kernel oil	38,500	BOD ₅ Oil and fat	497,000 250,200
Olive oil mills (> 36)	Production of olive oil (virgin)	55,000	BOD ₅	5,225,000
Oranga Ltd	Production of orange juice	60,000	BOD ₅	129,000

5. Manufacturing of Phosphate fertilizers and Phosphoric acid

All national production of phosphate fertilizers and other related products (such as phosphoric acid, sulfuric acid and other supplements for animal feeds) is manufactured in Phosphorofertil Ltd at Dubrovo. The other phosphate plant (Fertilor), which was located at Bakir, has ceased operation since 1997, leaving stockpiles of chemicals. The possible emissions from the abandoned plant will be presented in other part of the Baseline Budget.

Montalba Province

Industry	Type of product	Production (tons/year)	Pollutant	Total release (Kg/year)
Phosphofertil	Single and triple super phosphate, phosphoric acid	40,000 (single) 90,000 (triple) 60,000 (phosphoric acid)	Dust	192,040
			HF	55,440
			Cd	1,980
			Liquid emissions	
			F	672,000
			Pb, As, Cr, Hg	66,000
			P ₂ O ₅	1,512,000
	NH ₃	8,400		

6. Metallurgy – Casting Iron and steel

Atlantis Iron and Steel Company (AIS) is the only plant for casting while Halix plant operates hot and cold rolling. Both industries are located in the Atlantis City industrial area, in the Saronia Province.

Saronia Province

Industry	Process	Production (tons/year)	Pollutant	Total releases
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Atlantis Iron and Steel	Dirty scrap, limited control	5,000	Air emissions	($\mu\text{g I-TEQ/y}$)
			PCDD/PCDF	50,000
			Liquid emissions	(Kg/year)
			Phenol	50
			CN-	225
Halix	hot and cold rolling	2,000	Liquid emissions	(Kg/year)
			Oil	4,100

7. Secondary smelting

Province of Montalba

In the Province of Montalba, in the industrial area of Dubrovo is located the lead smelting industry Plombino Ltd (using old lead batteries) and the Aluminum smelting and profiling industry Dubralumina SA.

Industry	Process	Production (tons/year)	Pollutant	Total releases
Dubralumina SA	Aluminum secondary smelting and profiling	11,000	Air emissions	
			PCDD/PCDF	242,000 ($\mu\text{g I-TEQ/y}$)
			Liquid emissions	
			Oil	7,150 (Kg/year)
Plombino Ltd	Lead secondary smelting	8,000	Air emissions	
			PCDD/PCDF	8,000 ($\mu\text{g I-TEQ/y}$)
			Pb	256,000 (Kg/year)
			Liquid emissions	
			Oil	5,200 (Kg/year)

Saronia Province

In the Province of Saronia the most important smelting industry is Bakirex Ltd, which is using scrap to produce copper. The plant is not using up-to-date technology, or a very efficient system to control atmospheric releases. Many complaints have been made because the plant is located inside the urban area (because of the uncontrolled expansion of the city). However, because of the industrial decline in Bakir, it is not easy to close the plant because of unemployment problems in the area.

Industry	Process	Production (tons/year)	Pollutant	Total releases
Bakirex Ltd		20,000	Air emissions	
			PCDD/PCDF	4,000,000 ($\mu\text{g I-TEQ/y}$)
			Pb	5,000 (Kg/year)

8. Tanning and dressing of leather

In Atlantis are operating many tanneries mostly in the area of Atlantis City (Podouce and Durotan) and in the area of Lobosville (Luppogrosso SA and Skinyrat Ltd). These tanneries are using hair pulp, chrome tanning, re-tanning and finish.

Saronia Province

Industry	Production Process	Production (tons/year)	Pollutant	Total releases (Kg/Year)
Podouce	Cow skins	800	BOD5 TKN Cr Phenol Oil	77,800 13,900 3,530 90 15,580
Durotan	Cow and sheep skins	1200	BOD5 TKN Cr Phenol Oil	116,900 20,900 5,300 135 23,370
Luppogrosso SA	Hair save, chrome tan, retan and wet finish	1000	BOD5 TKN Cr Phenol Oil	95,000 17,000 4,300 110 19,000
Skinyrat Ltd	Hair pulp, chrome tan no finish	700	BOD5 TKN Cr Phenol Oil	77,000 11,200 3,080 - 4,600

9. Textiles

Textile industries are mainly located at Saronia Province, close to Lobosville (Cottonella Ltd, Aboubela Ltd) and Atlantis City (Bebekcotton).

Saronia Province

Industry	Process	Production (tons/year)	Pollutant	Total releases (Kg/year)
Cottonella Ltd	Washing, Bleaching of cotton	100	Liquid emissions	(Kg/year)
			BOD ₅ COD	3,800 360,000
Aboubela Ltd	Dying, finishing cotton	700	Liquid emissions	(Kg/year)
			BOD ₅	21,000
	Dying, finishing acrylic	150	BOD ₅	3,750
	Dying, finishing polyester	380	BOD ₅	30,400
Bebekcotton	Dying, finishing cotton	550	BOD ₅	16,500

10. Manufacture of paper

There is no production of paper pulp in Atlantis. Paper is produced from imported pulp in paper mills. There is one paper mill in the country, located in Atlantis City (Papierblanc).

Saronia Province

Industry	Process	Raw materials (tons/year)	Pollutant	Total release (Kg/year)
Papierblanc	Sanitary paper	3,480	COD	104,300
	Writing paper	51,220	BOD5 COD	921,500 1,791,700
	Total plant	54,700	Air emissions PCDD/PCDF	546,700 (µg-TEQ/y)

11. Manufacture of cement

There is one cement plant in Atlantis, the Atlas Cement, located at the industrial area close to Atlantis City.

Saronia Province

Industry	Type of control	Production (tons/year)	Pollutant	Total release (Kg/year)
Atlas Cement	ESP	750,000	Air emissions	
			Cd	3.1
			Cr	2.9
			F	338
			HCl	18,750
			Hg	83
			Pb	270
			Benzene	1,200
			Biphenyl	2,3
			Chlorobenzene	6,0
			Phenol	40
			Toluene	75
			PCDD/PCDF	112,500*

*µg I-TEQ/y

12. Energy Production - Combustion of fuel for the generation of electricity

Saronia Province

Electricity is been produced in the National Electricity Company's thermoelectric plant, which is burning fuel oil. The total capacity of the plant is 900,000 tons of fuel oil per year.

Industry	Consumption (tons/year)	Pollutant	Total release (Kg/Y)
National Electricity Company	900,000	10 PAH	396
		Cd	42
		Cr (VI)	27
		F	4050
		Ni	9000
		Cr	90
		Cu	189
		Hg	13

13. Lubricating oils

Lubricating oil is been discharged from different activities in Atlantis and the estimated annual quantities from different sources are (on country's level):

Source	Quantity (tons/year)
Automobile lubricating oils	3,800
Industrial premises	200
Ship bilge	1,300

14. Stockpiles of obsolete chemicals

Saronia Province

The major stockpiles of chemicals are located in the abandoned plants of Bakirochlor Ltd and Fertilor, both at Bakir.

- Bakirochlor Ltd. was a Chloralkali and PVC plant 5 Kms form Bakir. A recent study surveyed the 20 ha of the former plant and detected Hg concentrations in the soil ranging from 4,000 to 24,000 mg Hg / Kg of soil. Higher than normal Hg concentrations were also found in the coastal sediments at the vicinity of the plant, as well as in ground water 10 m from the surface. No action has been made to treat the contaminated soil or to prevent its erosion to the sea.
- Fertilor was a phosphate fertilizer plant, which closed 5 years ago. In the factory's area, large stockpiles of residues (approximately 200,000 tons) have been left, probably leaching arsenic and copper into the groundwater. The dumpsite is on an area without any protection for the water table and constitutes a direct threat to the health of the local people and the coastal ecosystem.
- Pestochem plant is also located in the greater area of Bakir, and ceased operation 6 years ago. The site is contaminated by hazardous chemicals, and residues from the former chemical plant, a waste dump and abandoned chemical storage site. No detailed survey has been made in the site to assess the situation but, sporadic analyses of ground water in the area reveled extremely high concentrations of many chemicals, including lindane, methanol, carbon sulphite, sodium dichromate, mono-methylamine and di-methylamine.

Baseline Budget
Administrative region pollutant's release (year 2003)

Country: ATLANTIS Administrative Region: Montalba Province

Pollutant	Water	Air	Total release (Kg/y)
Dust		+	192,040
VOC		+	200
PCDD/PCDF		+	250,000 mg I-TEQ/y
PAH		+	396
Cd		+	2,020
Cr		+	127
Cu		+	189
F		+	56,718
Hg		+	13
Ni		+	9,000
Pb		+	256,000
BOD₅	+		11,303,988
COD	+		26,400,000
Tot - N	+		1,700,000
NH₃	+		8,400
Tot - P	+		1,090,170
Tot - coiliforms	+		5.6 x 10⁹
PAH	+		1,275
Oil (mineral)	+		12,350

Budget Baseline
Administrative region pollutant's release (year 2003)

Country: ATLANTIS Administrative Region: Saronia Province

Pollutant	Water	Air	Total release (Kg/y)
VOC		+	130
PCDD/PCDF		+	4,709,200 (µg I-TEQ/y)
Cd		+	3.1
Cr		+	2.9
F		+	338
Hg		+	83
Pb		+	5,270
Benzene		+	1,200
Phenols		+	40
Biphenyl		+	2.3
Chlorobenzene		+	5.0
Toluene		+	75
BOD₅	+		123,543,000
COD	+		
Tot - N	+		21,333,000
Tot - P	+		1,547,000
Tot - coiliforms	+		17.57 x 10⁹
CN-	+		225
Phenols	+		275

National Budget Baseline for the year 2003

Country: ATLANTIS

Pollutant	Water	Air	Total release (Kg/y)
Dust		+	192,040
VOC		+	330
PCDD/PCDF		+	4,959,200 (µg I-TEQ/y)
PAH		+	396
Cd		+	2,023.1
Cr		+	129.9
Cu		+	189
F		+	56,718
Hg		+	96
Ni		+	9,000
Pb		+	261,270
Benzene		+	1,200
Phenols		+	40
Biphenyl		+	2.3
Chlorobenzene		+	5.0
Toluene		+	75

National Budget Baseline for the year 2003

Country: ATLANTIS

Pollutant	Water	Air	Total release (Kg/y)
BOD ₅	+		23,658,286
COD	+		
Tot - N	+		23,033
NH ₃	+		8,400
Tot - P	+		2,637,170
Tot - coiliforms	+		23.17 x 10 ⁹
PAH	+		1,275
Oil (mineral)	+		16,450 (+ 5,300,000 lub oil)
Oil (vegetable) and fat	+		312,550
Phenols	+		315
Cr	+		16,218
Cu	+		1,200
F	+		672,000
Pb	+		6
Zn	+		1,200

4.3 Outline of the NAP formulation steps

According to the available data and after consultation with all competent authorities, the main environmental issues per Province are as follows:

a) Province of Montalba

1. Phosphoric fertilizers plant (Phosphorofetril) at Dubrovo
2. Lead smelter (Plombino Ltd) at Dubrovo
3. Municipal solid wastes at Dubrovo
4. Urban wastewater at Dubrovo
5. Aluminium smelter (Duraloumina SA) at Dubrovo
6. Excavation wastes from the phosphate mining at Alba Mountain
7. Urban wastewater at Hibernia
8. Municipal solid wastes at Hibernia
9. Illegal constructions in the coastal area north of Dubrovo

b) Province of Saronia

10. Stockpiles of obsolete chemicals at Bakir
11. Urban wastewater at Atlantis City
12. Municipal solid wastes at Atlantis City
13. Copper smelting at Bakir (air pollution)
14. Cement plant at Atlantis City (air pollution)
15. Paper plant at Atlantis City (air and water pollution)
16. Tanneries at Lobosville and Atlantis City
17. Effluents from livestock breeding and slaughterhouses at Lobosville
18. Pollution of the river Saron from urban effluents and agricultural land runoff
19. Pollution and salination of Karateppe wetland
20. Illegal constructions (housing) in Buffo Bay

According to these priorities, the sectoral plans will be as follows:

a) Development of national programmes for the environmentally sound management of sewage

Using the available Documents UNEP MAP/WHO/GEF, 2003 ("Guidelines for sewage treatment and disposal in the Mediterranean region") and UNEP MAP/WHO, 2003 ("Guidelines for Municipal wastewater reuse for the Mediterranean Region") the national authorities will develop a programme for the construction of Wastewater Treatment Plants (WTP) for all major cities of Atlantis. Atlantis City and Bakir will probably need a secondary treatment WTP, while Dubrovo could continue to use the primary settlement technique in combination with a long submarine outfall, in order to achieve maximum dilution and dispersion in the coastal marine environment. In all cases the urban sewage network has to be completed in order to serve greater part of the city. Wastewater Treatment Plants, using secondary treatment and probably tertiary (removal of nitrogen and phosphorus) treatment should be constructed to receive the urban effluents of Alharoun. Nitrogen and phosphorus retention is important because the effluent's receiving body is the river Saron. Although reuse of the treated water in the cultivation of orange trees and cotton could be considered, information campaigns have to be organized in order to persuade farmers to use recycled water in their land.

Lobosville and Alharoun should build facilities to treat septage from septic tanks. Septic tanks will continue to be used in the semi-rural area in the plain of Saronia, therefore septage receiving facilities will be needed. Authorities should find ways to control the owners/drivers of septage transport vehicles, in order to avoid disposal of septage in unauthorised locations.

- b) Development of national programmes for the reduction at source and environmentally sound management of urban solid waste in coastal area.

Using the available Document UNEP MAP/WHO/GEF 2003 ("Guidelines on the Management of coastal litter for the Mediterranean Region") the national authorities will develop a programme for the management of urban solid wastes.

All cities of Atlantis have problems with the management of solid wastes. Serious problems have been recorded in Dobrovo, Atlantis City and Bakir. Sanitary landfills have to be constructed in all the cities, but priority has to be given in these three cities, because they face greater problems of solid waste management. Also specialised landfills have to be constructed to receive special industrial solid wastes. All landfills have to be planned, build and run using the BAT recommended in the UNEP Documents.

- c) Prepare national programmes for the reduction and control of pollution by heavy metals, mercury, cadmium and lead.

The national authorities can prepare these programmes using the available documentation presented: UNEP MAP 2003 ("Draft Regional Plan for the reduction of the generation of hazardous waste from industrial installations"), UNEP MAP/GEF, 2003 ("Regional Plan for the management of hazardous waste including inventory of hazardous waste in the Mediterranean Region") and RAC/CP, 2001 ("State of cleaner production in the Mediterranean Action Plan countries").

Toxic heavy metals are emitted in Atlantis mainly from the metallurgical industry in Atlantis City, Bakir and Dubrovo. The fertilizer industry at Dubrovo is also contributing to heavy metal contamination through air emissions.

- d) Prepare national programmes for the reduction and control of pollution by the following organohalogen compounds: Halogenated Aliphatic Hydrocarbons (chlorinated solvents, chlorinated paraffins), Halogenated Aromatic Hydrocarbons [Chlorobenzenes, polychlorinated naphthalenes, polybrominated diphenyl ethers (PBDEs) and polybrominated biphenyls (PBBs)], Chlorinated Phenolic compounds, Organohalogenated pesticides.

The national authorities will develop these programmes using the following Documents: "Regional Plan on the management of PCBs and nine pesticides for the Mediterranean Region" (UNEP MAP/GEF 2003), "Draft Regional Plan for the reduction of the generation of hazardous waste from industrial installations" (UNEP MAP 2003), "Regional Plan for the management of hazardous waste including inventory of hazardous waste in the Mediterranean Region" (UNEP MAP/GEF, 2003), "State of cleaner production in the Mediterranean Action Plan countries" (UNEP MAP/RAC/CP, 2001), "Recycling possibilities and potential uses of used oils" UNEP MAP/RAC/CP, 2000).

In Atlantis there is no important chemical industry. However the use of pesticides in the agriculture around the cities of Alharoun and Lobosville have resulted to the accumulation of pesticide residues in the river Saron water, which are also detectable in the sediments of the Karateppe wetland. Phasing out of all obsolete pesticides is a major issue, which will greatly improve the environmental quality in the Saronia plain and the watersheds of the area.

Stockpiles of hazardous wastes are left uncontrolled at Bakir and should be collected and treated accordingly.

e) Develop national programmes for the environmentally sound management of wastewater and solid waste from industrial installations, which are sources of BOD.

These programmes can be based on the Document "Regional Plan for the reduction of input BOD by 50 percent by the year 2005 from industrial sources for the Mediterranean Region (UNEP MAP/GEF 2003). All industries have to operate a wastewater treatment plant, and the national authorities should control the treatment's efficiency.

f) Updating and adopting of national regulations on sewage discharges to the sea and rivers

The national authorities should prepare new standards for the quality of the industrial wastewater, which are discharged to the inland and coastal waters of Atlantis.

g) Establishing a system of previous authorization by competent national authorities for works which cause physical alterations of the natural state of the coastline or the degradation of coastal habitats

Environmental Impact Assessment has to be adopted as a general tool to control not only marine pollution but also to protect the coastal area from physical alteration. Illegal housing has to be phased out and no building without permit has to be allowed on the coastline.

h) Phasing out the use of the nine pesticides, except for those for which WHO recommendations related to the safeguarding of human life suggest otherwise

Using the Document UNEP MAP/GEF 2003 ("Regional Plan on the management of PCBs and nine pesticides for the Mediterranean Region"), the national authorities will prepare a programme for the phasing out of the 9 pesticides of concern.

j) Prohibiting the manufacture, trade and new uses of PCBs

Using the Document UNEP MAP/GEF 2003 ("Regional Plan on the management of PCBs and nine pesticides for the Mediterranean Region"), the national authorities will formulate a programme for the prohibition of PCBs. The PCB stockpiles in the transformers of the National Electricity Company have to be collected in safe areas and exported for destruction.

When sectoral plans are ready for each Province, the benefits from the implementation of the programmes have to be assessed in order to evaluate the reduction of the pollution load on Province and National level, taking into consideration all financial aspects.

4.4 Setting the administrative region / national priority lists of action

Priority list of actions were set taking into consideration the SAP targets as presented in Annex IV (Overview of the SAP targets), as well as the priorities defined by the national authorities (Annex III, National/ Administrative region priority list of actions for 2010).

The priorities for Atlantis are as follows:

Province of Montalba

- a. Phosphoric fertilizers plant (Phosphofertil) at Dubrovo
- b. Lead smelter (Plombino Ltd) at Dubrovo
- c. Municipal solid wastes at Dubrovo

- d. Urban wastewater at Dubrovo
- e. Aluminium smelter (Duraloumina SA) at Dubrovo
- f. Excavation wastes from the phosphate mining at Alba Mountain
- g. Urban wastewater at Hibernia
- h. Urban solid wastes at Hibernia
- i. Illegal constructions in the coastal area north of Dubrovo

Province of Saronia

- a. Stockpiles of obsolete chemicals at Bakir
- b. Urban wastewater at Atlantis City
- c. Urban solid wastes at Atlantis City
- d. Copper smelting at Bakir (air pollution)
- e. Cement plant at Atlantis (air pollution)
- f. Paper plant (air and water pollution)
- g. Tanneries at Lobosville and Atlantis City
- h. Effluents from livestock breeding and slaughterhouses at Lobosville
- i. Pollution of the river Saron from urban effluents and agricultural land runoff
- j. Pollution and salination of the Karateppe wetland
- k. Illegal constructions (housing) in Buffo Bay

In the following Tables are presented the priorities for action in the administrative region of Atlantis.

NATIONAL / ADMINISTRATIVE REGION PRIORITY LIST OF ACTIONS FOR 2010 (1)

Administrative Region	Site	Pollutant	Expected Reduction %	Stakeholders	Time Framework	Tracking Method	Economic Instruments
Montalba 1	Phosphofertil (Dubrovo)	Dust, HF, Cd in the air F in the wastewater	50%		2010	Monitoring Monitoring Monitoring	
Montalba 2	Plombino Ltd (Dubrovo)	Pb in the air	50%		2010	"	
Montalba 3	Dubrovo	Urban wastes solid	Sanitary landfill		2005		
Montalba 4	Dubrovo	Urban wastewater (BOD, N, P, Coliforms)	90% BOD, N, P, colif. secondary treatment		2005		
Montalba 5	Duraloumina SA (Dubrovo)	PCDD/PCDF	Conformity with legislation		2010		
Montalba 6	Phosphomines Ltd	Mining residues solid	Conformity with legislation		2010		

NATIONAL / ADMINISTRATIVE REGION PRIORITY LIST OF ACTIONS FOR 2010 (2)

Administrative Region	Site	Pollutant	Expected Reduction %	Stakeholders	Time Framework	Tracking Method	Economic Instruments
Montalba 7	Hibernia	Urban wastewater (BOD, N, P, Coliforms)	90% BOD, N, P, colif. Secondary treatment		2025	Monitoring Monitoring Monitoring	
Montalba 8	Hibernia	Urban solid wastes	Sanitary landfill		2025	"	
Montalba 9	Dubrovo	Illegal construction on the coast	Conformity with national planning		2010		

NATIONAL / ADMINISTRATIVE REGION PRIORITY LIST OF ACTIONS FOR 2010 (3)

Administrative Region	Site	Pollutant	Expected Reduction %	Stakeholders	Time Framework	Tracking Method	Economic Instruments
Saronia 1	Bakirochlor (Bakir) Fertilor (Bakir) Ptrochem (Bakir)	Hg (stockpiles) As, Cu (stockpiles) Chemicals (stockpiles)	100 100 100		2005 2005 2005	Monitoring Monitoring Monitoring	
Saronia 2	Atlantis City	Urban wastewater (BOD, N, P, Coliforms)	90% BOD, N, P, colif. Secondary treatment		2005	"	
Saronia 3	Atlantis City	Urban solid wastes	Sanitary landfill		2005		
Saronia 4	Atlas Cement	PCDD/PCDF, HCl, Benzene in the air	Conformity with legislation		2005		
Saronia 5	Papierblanc	PCDD/PCDF (air) BOD (water)	Conformity with legislation		2005		
Saronia 6	Bakirex Ltd (Bakir)	PCDD/PCDF and Pb in the air	Conformity with legislation		2005		

As an example on how to use the available information (NDA and BB) in order to fill the Tables of Annex III (above presented) taking into consideration the SAP targets, is given below for three environmental issues (priorities) of the Saronia Province

Province of Saronia

Priority 1. Collect and dispose in a safe environmental manner all obsolete chemicals from the former industrial sites at Bakir (Bakirochlor Ltd, Fertilor and Pestochem)

Site:

Bakir (industrial plants: Bakirochlor Ltd, Fertilor and Pestochem).

Pollutant

The stockpiles of Bakirochlor plant contain high Hg concentrations, which is considered a toxic metal, and should be collected and disposed in a safe environmental manner according to the SAP Guidelines. Similar approach is necessary for the As and Cu containing stockpiles at the closed Fertilor plant and the organic chemicals containing stockpiles at the closed Petrochem plant.

Time framework:

According to the SAP targets, by the year 2005 all obsolete chemicals have to be removed from contaminated sites. Therefore this should be the time framework.

Expected reduction:

All chemicals have to be removed in order to clean the sites therefore the expected reduction should be 100%.

Stakeholders:

Tracking method:

Monitoring of the concentrations of Hg, As, Cu and specific organic compounds (i.e. lindane, mon- and di- methylamine) in the ground water and soils of the contaminated sites. Monitoring should continue after the removal of the stockpiles in order to track the site remediation.

Priority 2. Treatment of the urban effluents of Atlantis City

Site: Atlantis City

Pollutant

According to the BB of the administrative region, the urban effluents of Atlantis City are not treated and therefore they contain important loads of BOD, N, P and coliforms. Only a part of the city's effluents are treated with a primary settling system, while the rest of the effluents are discharged without any treatment to the sea. According to SAP targets all cities with a population above 100,000 have to treat their effluents according to LBS Protocol (secondary treatment). Atlantis City has a population of 1,400,000 and therefore has to build a secondary treatment plant, with an efficiency of 90% reduction of the organic pollutant's load.

Time framework: According to the SAP targets, by the year 2005 all cities with population > 100,000 should be in conformity with LBS. A Wastewater Treatment Plant using secondary treatment (BOD reduction 90%) should be constructed to treat Atlantis City urban effluents by that time. The time is not enough therefore the authorities should begin immediately to work on that issue.

Stakeholders:

Tracking method: A marine environmental monitoring programme should be immediately initiated in order to assess the quality of the marine coastal environment at the vicinity of Atlantis City and to follow possible changes in the future, after the construction of the Wastewater Treatment Plant.

Priority 3. Management of the municipal solid wastes of Atlantis City

Site: Atlantis City

Pollutant

Solid waste uncontrolled dumping creates aesthetic problems, affect the groundwater quality and, when at the vicinity of the coast, affects the coastal marine environment. A multitude of pollutants, inorganic as well as organic are involved in the process.

Time framework: According to the SAP targets until the year 2005, all cities with population > 100,000 should apply a solid wastes management system. In the case of Atlantis City (population 1,400,000) it is needed to establish a new sanitary landfill for the city's solid waste. A study has to be completed in order to choose the most suitable site for that purpose in the area.

Guidelines for the management of the solid waste can be found in the relative UNEP Document.

Stakeholders:

Tracking methods: The groundwater in the area has to be monitored along with the general operation of the landfill site.

National priorities of action

The decision on the national priorities for action will be taken after the consultation of the relevant authority bodies of Atlantis. Therefore, at ministerial level, with the assistance of national experts, the government will decide the priorities.

1. Urban effluent treatment seems to be a priority, especially for the two big cities, Atlantis City and Dubrovo. For both cases, discharged pollutants are above the permissible levels and the SAP targets cannot be met by the year 2005. Therefore it is already too late and in order to meet the SAP targets with some delay, immediate action is needed.

2. Industrial pollution priorities are: the Al secondary smelter in Atlantis City, the phosphoric fertilizer production plant in Dubrovo, the Cement factory in Atlantis City, the paper plant in Atlantis City and the Pb smelter in Dubrovo. For all plants the time framework is the year 2010 and need investments on the cleaning systems for air and liquid wastes.

Tanneries in Atlantis City and Lobosville have to reduce their BOD and Cr releases also by the year 2005 and 2010 respectively. Therefore these industries have also to immediately establish wastewater treatment plants.

Animal industries are responsible for the very high organic and nutrients load that pollutes the river Saron as well as all the Saronia Province waterbodies. However it is not exactly known which part of the organic load is reaching the sea. Nevertheless wastewater treatment plants have also to be established for these industries.

3. Obsolete chemicals of the closed industries at Bakir have to be removed immediately in order to protect the human health in the area.

Therefore, priorities for action are:

For **BOD and N** reduction

- Secondary treatment for Atlantis City and Dubrove urban wastewater
- Treatment of tanneries effluents
- Treatment of animal breeding and slaughterhouse effluents

For **toxic metals** reduction

- Cleaning of air emissions in smelters (Pb)
- Cleaning of air emissions in phosphoric fertilizers plant (Cd)
- Treating of tanneries wastewater (Cr)

For **PCDD/PCDF** reduction

- Cleaning of air emissions in Al smelter, cement plant, paper plant

For **obsolete chemicals** phasing out

- Removal of obsolete chemicals and soil rehabilitation of industrial area in Bakir (closed industries)

Also actions are needed for the control of lubricating oil emissions (recycling), Karateppe wetland degradation, mining activities, and illegal housing construction on the shore of Porto Buffo, Atlantis City and Dubrovo.

5. REFERENCES

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- UNEP MAP/ GEF, 2003. Strategic Action Programme. Guidelines: River (including estuaries) pollution monitoring programme for the Mediterranean Region. [Meeting of the MED POL National Coordinators, Sangemini, Italy, 27-30 May 2003].
- UNEP/MAP, 2003. Guidelines for Public Participation in the NAP for SAP/NAP.
National Diagnostic Analysis of the following Mediterranean Countries:

- Albania
- Algeria
- Bosnia-Herzegovina
- Croatia
- Cyprus
- Egypt
- France (in preparation)
- Greece
- Italy (in preparation)
- Israel
- Lebanon
- Libya
- Malta (in preparation)

- Monaco (in preparation)
- Morocco
- Palestinian Authority (Gaza Strip)
- Slovenia
- Spain (in preparation)
- Syria
- Tunisia
- Turkey

RAC/CP Publications

- Guide for applying BATs, BEPs and CTs in industries
- Regional plan for reduction of industrial hazardous wastes
- Guide for BATs and BEPs for industrial sources of BOD, nutrients and suspended solids
- Regional guide for the application of BATs, BEPs and CTs in industries
- MOED: Minimisation Opportunities Environmental Diagnosis
- Good Housekeeping Practices Programme – Design and application in industry
- Regional plan for industrial HW reduction (the plan provides options for preventing pollution in several sectors such as metal, oil refining, tanning, textiles, paper and also on used oils)
- Regional guide for the application of BATs and BEPs in industrial sources of BOD, nutrients and suspended solids (provides options for preventing pollution in several sectors: food and beverages, textiles, tanning, paper, phosphatic fertilisers)
- Alternatives for preventing pollution in the surface treatment industry
- Pollution prevention in olive oil production
- Pollution prevention opportunities in the tanning sector industry within the Mediterranean region + KIT
- Pollution prevention in food canning processes (e.g. for Atlantis, fish canning and juice)
- Recycling possibilities and potential uses of used oils
- Pollution prevention in the textile industry within the Mediterranean region
- Regional guide for the application of BEPs for the rational use of fertilisers and reduction of nutrient loss from agriculture
- Database on cleaner technologies for the textile sector (available at RAC/CP web site)
- Database on cleaner technologies for the paper sector (available at RAC/CP web site)
- Med Clean case studies of companies from several sectors having adopted cleaner production measures, with information on economical implications.

BREF documents made for the European context and available at the web site of the European IPPC Bureau (<http://eippcb.jrc.es>), at different stages of development:

– Pulp and Paper manufacture	– Economic and cross media issues under IPPC
– Iron and Steel production	– Large Combustion Plant
– Cement and Lime production	– Large Volume Inorganic Chemicals - Ammonia, Acids & Fertilisers
– Cooling Systems	– Large Volume Inorganic Chemicals - Solid & Others
– Chlor-Alkali manufacture	– Slaughterhouses and Animal By-products
– Ferrous Metal processing	– Food, Drink and Milk processes
– Non-Ferrous Metal processes	– Ceramics
– Glass manufacture	– Management of Tailings and Waste-Rock in Mining Activities
– Tanning of hides and skins	– Surface treatment of metals
– Textile processing	
– Monitoring systems	
– Refineries	
– Large Volume Organic Chemicals	
– Smitheries and Foundries	

<ul style="list-style-type: none">- <u>Intensive Livestock Farming</u>- <u>Emissions from storage of bulk or dangerous materials</u>- <u>Common waste water and waste gas treatment and management systems in the chemical sector</u>	<ul style="list-style-type: none">- <u>Surface treatments using solvents</u>- <u>Waste Incineration</u>- <u>Waste Treatments</u>- <u>Speciality inorganic chemicals</u>- <u>Organic fine chemicals</u>
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ANNEX I

ISSUES/IMPACTS MATRIX

**GUIDELINES FOR SCORING ISSUES ASSOCIATED WITH EACH
ENVIRONMENTAL ISSUE
HUMAN HEALTH AND MARINE ENVIRONMENT IMPACTS**

ISSUES/IMPACTS MATRIX

1	2	3				4	5
Issues	Indicator of magnitude	Impacts				Root causes	Possible solutions
		Human Health	Marine Environment	Socio-Economic Loss	Global Environment		

- Step-1- Indicate the issue and identify the site
- Step-2- It is advisable to give data or trends as appropriate
- Step-3- Score the impacts as follows:
 - 1-no known impact
 - 2-slight impact
 - 3-moderate impact
 - 4-severe impact
- Step-4- Indicate the root causes of the issue
- Step-5- Indicate legal, institutional and technical possible solution
- Step-6- Indicate the weight of the individual impact from a total weight of 10.The weight should reflect the importance of the impact in the national policies
- Step-7- Multiply the score by the weight.

As the result of this exercise, the individual impacts are classified by relevance according to the results of step-7-.

EXAMPLE: the weight of individual impact fixed by the administrative region SAP team is as follows:

- 4 public health
- 3 marine environment
- 2 socio-economic
- 1 global environment

The SAP team scored the impacts of issue X as follows :

- 3 public health
- 1 marine environment
- 2 socio-economic
- 1 global environment

**Guidelines for Scoring Issues Associated with Each Environmental Issue
Human Health and Marine Environment Impacts**

Issue	Score 0 = No concern	Score 1 = Slight concern	Score 2 = moderate concern	Score 3 = major concern
Trace Metals (Pb,Hg,Cd)	<ul style="list-style-type: none"> • No evidence of production or product contamination • No evidence of air emissions • No evidence of emissions from solid residues • No evidence of chemical stockpiled • No evidence of chemical being contaminant in production of other chemicals • No evidence of use of the chemical • No evidence of release from liquid effluent 	<ul style="list-style-type: none"> • Evidence of limited production • Presence of small sources with possible emissions (e.g. small incineration plants) • Some limited evidence of releases but on a small scale invoking local concerns • Some use of the chemical in small areas • Some limited evidence of releases according to national standards 	<ul style="list-style-type: none"> • Historical production evident and production for local use ongoing • Present as contaminant in other chemical production • Presence of major combustion related sources e.g. large municipal or industrial incinerators • Evidence of stockpiles of the chemical • Use of chemical in agriculture or industry sub-regionally 	<ul style="list-style-type: none"> • Major production of chemical for local and export use • Chemical evident as contaminant in large scale production of other chemicals • Known emission of chemical from large scale • Evidence of leakage from major stockpiles of the chemical poorly packaged • Large-scale use of the chemical throughout the region
	<ul style="list-style-type: none"> • No known or historical levels of chemical contaminant in the environment except background levels of naturally occurring substances • No available data to quantify evidence of the chemical found in fish, wildlife animal or human tissue 	<ul style="list-style-type: none"> • Chemical contaminants are detectable in the environment but below threshold limits defined for the country or region • Chemical contaminants are detectable from fish, wildlife, foodstuff or human samples but below threshold limits established for the country or region 	<ul style="list-style-type: none"> • Chemical contaminants are found in the environment marginally above threshold limits defined for the country or region • Limited data available to support chemical existing within fish, wildlife, foodstuff or human tissue at marginal levels above threshold standards for the country or region 	<ul style="list-style-type: none"> • Chemical contaminant is analysed repeatedly well above threshold limits in the environment defined for the country or region • Known contamination of fish, wildlife, foodstuff or humans at levels far exceeding the threshold established for the country or region

Issue	Score 0 = No concern	Score 1 = Slight concern	Score 2 = moderate concern	Score 3 = major concern
Organohalogen	<ul style="list-style-type: none"> • No evidence of production or product contamination • No evidence of air emissions • No evidence of emissions from solid residues • No evidence of chemical stockpiled • No evidence of chemical being contaminant in production of other chemicals • No evidence of use of the chemical • No evidence of release from liquid effluent 	<ul style="list-style-type: none"> • Evidence of limited production • Presence of small sources with possible emissions (e.g. small incineration plants or bleached kraft/pulp mills using chlorine) • Some limited evidence of releases but on a small scale invoking local concerns • Some use of the chemical in small areas • Some limited evidence of releases in compliance with national standards 	<ul style="list-style-type: none"> • Historical production evident and production for local use ongoing. Present as contaminant in other chemical production • Presence of major combustion related sources e.g. large municipal or industrial incinerators or large bleached kraft pulp mills • Evidence of stockpiles of the chemical • Use of chemical in agriculture or industry 	<ul style="list-style-type: none"> • Major production of chemical for local and export use • Chemical evident as contaminant in large scale production of other chemicals • Known emission of chemical from large scale incinerators or chlorine bleaching of pulp or other related combustion facilities • Evidence of leakage from major stockpiles of the chemical poorly packaged • Large-scale use of the chemical throughout the region
	<ul style="list-style-type: none"> • No known or historical levels of chemical contaminant in the environment except background levels of naturally occurring substances • No available data to quantify evidence of the chemical found in fish, wildlife animal or human tissue 	<ul style="list-style-type: none"> • Chemical contaminants are detectable in the environment but below threshold limits defined for the country or region • Chemical contaminants are detectable from fish, wildlife, foodstuff or human samples but below threshold limits established for the country or region 	<ul style="list-style-type: none"> • Chemical contaminants are found in the environment marginally above threshold limits defined for the country or region • Limited data available to support chemical existing within fish, wildlife, foodstuff or human tissue at marginal levels above threshold standards for the country or region 	<ul style="list-style-type: none"> • Chemical contaminant is analysed repeatedly well above threshold limits in the environment defined for the country or region • Known contamination of fish, wildlife, foodstuff or humans at levels far exceeding the threshold established for the country or region

Issue	Score 0 = No concern	Score 1 = Slight concern	Score 2 = moderate concern	Score 3 = major concern
BOD from industrial sources	<ul style="list-style-type: none"> • No evidence of releases from solid residues • Evidence of BOD levels in Rivers in compliance with national standards • Evidence of releases of all liquid industrial effluents in compliance with the national standards 	<ul style="list-style-type: none"> • Presence of small sources from small size industries • Some limited evidence of releases but on a small scale invoking local concerns 	<ul style="list-style-type: none"> • Historical releases of BOD from medium size industry • Evidence of periodical high BOD levels in coastal rivers 	<ul style="list-style-type: none"> • BOD releases are evident as contaminant in large scale industries • Known releases of BOD from large scale industries • Evidence of leakage from major municipal solid waste landfills • Evidence of leakage from major industrial solid waste landfills
	<ul style="list-style-type: none"> • No known or historical levels of BOD in water bodies except background levels of naturally occurring substances • No evidence of any eutrophication cases 	<ul style="list-style-type: none"> • BOD levels are detectable in water bodies but below threshold limits defined for the country or region 	<ul style="list-style-type: none"> • BOD levels are found in water bodies marginally above threshold limits defined for the country or region • Historical few harmful effects for marine and rivers wildlife associated with high BOD levels 	<ul style="list-style-type: none"> • BOD levels are analysed repeatedly well above threshold limits in water bodies • Evidence of repeated harmful effects for marine and rivers wildlife associated with high BOD levels
PCBs	<ul style="list-style-type: none"> • No evidence of production or product contamination • No evidence of air emissions • No evidence of emissions from solid residues • No evidence of chemical stockpiled • No evidence of chemical being contaminant in production of other chemicals 	<ul style="list-style-type: none"> • Evidence of limited production • Presence of small sources with possible emissions (e.g. small incineration plants or bleached kraft/pulp mills using chlorine); • Some limited evidence of releases but on a small scale invoking local concerns • Some use of 	<ul style="list-style-type: none"> • Historical production evident and production for local use ongoing. Present as contaminant in other chemical production • Presence of major combustion related sources e.g. large municipal or industrial incinerators or large bleached kraft pulp mills 	<ul style="list-style-type: none"> • Major production of chemical for local and export use • Chemical evident as contaminant in large scale production of other chemicals • Known emission of chemical from large scale incinerators or chlorine bleaching of pulp or other

Issue	Score 0 = No concern	Score 1 = Slight concern	Score 2 = moderate concern	Score 3 = major concern
	<ul style="list-style-type: none"> • No evidence of use of the chemical • No evidence of release from liquid effluent 	<p>the chemical in small areas</p> <ul style="list-style-type: none"> • Some limited evidence of releases associated with liquid effluents 	<ul style="list-style-type: none"> • Evidence of stockpiles of the chemical • Use of chemical in agriculture or industry 	<p>related combustion facilities</p> <ul style="list-style-type: none"> • Evidence of leakage from major stockpiles of the chemical poorly packaged • Large-scale use of the chemical throughout the region
	<ul style="list-style-type: none"> • No known or historical levels of chemical contaminant in the environment except background levels of naturally occurring substances • No available data to quantify evidence of the chemical found in fish, wildlife animal or human tissue 	<ul style="list-style-type: none"> • Chemical contaminants are detectable in the environment but below threshold limits defined for the country or region • Chemical contaminants are detectable from fish, wildlife, foodstuff or human samples but below threshold limits established for the country or region 	<ul style="list-style-type: none"> • Chemical contaminants are found in the environment marginally above threshold limits defined for the country or region • Limited data available to support chemical existing within fish, wildlife, foodstuff or human tissue at marginal levels above threshold standards for the country or region 	<ul style="list-style-type: none"> • Chemical contaminant is analysed repeatedly well above threshold limits in the environment defined for the country or region • Known contamination of fish, wildlife, foodstuff or humans at levels far exceeding the threshold established for the country or region
Solid Waste	<ul style="list-style-type: none"> • Evidence of convenient solid waste management system in the region • No noticeable interference with the recreational use of beaches due to litter • No reported entanglement of aquatic organisms with debris 	<ul style="list-style-type: none"> • Evidence of temporary failure of the solid waste management system • Some evidence of marine derived litter on beaches • Occasional recovery of solid waste through trawling activities 	<ul style="list-style-type: none"> • No evidence of solid waste landfill • Widespread litter on beaches giving rise to public concern regarding recreational use of beaches • High frequency of benthic litter recovery and interference with trawling activities • Frequent report of entanglement / suffocation of species by litter 	<ul style="list-style-type: none"> • No evidence of solid waste management system • Incidence of litter on beaches sufficient to deter the public from recreational activities • Trawling activities untenable because of benthic litter and gear entanglement • Widespread entanglement and/or suffocation of aquatic species

Issue	Score 0 = No concern	Score 1 = Slight concern	Score 2 = moderate concern	Score 3 = major concern
Batteries and chemicals associated to its manufacturing	<ul style="list-style-type: none"> • No evidence of production • No evidence of air emissions • No evidence of emissions from solid residues • No evidence of batteries stockpiled • No evidence of release from liquid effluent • Evidence of extensive recycling (100%) of batteries 	<ul style="list-style-type: none"> • Evidence of limited production • Presence of small sources with possible emissions (e.g. small incineration plants and landfills) • Some limited evidence of releases but on a small scale invoking local concerns • Presence of small stockpiles • Evidence of medium scale recycling (80%) 	<ul style="list-style-type: none"> • Historical production evident and production for local use ongoing • Presence of major combustion related sources e.g. large municipal or industrial incinerators • Evidence of stockpiles of batteries • Evidence of small scale recycling (50%) of batteries 	<p>by litter</p> <ul style="list-style-type: none"> • Major production of batteries for local and export use • Chemicals from Batteries production are evident as contaminant in large scale production • Evidence of leakage from major stockpiles • Large-scale use of batteries throughout the region • Evidence of no recycling of batteries
	<ul style="list-style-type: none"> • No known or historical levels of chemical contaminant in the environment except background levels of naturally occurring substances • No available data to quantify evidence of the chemical found in fish, wildlife animal or human tissue 	<ul style="list-style-type: none"> • Chemical contaminants are detectable in the environment but below threshold limits defined for the country or region • Chemical contaminants are detectable from fish, wildlife, foodstuff or human samples but below threshold limits established for the country or region 	<ul style="list-style-type: none"> • Chemical contaminants are found in the environment marginally above threshold limits defined for the country or region • Limited data available to support chemical existing within fish, wildlife, foodstuff or human tissue at marginal levels above threshold standards for the country or region 	<ul style="list-style-type: none"> • Chemical contaminant is analysed repeatedly well above threshold limits in the environment defined for the country or region • Known contamination of fish, wildlife, foodstuff or humans at levels far exceeding the threshold established for the country or region
Lub Oil	<ul style="list-style-type: none"> • No evidence of production • No evidence of air emissions • No evidence of emissions from solid residues • No evidence of lub oil stockpiled • No evidence of release from liquid 	<ul style="list-style-type: none"> • Evidence of limited production • Presence of small sources with possible emissions (e.g. small incineration plants and landfills) • Some limited evidence of releases but on a 	<ul style="list-style-type: none"> • Historical production evident and production for local use ongoing • Presence of major combustion related sources e.g. large municipal or industrial incinerators 	<ul style="list-style-type: none"> • Major production of lub oil for local and export use • Chemicals from Batteries production are evident as contaminant in large scale production

Issue	Score 0 = No concern	Score 1 = Slight concern	Score 2 = moderate concern	Score 3 = major concern
	effluent <ul style="list-style-type: none"> Evidence of full recycling of lub oil 	small scale invoking local concerns <ul style="list-style-type: none"> Presence of small stockpiles Evidence of medium scale recycling of lub oil 	<ul style="list-style-type: none"> Evidence of stockpiles of lub oil Evidence of limited recycling of lub oil 	<ul style="list-style-type: none"> Evidence of leakage from major stockpiles of the chemical poorly packaged Large-scale use of lub oil throughout the region Evidence of no recycling of lub oil
	<ul style="list-style-type: none"> No known or historical levels of chemical contaminants from lub oil in the environment except background levels of naturally occurring substances No available data to quantify evidence of the chemicals originated from lub oil found in fish, wildlife animal or human tissue 	<ul style="list-style-type: none"> Chemical contaminants from lub oil are detectable in the environment but below threshold limits defined for the country or region Chemical contaminants originated from lub oil are detectable from fish, wildlife, foodstuff or human samples but below threshold limits established for the country or region 	<ul style="list-style-type: none"> Chemical contaminants from lub oil are found in the environment marginally above threshold limits defined for the country or region Limited data available to support chemicals originated from lub oil existing within fish, wildlife, foodstuff or human tissue at marginal levels above threshold standards for the country 	<ul style="list-style-type: none"> Chemical contaminants from lub oil are analysed repeatedly well above threshold limits in the environment defined for the country or region Known contamination of fish, wildlife, foodstuff or humans by chemical originated from lub oil at levels far exceeding the threshold established for the country

**Guidelines for Scoring Issues Associated with Each Environmental issue
Socio Economic Loss**

Issue	Score 0 = No concern	Score 1 = Slight concern	Score 2 = moderate concern	Score 3 = major concern
ALL ISSUES	<ul style="list-style-type: none"> • No evidence of increased cost of human health protection • No evidence of loss of tourism or recreational values • No evidence of loss of property values • No evidence of changes in land use plans 	<ul style="list-style-type: none"> • Evidence of increase in cost of human health protection • Temporary reduction of beaches frequentation • Evidence of changes in land use plans • Loss of aesthetic values 	<ul style="list-style-type: none"> • Modification or loss of cultural heritage • Increased cost of clean up • Reduced options for aquaculture • Evidence of temporarily loss of economic returns 	<ul style="list-style-type: none"> • Complete loss of tourism and recreational activities • Considerable loss of property values • Noteacable local population immigration • Loss of economic returns • Loss of protected areas • Loss of wild and aquatic life • Complete changes in land use plans

**Guidelines for Scoring Issues Associated with Each Environmental issue
Regional and Global environment**

Issue	Score 0 = No concern	Score 1 = Slight concern	Score 2 = moderate concern	Score 3 = major concern
ALL ISSUES	<ul style="list-style-type: none"> • No evidence of violation of Bilateral environmental agreements • No evidence of violation of regional and global environmental agreement • No evidence of transboundary impacts 	<ul style="list-style-type: none"> • Potential transboundary impacts 	<ul style="list-style-type: none"> • Increase of GHG emissions 	<ul style="list-style-type: none"> • Evidence of violation of regional and global environmental agreements • Potential bilateral conflict

ANNEX II

NATIONAL / ADMINISTRATIVE REGION PRIORITY LIST OF ACTIONS FOR 2010

NATIONAL / ADMINISTRATIVE REGION PRIORITY LIST OF ACTIONS FOR 2010

Administrative Region	Site	Pollutant	Expected Reduction %	Stakeholders	Time Framework	Tracking Method