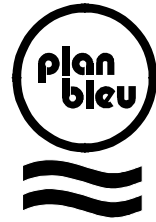




MEDITERRANEAN ENVIRONMENTAL  
TECHNICAL ASSISTANCE PROGRAM



MEDITERRANEAN  
ACTION PLAN

**METAP III**  
**Regional Capacity Building Programme**  
**Programme Performance Monitoring and Indicators**

**Environmental Performance Indicators**  
**3 National Tests**

*Synthesis Report*



March 2000



UNOPS

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## Foreword

In recent years, most countries in the world have adopted sustainable development as the goal for environment and natural resources policy as a result from the Earth Summit in 1992. In many cases this very broad goal has been translated into specific national targets for abatement and control of pollutants, and for the management of natural resources such as water, forests or soils.

This process of goal-setting has been given additional impetus by the development of environmental policy frameworks or national environmental action plans, which lay out the overall structure for environmental policy. The prime motivation for the current interest in environmental indicators is the need to monitor progress towards those goals.

The Mediterranean Countries are working actively in this direction. Consequently, a specific Regional Program on **Environmental Performance Monitoring and Indicators** was designed jointly by METAP and Blue Plan /MAP/UNEP and started in January 1996. The 13 countries involved in the program went through the various stages necessary to build a relevant set of indicators: issues assessment, indicators selection, policy relevance, feasibility assessment, calculation, interpretation. The process benefited greatly from the active participation and willingness of the national experts.

Each of the 13 countries was asked to test the indicators sheets, calculate and interpret them.

A list of a core set of EPI was considered relevant for the whole region for priority issues in the Mediterranean: Water management, solid waste management, and air pollution control.

These attempts revealed the difficulty of a practical implementation of a good theory. Data are often not available, or not reliable, or available only for one place, one year. Quantitative targets are not yet set. We need to be aware of this constraints and work upon the improvement of both the data production and the objective setting.

But all the countries agreed that indicators are the building block for a long-term work on environmental performance assessment. When combined with targets for future performance, environmental indicators can show how effectively current policies are helping to improve the environmental conditions, and how far a country has yet to go.

It was decided, as a follow-up of the regional activity, **to test the feasibility of these indicators in 3 pilot countries**. Turkey, the Palestinian Authority and Egypt were chosen to carry out this test in 1999-2000.

This report provides a synthesis on the organisation and results of the 3 tests<sup>1</sup>. This report is divided into two parts:

- Part 1, focused on the process of testing indicators at the national level, the experience learned, and prospects;
- Part 2, showing some examples of illustrated indicators sheets for the Mediterranean region.

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<sup>1</sup> Each one (Egypt, Palestinian Authority, Turkey) will be separately related in a national report.

## Part 1

# Synthesis report on the process and results of Testing Environmental Performance Indicators in three countries

## Executive Summary

This activity forms part of the Performance Monitoring and Indicators Programme, a specific field of co-operation between Blue Plan, on behalf of the Mediterranean Action Plan, and METAP. It was launched at a major regional workshop in Damascus in January 1996.

This synthesis report aims at summarising the main outcomes of 3 national pilot tests on Environmental Performance Indicators conducted simultaneously in 3 places, namely: Turkey, the Palestinian Authority and Egypt in 1999-2000, in the fields of Air, Waste and Water.

It allows also to check the progress, from the three 1998 sub-regional workshops<sup>2</sup>, with national results and to assess the major stakes and steps in the implementation of a regular environmental performance activity.

The METAP/Blue Plan Environmental Performance Indicators test was officially launched in Mai 1999 and was to be finalised in December 1999. For institutional reasons, the test was delayed and could not start in most of the countries prior to October. It was therefore extended up to March 2000 to allow for a six month period.

This synthesis report presents only the main results achieved on a regional basis. The national reports prepared by each country provide more details on the content of discussion over the indicators sheets and their calculation.

### 1 Objectives of the test and summary of activities

The overall **objective** of the contract was to improve environmental performance in 13 Mediterranean Countries through the application of Environmental Performance Indicators (EPI). The specific objectives were:

- to improve national environmental policies evaluation through the use of indicators
- to evaluate, the practical “feasibility” of a first Mediterranean set of around 35 indicators,
- to test their relevance in the national context (Environmental strategies -waste, water, air-, National Environmental Action Plans, Environmental reporting)
- to illustrate their usefulness in the decision making process;
- to serve as a good identification of the work to be implemented in order to produce them regularly (MEDSTAT<sup>3</sup> with Environmental statistical divisions; Observatory functions<sup>4</sup>; Environmental System information projects<sup>5</sup>; ...)

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<sup>2</sup> Blue Plan/MAP/UNEP, ENVIRONMENTAL PERFORMANCE INDICATORS : METAP III , Regional Capacity Building Programme : Programme Performance Monitoring and Indicators, 1998.

<sup>3</sup> MEDSTAT= 3 years Euro-Mediterranean cooperation project on environmental statistics (1999-2001); this project managed by the Blue Plan in cooperation with EUROSTAT concerns the three pilot countries among a group of twelve beneficiary Mediterranean countries.

<sup>4</sup> such as the Turkish environment and Development Observatory, the newly born Lebanese one, the OTED in Tunisia, the OMED in Morocco.

<sup>5</sup> Such as the EIIS project in Egypt, the Environmental Information Network in Turkey.

## 2 Achievements

Depending on the country, around 50 to 100 national experts were involved in the test through the technical working groups, the field visits, technical meetings. The main activities under the present test were:

- organising national Workshops to review the conceptual framework of EPIs and test a first set of relevant indicators for the assessment of priority issues: air pollution, waste management, water management.
- heightening the selection and effective preparation of EPIs in technical working groups
- holding technical meetings on a case by case for specific information requirements;
- promoting interest, networking and developing capacity building on the use and application of EPIs.

The setting up of inter-institutional working groups with a national technical facilitator were good means of raising understanding on the issues and priorities for each of the topics and on the difficulty of measuring indicators.

The preparation, facilitation and debriefing of these meetings required intensive networking between the test team and Blue Plan, and were useful for raising awareness of national experts on EPI conceptual frameworks, since many of them were not familiar with indicators, performance assessment towards goals and targets setting.

Work in small thematic groups during workshops, bringing together experts in the same field, in an informal atmosphere, did probably contribute to strengthening future networking.

In Turkey and Palestine, the work of the local facilitators was enhanced by the participation of international experts on solid waste management and air pollution, who tackle these issues daily in practise. They were also invited to present their approach to EPIs and to answer specific technical questions. This was appreciated, and enriched discussions and widened the network.

In Egypt, the Environmental Agency benefited from a number of national and international experts working in house on related fields (waste strategy, setting the environmental information system), and therefore there was no need to invite additional experts from abroad. The focus was put on national expertise.

### 3 Difficulties

Due to various institutional changes and reorganisation in the three countries, the test took longer than expected to start and being implemented.

- In the three countries, the work was coordinated by the Environmental Ministry. It was not easy for the national coordinator to involve all the relevant institutions within the short time available for the test. It requires an intensive networking and institutional setting prior to the meetings. Due to this, the test is felt difficult and should allow additional work on data availability and critical review of available information. Therefore, the work is not considered fully finalised by the national METAP focal point.
- Furthermore, the three countries were still in a process of defining their national environmental plan or strategy on waste for example (Egypt, Palestine), or setting the criteria and targets for its implementation (Turkey), or designing their monitoring systems (air pollution monitoring system in Palestine). The lack of quantified objectives and targets in the available policy documents limited the possibility to refer to quantified objectives to guide them in the process of selection and interpretation of the indicators sets.
- as most of the members of the national working groups were new to the concept of indicators in general and environmental performance indicators, an important time was necessary to clarify overall objective, framework, concepts. Further consultation were also felt useful to agree on the indicators sheets content and conclude on their definition/calculation methods and the need to fit with the revised national schedules and strategies that are just being defined.
- Finally, a key difficulty in some of the countries is the lack of trained human resources inside the institutions to carry out the activities and the difficulty to keep them due to low salaries.

Environmental performance activity should be performed by the institutions themselves and therefore the capacity building should be concentrated on the people who will perform regularly these activities. External consultants should only help the process but not be the key actors.

Therefore, this test is considered in all three countries as a pilot activity to develop a longer and more extensive national activity on indicators to monitor environmental projects, and commitments, the NEAP, or sustainable development strategies being developed.

### 4 Future prospects

The test reached its objective by raising awareness and interest at a national level on the usefulness of environmental performance Indicators. Most of the national experts involved felt that it was an important working field, that was not yet addressed at the national level at the time of the test.

It has also been successful in developing interest in national initiatives on environmental indicators along the same lines, for various objective according to the country :

- policy performance or project performance analysis for the National environmental action Plan or strategy implementation and the framing of the regional and national environment report in Turkey and Palestine.
- setting a policy performance activity in the newly born strategic and planning division, as well as a development activity along the National Environmental Action Plan preparation in Egypt.
- Guiding the setting of environmental projects in Palestine and especially the technical monitoring network on air quality. Performance indicators are now part of the prerequisite of each project in Palestine.

In addition, in all three countries, it is expected to use the EPI test results to focus the 2000-2001 work program of the regional cooperation program on environmental statistics which just started (MEDSTAT-ENV) and which is coordinated by the national statistical institutes in the countries (SIS in Turkey, PCBS in Palestine, CAPMAS in Egypt) with the assistance of Blue Plan-regional Activity centre.

# From the objectives to the Test implementation

## 1 Background

The following test represents the follow-up of 3 sub-regional workshops in 1998 which gathered experts coming from 13 Mediterranean countries :

- Rabat sub-region: “Algeria, Lebanon, Morocco, Tunisia”
- Cairo sub-region: “Cyprus, Egypt, Jordan, Palestinian Authority, Syria”
- Split sub- region: “Albania, Croatia, Slovenia, Turkey”

These experts agreed on a selection of a set of Environmental Performance Indicators on the following issues:

1. Air pollution
2. Solid waste management
3. Water resource and demand management
4. Water pollution.

EPI have been selected for their ability to represent, in a very synthetic way, and for Mediterranean sub-regions, common issues as they arise in the countries.

This selection was suggested to countries as a first limited prime set of indicators on which concentrating their effort for data collection.

The participants of the three 1998 METAP/Blue Plan sub-regional workshops recommended the continuation of the activity on environmental performance indicators at a national level to get closer to the uses and to test the feasibility of the indicators sets.

Most of the 13 beneficiary METAP countries were then interested in the testing of the EPI selected at the regional level.

## 2 Three pilot countries

Therefore, when the follow up "national test" project was conceived by the Blue Plan; it was focused on the test of the feasibility of indicators sets in different country context. The following criteria were considered to select the three pilot countries:

- As much as possible, one country from each of the three 1998 sub-regional workshops.
- Countries which were not already involved in other international indicators activity, in order to avoid duplication of work;
- Countries which were not under very heavy political stress, as the test required a lot of inter-institutional cooperation and potential for the long term planning;
- Countries willing to participate in this difficult short term activity on the same three issues that were in line with their long term objective.

At the time of the launching of the test, some countries, which could have been good candidates for the test, were either :

- Not in a position to perform such a test in a short term for institutional or political reasons. Many of them considered that beforehand, the organisation and structuring of their environmental framework as well as an inter-institutional preparation work was needed. This was the case of Lebanon, Algeria from the Rabat group, Croatia and Albania from the Split group, as well as Cyprus, Syria and Jordan of the Cairo group.
- Or already, involved in a time consuming test on indicators for the follow up of the sustainable development issues (e.g. test of the UN or MCSD sustainable development indicators) : Tunisia, Morocco, Slovenia were involved in ISD.

Therefore, the present test has been conducted simultaneously in 3 countries, namely: **Turkey** (Split workshop), the **Palestinian Authority** and **Egypt** (Cairo workshop) in 1999.

### 3 Objectives

The main objectives of the test were:

- to improve national environmental policies evaluation through the use of indicators
- to evaluate, the practical “feasibility” of a first Mediterranean set of 35 indicators, which means:
  - Precise and test their definitions/methods of calculation
  - Assess data availability and liability
  - Collect data when existing
  - Calculate the indicators
  - Publish them together with a brief analysis of trends
  - For non-existing data (or not reliable data), identify the necessary actions to carry out to calculate the indicators
- to test their relevance in the national context in order to illustrate their usefulness in the decision making process
- to serve as a good identification of the work to be implemented in order to produce them regularly. (MEDSTAT<sup>6</sup> with Environmental statistical divisions; Observatory functions<sup>7</sup>; Environmental System information projects<sup>8</sup>; ...).

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<sup>6</sup> MEDSTAT= 3 years Euro-Mediterranean cooperation project on environmental statistics (1999-2001); this project managed by the Blue Plan in cooperation with EUROSTAT concerns the three pilot countries among a group of twelve beneficiary Mediterranean countries.

<sup>7</sup> such as the Turkish environment and Development Observatory, the newly born Lebanese one, the OTED in Tunisia, the OMED in Morocco.

<sup>8</sup> Such as the EIIS project in Egypt, the Environmental Information Network in Turkey.

## **4 List and definition of indicators to be tested**

The full list of indicators tested in the 3 pilot countries is shown in the next table.

The full description (description forms) of each indicator is to be found in a report named: “Blue Plan/MAP/UNEP. Environmental Performance Indicators: Final list of Indicators (revised), for METAP III, Regional Capacity Building Programme: Programme Performance Monitoring and Indicators, 1998”. This report is not reproduced here but was distributed as reference book to all participants to the test.

Each indicator description form<sup>9</sup> comprises the following parts : definition, data, illustration, use and international objectives and national objectives when available.

The test aimed at revising, adapting, illustrating these indicators sheets according to the country specificities on three topics: water, waste, air pollution.

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<sup>9</sup> Several methodological description forms were adapted from the set of 134 indicators used by the United Nations Commission for Sustainable Development (CSD<sup>9</sup> Blue Book), the Eurostat list of Pressure indicators or other documents cited thereafter.

Final List of EPI selected through the 3 workshops and tested at national level  
(1/2):

INDICATOR	PSR TYPE	INDICATOR N° (*)	RABAT SELECTION (**)	CAIRO SELECTION (**)	SPLIT SELECTION (**)
<b>AIR</b>					
Green House Gas emissions	P	1	1	1	
<b>SOx emissions</b>	<b>P</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>NOx emissions</b>	<b>P</b>	<b>4</b>	<b>1</b>	<b>1</b>	<b>1</b>
Energy Intensity	P	7		1	
Frequency of Excess over Standards	E	9	1		1
Excessive Respiratory Disorders due to Air Pollution	R	10	1	1	
Role of Renewable Energies in Energy Balance	R	11	1		
Expenditures Devoted to Air Pollution Abatement	R	14			1
<b>Proportion of Clean Fuels in Total Fuel Consumption</b>		-	<b>1</b>	<b>1</b>	<b>1</b>
<b>SOLID WASTE</b>					
<b>Municipal Solid Waste Generation</b>	<b>P</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
Composition of Municipal Waste	P	2	1		
Collection Rate of Municipal Waste	R	3	1	1	
Destination of Collected Municipal Waste	R	4		1	1
<b>Hazardous Waste Generation</b>	<b>P</b>	<b>8</b>	<b>1</b>	<b>1</b>	<b>1</b>
Contaminated Area	E	9			1
Proportion of MSW Treated in Discharges	R		1		
<b>Cost Recovery</b>	<b>R</b>	-	<b>1</b>	<b>1</b>	<b>1</b>

(\*) N of the sheet: refers to the description form number in the full report referred to in the previous page  
(\*\*): 1: means selected; Turkey was in Split Workshop, Egypt and Palestinian Authority were in the Egyptian Workshop

**In bold**, the common set for the 13 countries is shown

Final List of EPI selected through the 3 Workshops and to be tested at national level (2/2):

INDICATOR	PSR TYPE	INDICATOR N° (*)	SELECTION RABAT (**)	SELECTION CAIRO (**)	SELECTION SPLIT (**)
<b>WATER RESOURCES AND DEMAND</b>					
Water Mobilisation Rate	R	1'	1		
Aquifer Over Exploitation Index	P	4	1		1
Density of Hydrological Measurements Networks	R	5	1		
<b>On-farm Irrigation Efficiency</b>	<b>P</b>	<b>10</b>	<b>1</b>	<b>1</b>	<b>1</b>
Exploitation Index	P	11	1		1
Water final consumption index	P	12		1	
Index of Diversification of Water Supply	R	14	1	1	
<b>Drinking Water Demand Efficiency</b>	<b>P</b>	<b>15</b>	<b>1</b>	<b>1</b>	<b>1</b>
Water unit productivity in agriculture	R			1	
Cost Recovery Rate	P	-			1
<b>POLLUTION AND WATER QUALITY</b>					
<b>Water Quality Indicator</b>	<b>E</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>Agro-Chemicals Use Indicators</b>	<b>P</b>	<b>2'</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>Drinking Water Supply Compliance Indicators</b>	<b>P</b>	<b>5</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>Waste Water Collection and Treatment Indicator</b>	<b>R</b>	<b>6'</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>Industrial Waste Water Treatment</b>	<b>R</b>	<b>8'</b>	<b>1</b>	<b>1</b>	<b>1</b>
Pollution Flows	P		1		
Recovery Rate of Water Treatment and Protection	R		1		
Collective Treatment Efficiency	R		1		

(\*) N of the sheet: refers to the description form number in the full report referred to in the previous page

(\*\*): 1: means selected

Turkey was in Split Workshop, Egypt and Palestinian Authority were in the Egyptian Workshop

In bold, the common set for the 13 countries is shown

## 5 Methodology

The national tests were carried out under the coordination of the METAP national Focal Point (Ministry of Environment) or designated coordinator. The activity was done as a national initiative by national experts with the assistance of a technical working group representing the key institutions working on the topic and the Blue Plan experts when needed.

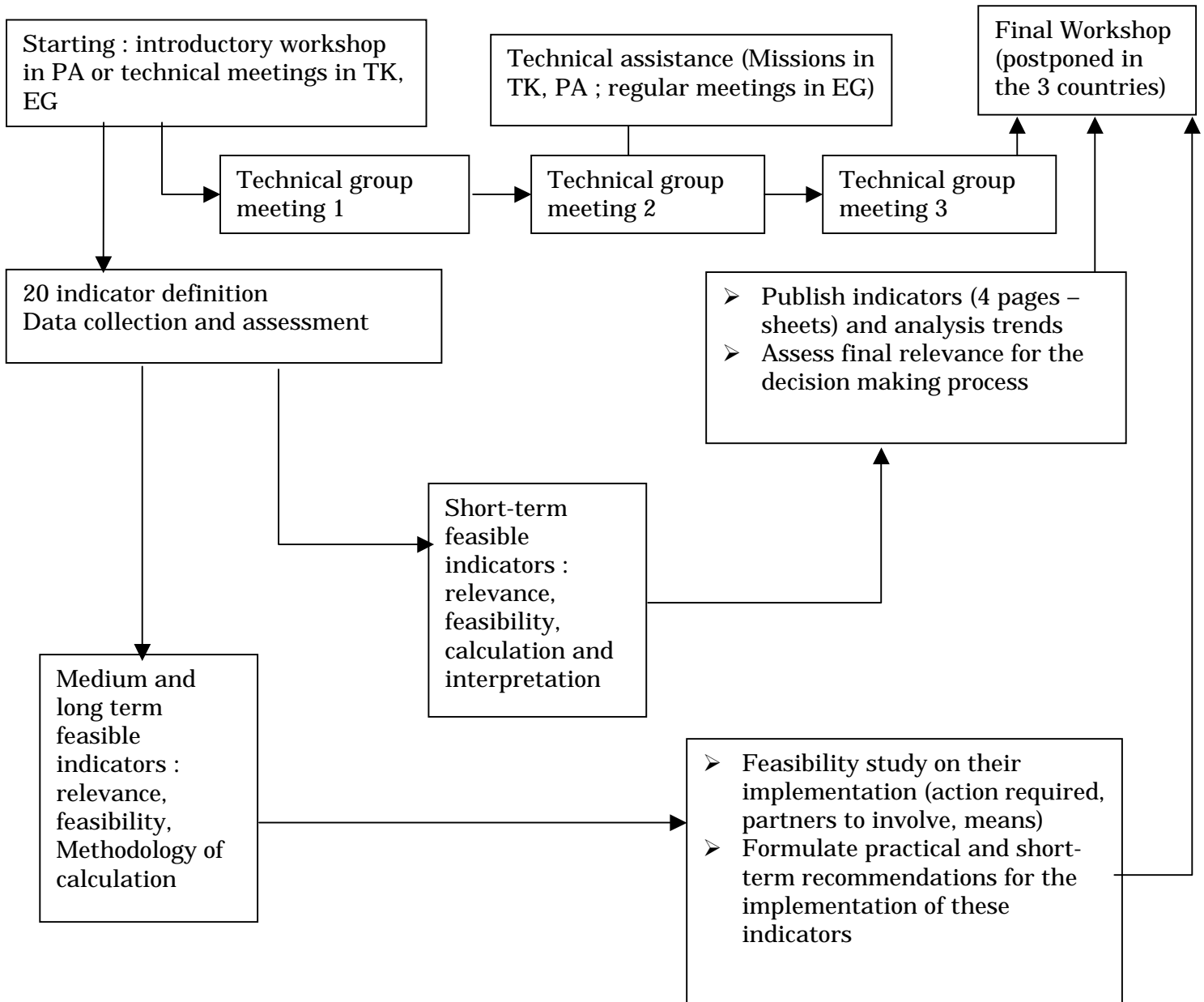
Each country defined its own way of conducting the test with the assistance of the Blue Plan Technical Team.

### 5.1 Starting point

A similar methodology was proposed to the three countries as follow : (see the flow chart thereafter.)

- the proposed test team :
  - One national leader in charge of co-ordinating the whole project and producing the final report, organising and animating the various technical groups, and especially the final workshop.
  - Several technical groups (waste, Air, Water) that gather all the experts from institutions, NGOs, municipalities that are working directly or indirectly on the subject.
  - External (or internal) expertise if necessary on very specific technical issues
- the process :
  - A launching meeting in order to start with the same background information
  - Technical groups (proposed 4 topics\*3 meetings/group\*10 participants); each technical group gathered experts on one topic and validate each step and output of the test. The success of these working group discussions is the key to the success of the project.
    - First meeting: information on the project and the EPI to the various institutions interested ; presentation of the indicators selected.
    - Second meeting: to assess the draft indicators sheets prepared by the technical coordinator and complement it. A field visit was organised during the working groups in order to have a common view on the reality and the data collection systems in the group.
    - Third meeting: to finalise the document “environmental performance indicators for 3 priority issues in the country : water, waste, air” that could be published by the institution as a pilot report.
  - A presentation of the draft report “environmental performance indicators for 3 priority issues in the country : water, waste, air” to a final seminar. It enables to enlarge the views with a presentation of the international activity on indicators and to discuss on the follow up of the EPI activity (develop similar projects on other fields etc.).
  - The report and its publication with a long term program on environmental performance indicators in the country.

Initial proposed logical flow chart for the national test



**OVERALL ORGANISATION/**  
*One national leader in charge of co-ordinating the whole project and producing the final report, organising and animating with technical experts the various technical groups, and especially the final workshop*  
*Several technical groups (waste, Air, Water) facilitated by technical experts from the Ministry of environment technical unit, or external consultants.*  
*External expertise on very specific technical issues (Two experts from France were invited to share their experience on Europe situation on air monitoring and waste in Palestine, and Turkey).*

## 5.2 Adapting the methodology on a country per country basis

The long term objective of this test is to raise awareness and interest and have national initiatives of indicators development along the same lines for policy performance or project performance analysis. Therefore, decisions, organisation were left as much as possible to the national initiative in order to set a first block for a lasting program.

Overall the general lines of the common methodology were followed :

- The national test was carried out by national experts (one for each of the subjects: air, solid waste, water resources, water pollution) with the assistance of the Blue Plan expertise.
- In each country, a launching or mid term workshop was organised in order to inform and involve the most appropriate national experts and institutions in the process of the test.
- A major focus was put on national consultation in order to achieve consensus building on the relevant sets of indicators within the country organising 1 to three working groups depending on the subject.

The differences in the process are summarized in the following table :

<i>Methodology aspects</i>	<i>Turkey</i>	<i>Palestine</i>	<i>Egypt</i>
Test team			
Coordination	<ul style="list-style-type: none"> <li>• administrative coordination (Chief of EIA department, Ministry of environment)</li> </ul>	<ul style="list-style-type: none"> <li>• All coordination by the National METAP focal point</li> </ul>	<ul style="list-style-type: none"> <li>• Administrative coordination (chief of TCOI, EEAA)</li> </ul>
	<ul style="list-style-type: none"> <li>• technical coordination in the TEDO unit, Menv)</li> <li>• mid-term mission from BP</li> </ul>	<ul style="list-style-type: none"> <li>• same</li> <li>• BP mission at the starting stage;</li> </ul>	<ul style="list-style-type: none"> <li>• Assistant (TCOI)</li> <li>• Regular assistance by D. Vallée, Blue Plan</li> </ul>
Policy advice	<ul style="list-style-type: none"> <li>• Environmental expert (98 sub-regional work) from the State Planning Organisation</li> </ul>	<ul style="list-style-type: none"> <li>• National focal point who participated to all the PPM program from 1996.</li> </ul>	<ul style="list-style-type: none"> <li>• Chief TCOI, EEAA</li> <li>• NEAP project manager</li> </ul>
Technical leaders	<ul style="list-style-type: none"> <li>• 4 from the Ministry of environment technical units</li> </ul>	<ul style="list-style-type: none"> <li>• 4 from the Ministry of environment</li> </ul>	<ul style="list-style-type: none"> <li>• 3 consultants from universities or consultancy;</li> </ul>
Knowledge of EPI of the working groups	<ul style="list-style-type: none"> <li>• the policy adviser, and 1 water pollution technical leader participated in 98 sub -regional workshops.</li> </ul>	<ul style="list-style-type: none"> <li>• The national coordinator, and 1 waste expert who participated in 98 workshop</li> </ul>	<ul style="list-style-type: none"> <li>• No knowledge by the technical leaders,</li> <li>• Participation of 2 experts from last year in the working groups.</li> </ul>

<b>Process of the test</b>			
Seminar	<ul style="list-style-type: none"> <li>• Launching seminar</li> </ul>	<ul style="list-style-type: none"> <li>• Launching seminar</li> </ul>	<ul style="list-style-type: none"> <li>• Launching seminar</li> </ul>
Working groups	<ul style="list-style-type: none"> <li>• 1 month after launching (start)</li> </ul>	<ul style="list-style-type: none"> <li>• Just after launching</li> </ul>	<ul style="list-style-type: none"> <li>• 1 month after launching</li> </ul>
Air	<ul style="list-style-type: none"> <li>• 3 working groups in 3 month</li> </ul>	<ul style="list-style-type: none"> <li>• 2 working groups in 2 months</li> </ul>	<ul style="list-style-type: none"> <li>• 1 working group in 1 month</li> </ul>
Waste	<ul style="list-style-type: none"> <li>• 3 working groups in 3 months</li> </ul>	<ul style="list-style-type: none"> <li>• 2 working groups in 2 months</li> </ul>	<ul style="list-style-type: none"> <li>• 2 working groups in 1 month</li> </ul>
Water resources/uses	<ul style="list-style-type: none"> <li>• 3 working groups in 3 months</li> </ul>	<ul style="list-style-type: none"> <li>• 1 working group</li> </ul>	<ul style="list-style-type: none"> <li>• 2 working groups</li> </ul>
Water pollution and waste water	<ul style="list-style-type: none"> <li>• 2 working groups in 3 months</li> </ul>	<ul style="list-style-type: none"> <li>• 1 working group</li> </ul>	<ul style="list-style-type: none"> <li>• (2 subjects together)</li> </ul>
Field trips	<ul style="list-style-type: none"> <li>• Yes for the waste and air working groups</li> </ul>	<ul style="list-style-type: none"> <li>• Yes for the air and waste working groups</li> </ul>	<ul style="list-style-type: none"> <li>• None (lack of time)</li> </ul>
External expertise	<ul style="list-style-type: none"> <li>• 2 experts in mission for the waste and air working groups (mid term evaluation)</li> </ul>	<ul style="list-style-type: none"> <li>• 2 experts in mission for the waste and air working groups (launching)</li> </ul>	<ul style="list-style-type: none"> <li>• A number of external funded project managers attended the launching workshop.</li> </ul>
<b>Institutional difficulties</b>	<ul style="list-style-type: none"> <li>• Change of administrative coordination, and reorganisation of the MoE</li> </ul>	<ul style="list-style-type: none"> <li>• Ministry moved location, and internal reorganisation,</li> <li>• Loss of trained human resources</li> </ul>	<ul style="list-style-type: none"> <li>• Change of status of the TCOI and internal reorganisation,</li> <li>• Loss of trained human resources,</li> </ul>
Current Effects	<ul style="list-style-type: none"> <li>• Strengthened the Turkish Observatory function with a structuring activity</li> </ul>	<ul style="list-style-type: none"> <li>• Implementation of indicators activity within all environmental projects</li> </ul>	<ul style="list-style-type: none"> <li>• EPI are tool for the new planning unit within the EEAA.</li> </ul>
Long term prospects	<ul style="list-style-type: none"> <li>• Link with the NEAP implementation, and env. reporting.</li> </ul>	<ul style="list-style-type: none"> <li>• Link with the Env. Strategy and design of networking system.</li> </ul>	<ul style="list-style-type: none"> <li>• Link with the NEAP development and other environmental strategies</li> </ul>

### 5.3 Working group composition

Depending on the countries, three to four technical groups were set under the coordination of the technical facilitators. Work in small thematic groups during workshops, bringing together experts in the same field, in an informal atmosphere, did probably contribute to strengthening future networking.

- In Turkey and Palestine, the work of the local facilitators was enhanced by the participation of international experts on solid waste management and air pollution, who shared their practical daily experience. They were also invited to

present their approach to EPIs and to answer specific technical questions. This was appreciated, and enriched discussions and widened the network.

- In Egypt, the Environmental Agency benefited from a number of national and international experts working in house on related fields (waste strategy, setting the environmental information system), and therefore there was no need to invite additional experts from abroad. The focus was put on national expertise.

The common features of the technical groups are :

- The diversity of institutions involved in the water issues ;
- The growing interest over air issues and the setting up of monitoring systems in the three countries;
- The concern over waste issues but not yet a monitoring system in place and only a recent leadership by the Ministry of environment or the environmental agency and still limited means of action.

There major differences is the content of the debate and the facilitation :

- In Palestine and Turkey, the participants already involved in the regional 1998-work on environmental performance indicators (sub-regional workshop) were involved in the coordination or facilitation team of the test. The debate was targeted on getting an agreement on the proposed list but more on the illustration, interpretation and targeting needed for the country.
- In Egypt, it was preferred to chose new experts and the debate were focused mostly on the meaning of indicators and the selection of the indicators.

The following table presents the list of institutions which participated in each technical group.

Technical working group	Turkey	Palestine	Egypt
<b>Air</b>	<ul style="list-style-type: none"> <li>• Ministry of environment,</li> <li>• Refik Saydam Centre of Hygiene (Ministry of Health),</li> <li>• State statistical institute,</li> <li>• Ministry of Energy,</li> <li>• Ministry of Transportation,</li> <li>• General Directorate of state of Metrological Service,</li> <li>• TUBITAK,</li> <li>• SPO.</li> </ul>	<ul style="list-style-type: none"> <li>• Ministry of environment,</li> <li>• Palestinian Central Bureau of Statistics (PCBS),</li> <li>• Ministry of Industry</li> </ul>	<ul style="list-style-type: none"> <li>• EEAA</li> <li>• Environmental research laboratory</li> <li>• EEAA/EIMP</li> <li>• EEAA/NEAP</li> <li>• Ministry of Industry</li> <li>• American University</li> </ul>
<b>Waste</b>	<ul style="list-style-type: none"> <li>• Ministry of Environment, SIS,</li> <li>• Great Ankara Municipality.</li> </ul>	<ul style="list-style-type: none"> <li>• Ministry of environment,</li> <li>• Palestinian Central Bureau of Statistics</li> <li>• Ministry of Industry</li> <li>• El-Bireh municipality</li> </ul>	<ul style="list-style-type: none"> <li>• EEAA</li> <li>• Environmental research laboratory</li> <li>• EEAA/NEAP</li> <li>• NGOs federation</li> <li>• CID</li> <li>• Kemonex company</li> </ul>
<b>Water resources</b>	<ul style="list-style-type: none"> <li>• Ministry of Environment,</li> <li>• SIS,</li> <li>• SPO,</li> <li>• Refik Saydam Centre of Hygiene,</li> <li>• State of Hydraulic Works,</li> <li>• Ministry of Agriculture,</li> <li>• Directorate of South Anatolian project,</li> <li>• Bank of Provinces,</li> <li>• Ministry of Energy.</li> </ul>	<ul style="list-style-type: none"> <li>• Ministry of environment,</li> <li>• PCBS</li> <li>• Water authority</li> <li>• Hydrology group and Other ngos,</li> <li>• Ministry of agriculture</li> </ul>	<ul style="list-style-type: none"> <li>• EEAA</li> <li>• National research centre,</li> <li>• National water research centre /drainage institute &amp; water resources and demand management</li> </ul>
<b>Water pollution</b>	<ul style="list-style-type: none"> <li>• Same institutions</li> </ul>	<ul style="list-style-type: none"> <li>• Same institutions</li> </ul>	<ul style="list-style-type: none"> <li>• AAEE, Environmental monitoring laboratory,</li> <li>• National research centre/water pollution,</li> <li>• National water research centre</li> <li>• Ministry of industry</li> </ul>

## 6 Workplan

As was presented before, the process and the organisation of the test was as much as possible left to the national initiatives with assistance along the way when necessary. The following table summarises the steps of the work.

The same results in the three countries were not reached but a final draft (in December from Turkey and Palestine and in March from Egypt) was achieved. Turkey and Palestine revised their draft in February and are preparing a national publication for larger dissemination of the work.

This activity requires an intensive networking among the various institutions and take some time to be launched. The first preparatory mission in each of the countries aimed not only at organising the work programme but also at assessing the various related projects that should be closely linked and the key persons to participate along the process.

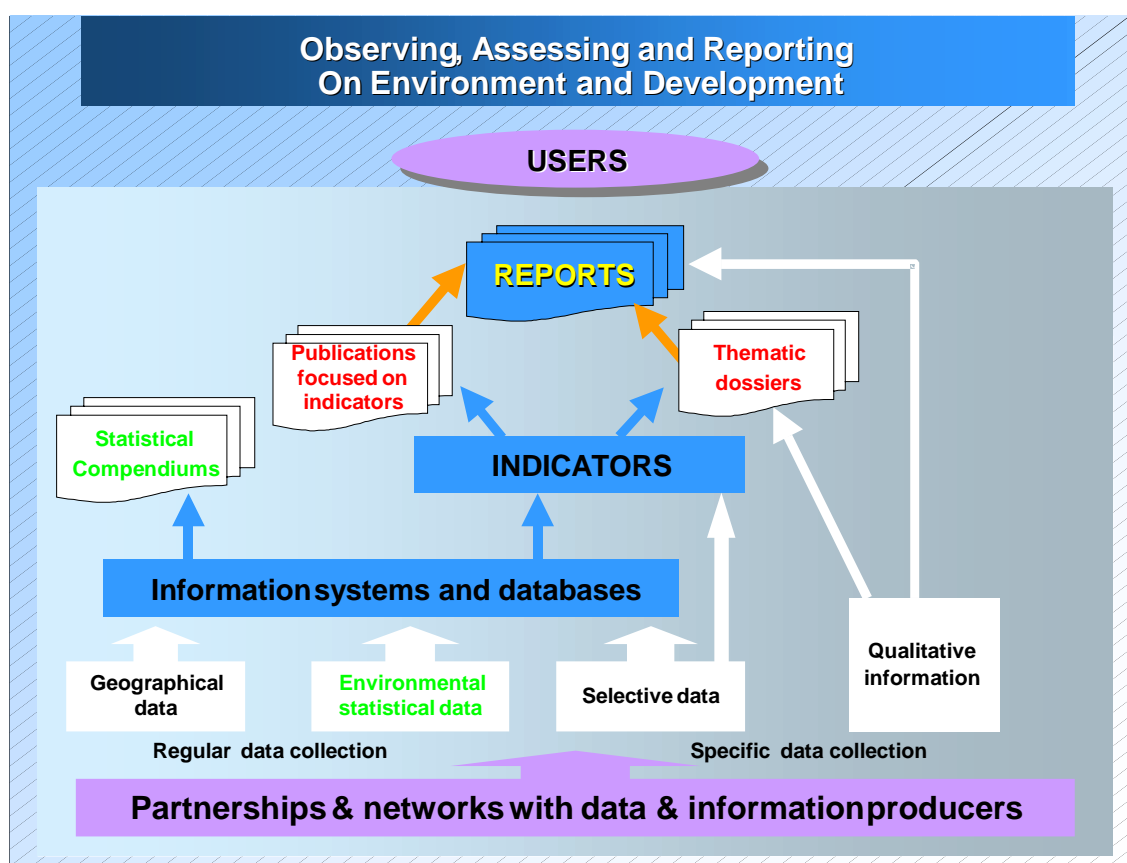
Tasks	Palestinian Authority	Turkey	Egypt
<ul style="list-style-type: none"> <li>BP Project proposal for testing to the countries and revision of indicators sheets.</li> </ul>	<ul style="list-style-type: none"> <li>1<sup>st</sup> Contact 05/99</li> <li>Approval: 09/99</li> </ul>	<ul style="list-style-type: none"> <li>1<sup>st</sup> Contact 05/99</li> <li>Approval : 09/99</li> </ul>	<ul style="list-style-type: none"> <li>1<sup>st</sup> Contact 05/99</li> <li>Approval : 10/99</li> </ul>
<ul style="list-style-type: none"> <li>Mission of Blue plan to adapt proposed Workplan with national Focal point</li> </ul>	<ul style="list-style-type: none"> <li>16/10/99</li> </ul>	<ul style="list-style-type: none"> <li>15/9/99r</li> </ul>	<ul style="list-style-type: none"> <li>26/9/99</li> </ul>
<ul style="list-style-type: none"> <li>Launching workshop : general presentation and topic discussions</li> </ul>	<ul style="list-style-type: none"> <li>17/10/99</li> </ul>	<ul style="list-style-type: none"> <li>16/9/99</li> </ul>	<ul style="list-style-type: none"> <li>23/12/99 ; 6/2/00</li> </ul>
<ul style="list-style-type: none"> <li>Working group on air pollution EPI</li> </ul>	<ul style="list-style-type: none"> <li>17/10/99 to 19/10/99</li> </ul>	<ul style="list-style-type: none"> <li>9/11/99 to 10/11/99</li> </ul>	<ul style="list-style-type: none"> <li>12/2/00</li> </ul>
<ul style="list-style-type: none"> <li>Working group on waste management EPI</li> </ul>	<ul style="list-style-type: none"> <li>19/10/99 to 21/10/99</li> </ul>	<ul style="list-style-type: none"> <li>11/11/99 to 12/11/99</li> </ul>	<ul style="list-style-type: none"> <li>13/2/00 and 20/2/00</li> </ul>
<ul style="list-style-type: none"> <li>Working group on water (resources/uses and pollution)</li> </ul>	<ul style="list-style-type: none"> <li>Ongoing</li> </ul>	<ul style="list-style-type: none"> <li>11/11/99 to 12/11/99</li> </ul>	<ul style="list-style-type: none"> <li>23/2/00 and 9/3/00.</li> </ul>
<ul style="list-style-type: none"> <li>Final workshop to present EPI test</li> </ul>	<ul style="list-style-type: none"> <li>29/3/00 – planned</li> </ul>	<ul style="list-style-type: none"> <li>no specific dates yet</li> </ul>	<ul style="list-style-type: none"> <li>No specific dates</li> </ul>
<ul style="list-style-type: none"> <li>Final reports : workshops + indicators report</li> <li>Blue Plan synthesis (31/3/00)</li> </ul>	<ul style="list-style-type: none"> <li>31/12/00 (draft)</li> <li>final : 31/3/00</li> </ul>	<ul style="list-style-type: none"> <li>31/12/00 (draft)</li> <li>final : 31/3/00</li> </ul>	<ul style="list-style-type: none"> <li>20/3/00</li> </ul>

## From issues to environmental reporting : Indicator, a tool in the process

The activity on Environmental Performance Indicators started in 1996 with the prime objective of improving performance assessment of the METAP III implementation. It was therefore focused on the priority fields of the program: water resources and coastal resources management, mitigation of hot spots, capacity building.

Environmental performance indicators' (EPI) are just a tool in the process of assessment. The assessment can only be performed if there is preparation and ownership of the process. For a given policy, program or project, the objectives, milestones and targets need to be clearly set, and quantified prior to the assessment.

The role of EPI as key element for environmental policy evaluation and reporting, converting data into information, is summarised in the figure below.



The EPI activity was therefore focused on capacity building to develop ownership and the understanding of the usefulness of indicators to keep tracks of changes of situation (improvement or degradation), the causes and the responses set. This

capacity building went step by step from the regional, to the national through a sub regional phase.

The national test done in three Mediterranean countries confirmed the need for indicators but demonstrated also the slow pace of reaching ownership of a process.

## **1 The need for indicators confirmed**

In the three countries, there was, from the beginning, a strong interest in working on environmental performance indicators. It was the major reason for selecting them.

The interest and need for indicators were confirmed in each country by the experts involved in the technical working groups. In general, the experts considered that devising and using indicators lies at the heart of the ability to "know" & "act".

This activity consists of selecting and enhancing data in order to create useful information for assisting decision-making and for inciting initiatives to be taken. Therefore it is felt that the indicators activity has a central role in structuring, organising environmental information production involving:

- **Data:** it forces choices to be made and allows priority data to be identified. It can incite data producers to adapt their approaches and their collection and measurement methods.
- **Analysis:** indicators allow past trends to be measured, possible changes to be imagine and non-sustainable phenomena to be better appraised.
- **Assessment:** indicators help to set result-based goals and/or measure progress towards targets already set and distance to goals (performance indicators)
- **Reporting:** indicators make reports on environment more objective and enriched and thus constitute a favoured vehicle for communication. Their use guarantees comparability of reports over time.
- **Partnership:** using indicators is a process for mobilising the several partners - data providers and users- and consolidating their mutual relationship.

By enhancing the already produced data and by transforming them into new information, indicators can bring a technical contribution to sustainable development issues in the frame of sectoral partnerships as required by the national environmental action plans or the sustainable development strategies as illustrated in the following scheme.

## **2 The need for consultation to agree on indicators**

The setting up of inter-institutional working groups with a national technical facilitator was good means of raising understanding on the issues and priorities for each of the topics and on the difficulty of measuring indicators.

- The preparation, facilitation and debriefing of these meetings required intensive networking between the test team and Blue Plan, and were useful for raising awareness of national experts on EPI conceptual frameworks, since

many of them were not familiar with indicators, performance assessment towards goals and targets setting.

- Work in small thematic groups during workshops, bringing together experts in the same field, in an informal atmosphere, did probably contribute to strengthening future networking.

In most of the countries, the test team did not succeed reaching all the objectives set for the test, even after months of permanent work by the technical coordinators and experts.

- However, there have been major achievements: in most of the cases, there has been an appropriation of the testing process and the need to go through the full selection process to improve the ability to report and assess.
- The sustainability of these type of process is clearly linked to the decision making process and the involvement of the technical institutions in charge of the issues as they will be the one setting the terms of reference of programs, projects and controlling the performance.

For each topic tackled, the issues are complex and numerous institutions are involved into the decision making process.

- The working groups had to devote time for debate & demonstration on country issues, indicators usefulness to then agree on the choice of a set of indicators best suited for these issues.
- A key element for the success of the working group was the facilitation by the national coordinator and technical coordinators and the inter-disciplinarity of the participants, especially to go through the needed steps for a better understanding and ownership of the process.
- Finally, the preparation of the test team was essential to reach common views on what should be achieved.

The working groups in Turkey and Palestine met two to three times; and one of the meetings was an intensive workshop on one day and a half. This time enabled:

- First step: remind the key concepts on environmental performance indicators; remind the issues and the political framework, in order to check the relevance of the indicator sets.
- Second step: assess the feasibility of the indicators sheets themselves. A field visit provided practical insight on the difficulties to calculate today some indicators but confirmed their usefulness in the long term.
- Third step: reporting on the use of indicators with concrete results and examples by the technical facilitator. The members of the working group who went through the discussion process are then the needed critical revisers.

In Egypt, the organisation phase of the test took a long time and the coordinator chose to limit the time for working groups and have more inputs from external consultants who will be contributing to the work of the EEAA in the future on these aspects.

- However, the choice as technical coordinator of external consultants who were not familiar with the subject and the overall objectives limited the added value possible.
- They had to go themselves through the process described above and associated the working groups only to the second phase of the consultation process: feasibility of the indicators sheets. But the experts invited in the working groups wanted also to share their views of the issues, before studying the indicators sheets.
- The technical institutions involved in the process did not get full ownership of the indicators as they were not the one working technically on them. However, at the decision making level, there is a strong interest to continue this process and the consultants could contribute to this next phase.

In Palestine, and Egypt, a major drawback of such a capacity building exercise is the lack of permanent technical human resources in the institutions themselves. This is mostly due to the funding system of the ministry with a lot of foreign funding projects and the inability to keep the personal at the same salaries once the project are achieved. Therefore, the capacity building is often done to people who do not stay in the institution.

In Turkey, the administration composition seems more stable but the internal institutional change and reshifting of policies also lead to a diluting of the capacity building.

### **3 The process of selection and relevance testing**

The process of indicators selection started in 1997 in the second METAP/Blue Plan regional seminar (Beirut) on environmental performance indicators and was operational in the three sub-regional seminars (Rabat, Cairo and Split) where participants “learned by doing”.

Most of them were very keen to continue this selection process at the national level as they considered that their selection should be validated and that to succeed in the use of indicators there was a need of awareness raising of decision makers and of technical experts.

Therefore, at the national level, there was a need for a validation of the selection done at the sub-regional level. In most of the cases, the first meetings of the working groups and of the technical coordinators with Blue Plan team were crucial to reach a common understanding on indicators concepts, issues, and the usefulness of these tools.

In addition, the national coordinator took this opportunity to link the test to the ongoing environmental reporting or strategies preparation process. This was the case in Egypt where two meetings were organised to discuss on the environmental reporting and the use of indicators in this framework. The technical coordinators were invited in these strategic meetings.

In the three countries, the indicator sets selected at the sub-regional level were:

- confirmed and only revised on a case by case basis, to fit better with the national data production systems and definitions (see national reports for more details) ;
- completed by other indicators either selected in other sub-regional working groups or produced at a national level.

The two tables next page indicate the indicators that were selected (2), slightly revised (2), or added (3).

Revised List of EPI at the national level (1/2):

INDICATOR	PSR TYPE	TURKEY SELECTION (**)	PALESTINE SELECTION (**)	EGYPT SELECTION (**)
<b>AIR</b>				
Green House Gas emissions	P		1/2	1/2
SOx emissions	P	1/2	1/2	1/2
NOx emissions	P	1/2	1/2	1/2
Other types of emissions	P		3	
Energy Intensity	P		1/2	1/2
Frequency of Excess over Standards	E	1/2	3	3
Excessive Respiratory Disorders due to Air Pollution	R		1/2	1/2
Role of Renewable Energies in Energy Balance	R			
Expenditures Devoted to Air Pollution Abatement	R	1/2		
<b>Proportion of Clean Fuels in Total Fuel Consumption</b>		1/2	1	1/2
<b>SOLID WASTE</b>				
<b>Municipal Solid Waste Generation</b>	P	1/2	1/2	1/2
Composition of Municipal Waste	P	3	3	3
Collection Rate of Municipal Waste	R		1/2	1/2'3
Destination of Collected Municipal Waste	R	1/2	1/2	1/2
<b>Hazardous Waste Generation</b>	P	1/2	1/2	1/2
Contaminated Area	E	1/2		
Proportion of MSW Treated in Discharges	R			
<b>Cost Recovery</b>	R	1/2	1/2	1/2

(\*\*): Turkey was in Split Workshop, Egypt and Palestinian Authority were in the Egyptian Workshop

1 indicates the set selected at the sub-regional level in the 1998 seminar.

2 indicates the indicators confirmed at the national level and 2' slightly changed

3 indicates that a new indicator was added

Revised List of EPI at the national level (2/2):

INDICATOR	PSR TYPE	TURKEY SELECTION (**)	PALESTINE SELECTION (**)	EGYPT SELECTION (**)
<b>WATER RESOURCES AND DEMAND</b>				
Water Mobilisation Rate	R			
Aquifer Over Exploitation Index	P	<b>1/2</b>		1
Density of Hydrological Measurements Networks	R	1		
<b>On-farm Irrigation Efficiency</b>	P	<b>1/2</b>	1/2	1/2/3
Exploitation Index	P	<b>1/2</b>	3	
Water final consumption index	P		1	1/2
Index of Diversification of Water Supply	R		1/2	1/2
<b>Drinking Water Demand Efficiency</b>	P	<b>1/2</b>	1/2	1/2
Water unit productivity in agriculture	R		1	1/2
Cost Recovery Rate	P	<b>1/2</b>		1
<b>POLLUTION AND WATER QUALITY</b>				
Water Quality Indicator	E	<b>1/2</b>	1	1/2
<b>Agro-Chemicals Use Indicators</b>	P	<b>1/2</b>	1/2	1/2/3
<b>Drinking Water Supply Compliance Indicators</b>	P	<b>1/2</b>	1/2	1/2
<b>Waste Water Collection and Treatment Indicator</b>	R	<b>1/2</b>	1/2	1/2'
<b>Industrial Waste Water Treatment</b>	R	<b>1/2</b>	1/2/3	1/2
Recovery Rate of Water Treatment and Protection	R	<b>1/2'</b>		

(\*\*): Turkey was in Split Workshop, Egypt and Palestinian Authority were in the Egyptian Workshop

1 indicates the set selected at the sub-regional level in the 1998 seminar.

2 indicates the indicators confirmed at the national level and 2' slightly changed

3 indicates that a new indicator was added

## 4 The need for clear Indicators sheets

Practical lesson learned from the national tests is that no standard information systems exists on the three issues tackled. Information is disseminated in various institutions (for water) or on time reports (for waste especially) or is not yet produced on a wide coverage for air.

This confirms the need for clear indicators sheets in order to start building the necessary guidance for both exchange of information and environmental information systems in place or to be developed.

The test starting this process of critical review of the data definition and data quality assessment but this activity is not yet finalized. It is expected that the final national reports will be a base for discussion in various national workshops to see the ways to revise thoughtfully the indicators sheets. It is felt that it requires very technical inputs that was not possible in the short time available for the test.

### 4.1 Definition

Therefore, most of the definitions were discussed and finally maintained or only slightly revised to really fit with the national context. For more details, it is preferable to go to the national reports which provide full detail of the internal debates and the final results.

For the new indicators added, definition were also provided in the same way that the others.

Most of the experts agreed that indicators sheets providing definition, methodological details were necessary to improve the capability at national level to exchange information and speak the same language on complex issues.

But they insisted that still further revision were needed to get to this consensual document. The major effort is certainly on the terminology (in the national language and English) and the way to present the methodology of calculations.

### 4.2 Data availability

During the sub-regional level, data availability was cited as a major constraint for the selection of indicators. This was confirmed by the national tests in the three countries even if situations are very different.

It is useful to summarize the state of the art on the availability of information for the list of selected indicators in the countries:

- **A:** available regularly as monitoring systems are in place
- **A part:** available regularly but only for part of the national territory
- **B:** available but not regularly (most of the time produced in the framework of a project or feasibility studies but not updated)
- **C:** not available today but in the short term could be produced
- **D:** not available and will only be possible in the long term

**AVAILABILITY OF THE LIST OF INDICATORS SELECTED THROUGH THE ENTIRE PROCESS OF THE PPM PROGRAM AND SELECTED AT THE NATIONAL LEVEL**

INDICATOR	SELECTION (**)	PA	EG	TK
<b>AIR</b>				
Green House Gas emissions (ton/year)	1/0	B	B	A
Sox emissions (ton/year)	1/1	B	B	A
Suspended Particulates (ton/year)		B	B	A
Nox emissions (ton/year)	1/1	B	B	A
Cox emission (ton/year)		B	B	A
Energy Intensity	1/0	A	A	A
Frequency of Excess over Standards	0/1	D	Apart	Apart
Excessive Respiratory Disorders due to Air Pollution	1/0	D	D	D
Role of Renewable Energies in Energy Balance		C	C	C
Expenditures Devoted to Air Pollution Abatement	0/1	D	D	Apart
Proportion of Clean Fuels in Total Fuel Consumption	1/1	C	C	C
<b>SOLID WASTE</b>				
Municipal Solid Waste Generation	1/1	B	B	A
Composition of Municipal Waste		B	B	B
Collection Rate of Municipal Waste	1/0	B	B	A
Destination of Collected Municipal Waste	1/1	B	B	A
Hazardous Waste Generation	1/1	D	D	C
Contaminated Area	0/1	?	?	C
Proportion of MSW Treated in landfill		C	C	A
Cost Recovery	1/1	D	D	C

(\*\*) : 1/0 : means selected in Cairo or 0/1 in Split; in bold , the most common indicators for the thirteen METAP countries  
**A**: available regularly as monitoring systems are in place : **A part**: available regularly but only for part of the national territory; **B**: available but not regularly (most of the time produced in the framework of a project or feasibility studies but not updated); **C**: not available today but in the short term could be produced; **D**: not available and will only be possible in the long term

INDICATOR	SELECTION	PA	EG	TK
<b>WATER RESOURCES AND DEMAND</b>				
Water Mobilisation Rate				
Aquifer Over Exploitation Index	0/1	C	D	C
Density of Hydrological Measurements Networks				
<b>On-farm Irrigation Efficiency</b>	<b>1/1</b>	D	D	D
Exploitation Index	0/1	A	A	A
Water final consumption index	1/0		A	
Index of Diversification of Water Supply	1/0	C	A	
<b>Drinking Water Demand Efficiency</b>	<b>1/1</b>	A	A	A
Water unit productivity in agriculture	1/0	??	?	
Cost Recovery Rate for drinking water	0/1	A	C	A
<b>POLLUTION AND WATER QUALITY</b>				
<b>Water Quality Indicator</b>	<b>1/1</b>	D	A	A part
<b>Agro-Chemicals Use Indicators</b>	<b>1/1</b>	B	A part	C
<b>Drinking Water Supply Compliance Indicators</b>	<b>1/1</b>	??	C	A
<b>Waste Water Collection and Treatment Indicator</b>	<b>1/1</b>	D	D	A/C
<b>Industrial Waste Water Treatment</b>	<b>1/1</b>	D	D	D
Pollution Flows				
Recovery Rate of Water Treatment and Protection				C
Collective Treatment Efficiency				

(\*\*) : 1/0 : means selected in Cairo or 0/1 in Split ;In bold, the common set for the 13 countries is shown

**A:** available regularly as monitoring systems are in place : **A part:** available regularly but only for part of the national territory; **B:** available but not regularly (most of the time produced in the framework of a project or feasibility studies but not updated); **C:** not available today but in the short term could be produced; **D:** not available and will only be possible in the long term

## 4.2.1 Sources and data quality

### AIR

**Air emissions** are the results of calculation and are performed in the three countries at least once for international convention purpose. Sources can be either the Ministry of environment or the statistical institute. In order to have regular information, there is a need to revise the methodology of calculation and the factors used. This is an inter-institutional activity.

Air quality is not monitored yet in Palestine, only indirect information exist through the surveys produced in the Palestinian Bureau of Statistics asking for opinion on emissions to the households. The Ministry of environment is in the process of setting up a monitoring system so data should be available in the long term. In the other two countries, monitoring systems are in place and in development; therefore data is produced but it does not cover the territory and is not able to provide information on traffic pollution as it was not set up for that purpose. There is a need to look further in a synthetic indicator that will be more illustrative than a set of different air pollution indicators.

### WASTE

The only country with a regular collection of data on waste is Turkey through exhaustive surveys organised by the statistical institute. The other two countries have only for the moment results of studies performed one time for the development of waste management strategy either at the national level or at local level. Here, data quality needs to be improved to succeed in producing relevant information through indicators. The first stage is therefore developing real methodologies for assessment of waste generation, collection, treatment stages. Again there, it cannot be done in isolation, as the key partners are the municipalities and they have to be trained to produce the raw data required.

### WATER

Water is certainly the subject where more data is available but the existing data do not fit exactly with the data required for the indicators. In addition, a lot of information relies mostly on estimates for planning purposes and is not regularly produced as such. Therefore, here prior to further data development, there is a need to go more in depth into the existing data production systems and estimation methods in order to check the feasibility of changes. Only then, new data collection system could be imagined.

For water quality, we face the same constraints that previously described for air. If no extensive monitoring system exists, there is no means to produce such information. Furthermore, the lack of classification system (except in Turkey) reduces the usefulness of the water quality index. There again, it requires national working groups to agree on the relevant classification for the country.

To conclude on data source and quality, there is still a lot of work to be done in the countries on this to get an objective picture of the system in place, its possibilities and drawbacks in order to optimise resources.

## 4.3 Feasibility

In the second part of the document are presented some examples of what could be regional illustrations of some of the indicators selected at the regional level. In the national documents, most of the indicators were revised and some of them are illustrated.

These illustrations show that some indicators can be calculated but often only for a year. Indicators are useful if they show changes ; it means that there is still a lot to be done to make the indicators set a decision maker tool.

### 4.3.1 Availability

The test showed that a number of indicators are already feasible (see the A, B, C codes in the availability tables), but some of them (D) are not yet feasible. These D indicators are not feasible for a number of reasons among others:

- definitions are not clear yet nor shared by the national experts,
- no data collection system is in place,
- the system in place is not adapted,
- political difficulties.

### **What are the necessary conditions for the future data collection ?**

Building useful information systems is a real challenge for environmental assessment and reporting. This experience shows that:

- produce and structure data is not a technological issues ;
- emphasis needs to be put on work organisation, definition and targeting objective ;
- above all, it is necessary to have a clear vision of the objectives to be reached, of what will be done with the data once produced, gathered and structured.

Going through the process of indicators selection from issues is clearly a tool to achieve this objective.

### 4.3.2 Targets

One major constraint to go towards environmental performance assessment is the lack of quantified targets in most of the strategies and policy documents. Setting the relevant targets for the policy objective is clearly not possible in the frame of a project on indicators but was one of the major lessons that the country took on board.

### 4.3.3 Next steps in the three countries

For the indicator for which no data is available, each country, with the Blue Plan assistance, identified the main priority actions to implement in order to improve the situation. They are detailed in the three corresponding national reports.

Apart from that, the test has been successful in developing interest for national initiatives on environmental indicators along the same lines, for various objectives depending on the country:

- policy performance or project performance analysis for the National environmental action Plan or strategy implementation and the framing of the regional and national environment report in Turkey and Palestine ;
- setting a policy performance activity in the newly born strategic and planning division, as well as a development activity along the National Environmental Action Plan preparation in Egypt ;
- guiding the setting of environmental projects in Palestine and especially the technical monitoring network on air quality. Performance indicators are now part of the prerequisite of each project in Palestine.

In addition, in all three countries, it is expected to use the EPI test results to focus the 2000-2001 work program of the regional cooperation program on environmental statistics that has just started (MEDSTAT-ENV) and is coordinated by the national statistical institutes in the countries (SIS in Turkey, PCBS in Palestine, CAPMAS in Egypt) under the coordination of Blue Plan-regional Activity centre.

The set of ongoing initiative can be summarized in the following table

NEXT STEPS	EGYPT	PALESTINE	TURKEY
<b>SHORT TERM ACTIONS</b>			
Awareness raising of decision makers	<ul style="list-style-type: none"> <li>• expert meeting and seminar planned</li> <li>• publication</li> </ul>	<ul style="list-style-type: none"> <li>• national seminar planned</li> <li>• publication</li> </ul>	<ul style="list-style-type: none"> <li>• publication</li> </ul>
Launching Environmental Indicators activity	<ul style="list-style-type: none"> <li>• Ministry of irrigation launch an indicators for the water field.</li> <li>• EEAA on new priority issues</li> </ul>	<ul style="list-style-type: none"> <li>• environmental projects have to include from the preparation phase an indicator component.</li> </ul>	<ul style="list-style-type: none"> <li>• Ministry of environment on NEAP other priority issues.</li> </ul>
Improving data quality and data production	<ul style="list-style-type: none"> <li>• MEDSTAT-env. program.ongoing</li> </ul>	<ul style="list-style-type: none"> <li>• MEDSTAT-env. program ongoing</li> </ul>	<ul style="list-style-type: none"> <li>• MEDSTAT-env ongoing</li> </ul>
<b>MEDIUM TERM ACTIONS</b>			
Monitoring progress of the National environmental Plan: development and use of EPI	<ul style="list-style-type: none"> <li>• Yes with the NEAP in preparation</li> </ul>	<ul style="list-style-type: none"> <li>• Yes for all environmental strategies as a precondition</li> </ul>	<ul style="list-style-type: none"> <li>• Yes to assess implementation of the NEAP</li> </ul>
Setting targets in the NEAP and the strategies	<ul style="list-style-type: none"> <li>• Yes with the NEAP preparation and the waste management strategy.</li> </ul>	<ul style="list-style-type: none"> <li>• Yes, in all environmental strategies</li> </ul>	<ul style="list-style-type: none"> <li>• Yes to revise the NEAP and improve assessment</li> </ul>
Choosing indicators for the environmental report	<ul style="list-style-type: none"> <li>• Proposed for the ongoing national report</li> </ul>	<ul style="list-style-type: none"> <li>• In progress</li> </ul>	<ul style="list-style-type: none"> <li>• Proposed for the 2000 national report</li> </ul>
Setting performance indicators for assessing performance of projects	<ul style="list-style-type: none"> <li>• Will probably be set in the future for the key environmental projects</li> </ul>	<ul style="list-style-type: none"> <li>• Already done</li> </ul>	<ul style="list-style-type: none"> <li>• Will probably be set in the future for the key environmental projects</li> </ul>

## 5 Conclusions and Recommendations

The relevance of the selection of the indicators set for the three priority issues: Air, Water and Waste has been confirmed through the test. This test was interesting not only for evaluating the relevance and usefulness of the indicator sheets and calculating them, but especially for its enhancing capacity role. It enabled in each country to: formulate priorities, work in inter-sectorial working groups, assess data availability and data quality.

### FORMULATE PRIORITIES AND AGREE ON A SET OF INDICATORS

The priorities formulation and identification of objectives, and key targets are the necessary starting point of the discussion on indicators. The discussion on priority issues enables both data providers and data users to share a common ground on what and why information is needed.

The test at a national level was very important as it allowed to strengthen inter institutional cooperation.

- It was possible to raise awareness on the usefulness of indicators for the follow up of policies and strategies, especially for the National Environmental Action Plans (NEAP) implementation.
- It highlighted common issues and enable to reach a consensus on a limited number of indicators per topic between different institutions that do not normally work together. Discussions were very rich.

The State/Pressure/Response framework appeared very effective to structure discussions, although it was practically often used as a “Problem/Cause/Solution” framework.

Each of the working groups managed to revise the prime indicators set selected in sub-regional working groups. In addition the assessment of the availability of data for calculating these indicators was possible.

In conclusion, the test demonstrated the usefulness of a uniform approach at a country level as was shown at the Mediterranean level (harmonisation of EPI lists and definitions), which must now take place over time.

### NETWORKING AND CAPACITY BUILDING

These activities allowed to identify the main institutional partners involved in air, water and solid waste management in the country but also to network them with the staff from the Environment and Development National Observatories, environmental information systems, and environmental statistical units.

These partners are now familiar with Indicators (principle, usefulness, conceptual framework and various initiatives in the Mediterranean). Indicators are considered as a good process to set priorities and targets and to monitor environmental performance at national and/or project level.

Work in small thematic groups during workshops, bringing together experts in the same topic, will probably contribute to strengthening future networking in the country. Field visits were a useful tool to bring up question on data quality.

## 6 Future prospects and Recommendations for future activities

### AT NATIONAL LEVEL

In the three countries, the test was considered as an opportunity to launch an activity on indicators development and testing that is needed for three activities of the Ministries of environment: performance assessment of the National Environmental Plan, environmental reporting, targeting production from environmental information system.

Therefore, it is felt important to disseminate the results of the EPI activity in a national seminar to be organised with :

- the units of the Ministry of environment in charge of the Environment reporting, of the NEAP implementation and the environmental information system development.
- The data providers and the data users.

In addition, in all three countries, it is expected to use the EPI test results to focus the 2000-2001 work program of the regional cooperation program on environmental statistics which just started (MEDSTAT-ENV) and which is coordinated by the national statistical institutes in the countries (SIS in Turkey, PCBS in Palestine, CAPMAS in Egypt) with the assistance of Blue Plan-regional Activity centre.

The recommendations for the involved Mediterranean countries, which came out from the debate at the sub-regional level and were confirmed by the national working groups are as follows:

EP Indicator Main Development Stages	At National Level
1. Defining Strategies/Objectives (especially environmental action plan, but also specific air pollution and solid waste management)	<ul style="list-style-type: none"> <li>• Assisting the institutions in charge in devising its strategy and the revision of the monitoring system,</li> <li>• Setting targets and milestones within the strategy</li> <li>• Feasibility studies on possible means of implementation for cost recovery and monitoring impacts;</li> <li>• promoting continuous inter-institutional co-ordination in order to produce jointly indicators</li> </ul>
2. Increasing Decision Maker Awareness of EPI usefulness	<ul style="list-style-type: none"> <li>• Workshops, booklets (in relation with Capacity 21) at a national level.</li> </ul>
3. Increasing Capacity Building on EPI practice	<ul style="list-style-type: none"> <li>• Improving project design on existing on-going projects (involving national teams in the design process in EPI practise) for instance in local Projects</li> </ul>
4. Assessing Relevance/ Selection	<ul style="list-style-type: none"> <li>• Assessing political relevance of indicators sets by linking better to the NEAP revision process.</li> </ul>
5. Setting Reference Values	<ul style="list-style-type: none"> <li>• Assisting in quantifying objectives especially in the framework of implementation of the National Environmental Plan (planning) and the international</li> </ul>

EP Indicator Main Development Stages	At National Level
	conventions obligations.
<p>6. Devising Approaches</p> <ul style="list-style-type: none"> <li>• Detailed definitions</li> <li>• Methods of data collection</li> <li>• Frequency</li> </ul>	<ul style="list-style-type: none"> <li>• Selecting indicators on new priority issues (defined in the NEAP)</li> <li>• Testing definitions and comparing them with national indicators on these other priority issues</li> </ul>
<p>7. Assessing Data Availability:</p> <ul style="list-style-type: none"> <li>• Available data</li> <li>• Unavailable data                             <ul style="list-style-type: none"> <li>• existing data</li> <li>• non-existent data</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Assessing data availability for the selected indicators (limited number per issue): identifying data sources</li> <li>• Identifying methodologies to overcome the lacking information</li> </ul>
<p>8. Collecting Available Data</p>	<ul style="list-style-type: none"> <li>• Collecting available data for selected indicators,</li> <li>• Assessing quality and promoting upgrading of measurement networks</li> </ul>
<p>9 Assessing Conditions for Providing (non- available) Data on a Regular Basis</p>	<p>Technical and institutional assistance:</p> <ul style="list-style-type: none"> <li>• Feasibility study for the calculation of selected indicators on a regular basis: identifying the necessary means and the organisation to be set up</li> </ul>
<p>10. Improving Data Production and Processing Methods</p>	<ul style="list-style-type: none"> <li>• upgrading the air quality measurement networks or sanitary landfill</li> <li>• developing new measurements campaigns (especially on urban air pollution)</li> <li>• Organise training on:                             <ul style="list-style-type: none"> <li>- data collection and processing</li> <li>- optimising measurement networks</li> <li>- data computation and analysis</li> <li>- the use of health registers for monitoring the effects of air pollution</li> </ul> </li> </ul>
<p>11. Improving Information Systems</p>	<ul style="list-style-type: none"> <li>• Assisting the project team in charge of setting up information systems in order to prepare for the regular calculation of selected indicators.</li> <li>• Assisting the institutions in charge of data production to improve regular data production (surveys, etc.)</li> </ul>
<p>12. Calculating Indicators</p>	<ul style="list-style-type: none"> <li>• Calculating indicators once data is available and regularly produced;</li> </ul>
<p>13. Communicating, Publishing Indicators</p>	<ul style="list-style-type: none"> <li>• Publishing a booklet on current strategies and issues using the calculated indicators</li> </ul>
<p>14. Revise Indicators</p>	<ul style="list-style-type: none"> <li>• As strategy and priorities are changing</li> </ul>

#### **AT THE REGIONAL LEVEL**

The activity on environmental performance indicators was launched in 1996 and went from regional to national initiatives but a regional exchange was maintained all along the process<sup>10</sup>.

A key recommendation from the countries was that environmental performance indicators were a tool to be integrated in all the ongoing regional, sub-regional and local initiatives (programs, projects) in order to be able to assess progress.

Thereafter are indicated the recommendations for follow up actions for the three subjects that were identified during the regional and sub-regional phase and were confirmed during the national test.

These 3 tests have confirmed how interesting and valuable the process of “collectively building” indicators can be.

Nevertheless, this process requires time and political willingness to be implemented. It also needs a capacity for building a long-term vision and for analysing and even criticising data, which is not everywhere developed.

The numerous institutions involved in these tests have demonstrated their high interest in this long-term process and thanks to their experience, we went a step further in the setting up of a common environmental evaluation system on three major environmental issues in the Mediterranean.

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<sup>10</sup> (the present report will therefore be available on the Web)

**Recommendations for Follow up Action**  
**For each topic : Air pollution, Solid Waste, Water Management :**

<b>EP Indicator Main Chronological Development Stages</b>	<b>At Mediterranean Level</b>
1. Defining Strategies/Objectives (especially for NEAP and air pollution and solid waste management)	<ul style="list-style-type: none"> <li>• Comparing strategies at regional level</li> <li>• Summarising the various possible economic approaches to cost recovery</li> <li>•</li> </ul>
2. Increasing Decision Maker Awareness of EPI usefulness	<ul style="list-style-type: none"> <li>• Regional booklet on EPI usefulness</li> </ul>
3. Increasing Capacity Building on EPI practice	<ul style="list-style-type: none"> <li>• Providing information on on-going works on indicators (Web) ; feedback on sub-regional workshops ; regional workshop; national tests</li> <li>• Handbook on EPI practice</li> </ul>
4. Assessing Relevance/ Selection	<ul style="list-style-type: none"> <li>• EPI Workshops in 1998</li> </ul>
5. Setting Reference Values	<ul style="list-style-type: none"> <li>• Comparing reference values in different countries</li> </ul>
6. Devising Approaches <ul style="list-style-type: none"> <li>• Detailed definitions</li> <li>• Methods of data collection</li> <li>• Frequency</li> </ul>	<ul style="list-style-type: none"> <li>• Harmonising classification and precise definitions</li> <li>• Exchange on methodologies for data productions</li> <li>• Stimulate a regular information production for the regional level.</li> </ul>
7. Assessing Data Availability : <ul style="list-style-type: none"> <li>• Available data</li> <li>• Unavailable data <ul style="list-style-type: none"> <li>– existing data</li> <li>– non-existent data</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Test the usefulness of a regional questionnaire to collect the needed information for EPI calculation</li> <li>• Provide capacity building on the critical review of data quality</li> </ul>

## Annex 1 / Participants

Thereafter is indicated only the coordinating team in each of the countries or territories. More information is to be found in the 3 corresponding national reports.

### 1 TURKEY

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<p><b>Institution responsible for test:</b> Ministry of Environment General Directorate of Impact Assessment Eskehir Yolu 8km 06100Ankara Tel: 90 0312 –285 32 83 Fax: 90 0312 – 286 22 71</p> <p>The new general director of EIA, Mrs. Havva ALP has been designated in December (formerly Mr. CABBAR)</p>	<p>Project coordinator: <b>Müge Altinalan;</b> <b>MOE</b> <a href="mailto:mugealtinalan@yahoo.com">mugealtinalan@yahoo.com</a></p> <ul style="list-style-type: none"> <li>➤ Expert in charge of the technical air working group: <b>Rezzan Katircioglu</b> (other person resource: F.Önder, SIS)</li> <li>➤ Expert in charge of the waste group: <b>Kemal Kurusakiz</b> (other resource person of the group waste: Mr Celik –Split, METAP98 et SIS)</li> <li>➤ Expert in charge of the group on water resource: <b>Sema Aras</b></li> <li>➤ Expert in charge of the group water pollution: <b>Zerrin Leblebici</b> (METAP 98)</li> </ul>
<p><b>Expert advisers for the EPI test,</b></p>	<p><b>Resource expert</b></p>
<p><b>Zeynep Demirhan Darvish</b> State Planning Organisation Necatibey Caddesi N°108 Anittepe, Ankara Tel: 90 312 230 87 20/64 15 Fax: 90 312 231 93 68 E-mail <a href="mailto:zdemir@dpi.gov.tr">zdemir@dpi.gov.tr</a></p>	<p>A. Tokel State Institute of Statistics Necatibey Caddesi N°114 Bakanliklar Ankara Tel: 90 312 417 64 40/ 711 Fax: 90 312 425 33 87</p>

## 2 Palestinian Territories

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<p><b>Institution responsible for test:</b>          Ministry of Environment</p>	<p>Project coordinator:  <b>Mohamad S. Al Hmaid</b>          The technical experts appointed from the Ministry of environment.</p>
<p><b>Expert advisers for the EPI test,</b></p>	<p><b>Resource experts for long term activities</b></p>
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### 3 EGYPT

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<p><b>Expert advisers for the EPI test,</b></p>	<p><b>Resource expert</b></p>
<p><b>Mr. Tarek Genena</b>  <b>Dr. Moussa</b></p>	<p>Chairman of the Environmental Solutions Firm  General manager of the Information Department and the computer centre</p>

## Annex 2 / Main bibliographic references on the environmental performance indicators programme

Blue Plan/MAP/UNEP, ENVIRONMENTAL PERFORMANCE INDICATORS: for METAP III , Regional Capacity Building Programme : Programme Performance Monitoring and Indicators, 1998.

- Report of the International Workshop, Beirut, 15-17 December 1997
- Records of the three sub-regional Mediterranean Workshops :
  - Rabat, 24-26 September 1998
  - Cairo, 8-10 November 1998
  - Split, 26-28 November 1998
- Frame Document, prepared by Blue Plan for the three sub-regional Mediterranean workshops, September 1998
- Final Report of the three sub-regional Mediterranean workshops, March 1999
- Final List of Indicators and Description Forms: Air, Solid Waste, Water, May 1999
- Reports of the Three National Tests on Environmental Performance Indicators
  - Report for Palestinian Authority, December 1999
  - Report for Turkey, December 1999
  - Report for Egypt, March 2000
  - Synthesis Report, March 2000

The following references were used to draw up the indicator description forms.

- **"Blue Book"**: United Nations, 1996, *Indicators of Sustainable Development Framework and Methodologies*, United Nations, Commission on Sustainable Development, New York, August 1996, The "Blue Book" is available for consultation on <http://www.un.org/esa/sustdev/isd.htm>
- Eurostat, 1997, *Indicateurs de développement durable ; une étude pilote selon la méthodologie de la Commission du développement durable des Nations Unies*, (Sustainable development indicators – a pilot study using methodology by the United Nations Commission for Sustainable Development) Eurostat, European Commission, 1997.
- EUROSTAT, 1998, pressure indicators sheets, draft. Unpublished.
- OECD, Environmental Indicators, 1998.
- Plan Blue/OSS, Indicateurs d'économie de l'eau, 1996 (in french only).
- IFEN, Indicators on environmental performances in France, 1996-1997 edition, Tec & Doc.

## Part 2

# Environmental performance indicators sheets: Examples of illustrations in the Mediterranean region

## Foreword

The results presented thereafter give some glimpse of what could be done at Mediterranean level if data were available for all the 35 indicators selected in 1998 from the 13 METAP countries along the Mediterranean sea.

Some indicator sheets are shown below as a matter of example. They are:

- Air pollution : **Green house Gas Emission ; Energy intensity ; SOx emissions ; NOx emissions**
- Water resource and demand management: **Water Exploitation index**

The data used for these sheets comes from official international sources for the northern countries, as well as from the METAP project. Detailed information on the definitions and methodology of calculation is not included thereafter but is available in the document cited as a note<sup>11</sup>

More data and examples of illustration at national level can be found in the 3 national reports.

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<sup>11</sup> Blue Plan/MAP/UNEP, ENVIRONMENTAL PERFORMANCE INDICATORS : Final List of Indicators (revised), for METAP III , Regional Capacity Building Programme : Programme Performance Monitoring and Indicators, 1998.

## 1 Green house Gas Emission sheet;

## ÉMISSIONS DE GAZ A EFFET DE SERRE

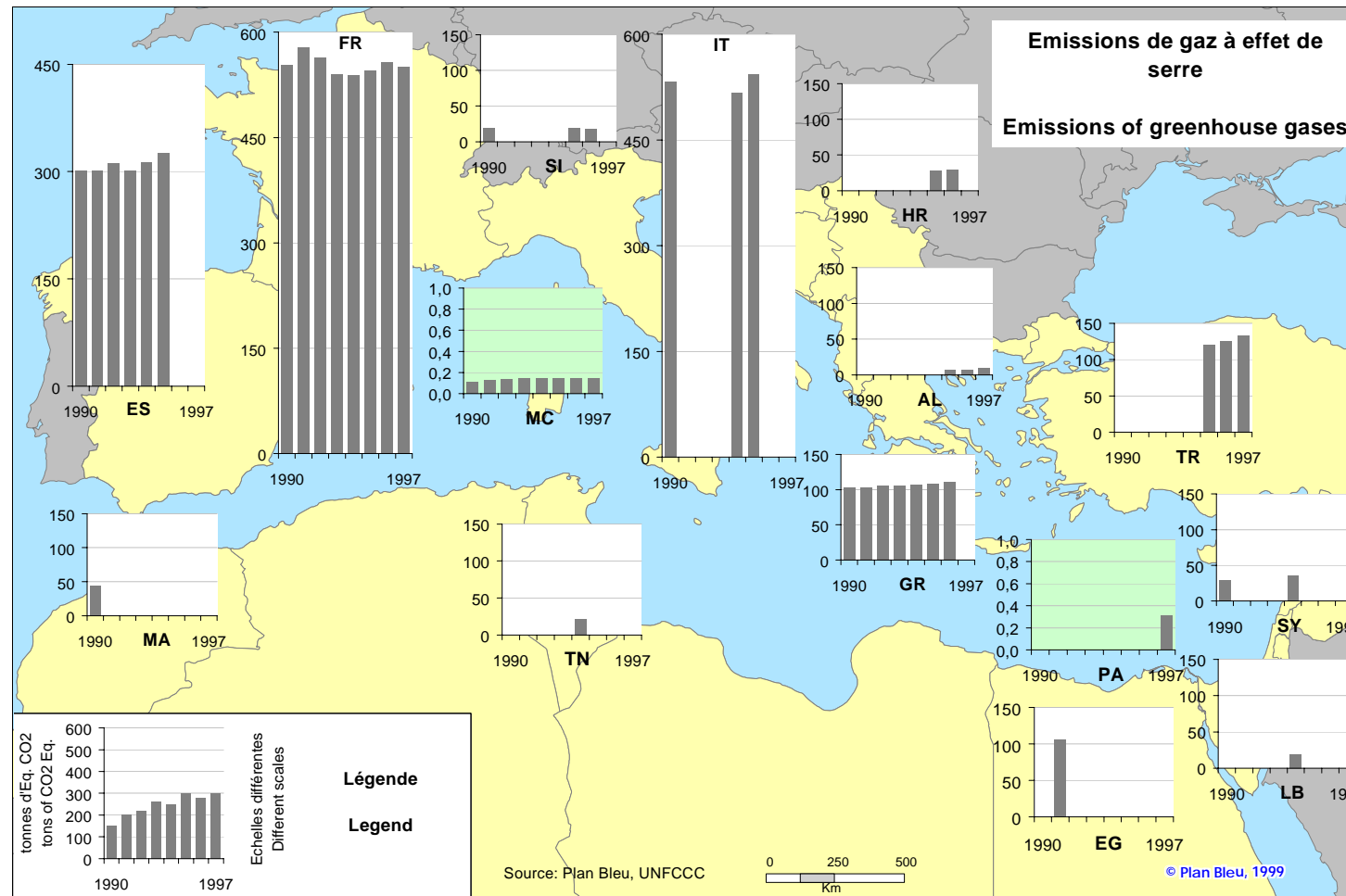
Au niveau de l'ensemble des pays riverains de la Méditerranée les émissions de gaz à effet de serre (GES) ont légèrement augmenté ou, au mieux, stagné pendant la période 1990-97.

Les émissions nationales de GES dépendent pour beaucoup, et notamment dans le cas du CO<sub>2</sub>, de la taille de la population et du niveau d'industrialisation du pays. Les pays de l'Union Européenne émettent les quantités de GES les plus élevées avec 550 millions de tonnes équivalent (Mt eq) CO<sub>2</sub> pour la France en 1997, 542 pour l'Italie et 325 pour l'Espagne en 1995. On remarquera que dans le cas de la France et de l'Espagne ces quantités pourraient être plus importantes sans les politiques de production d'énergie d'origine nucléaire.

La Grèce produisait 108 Mt eq CO<sub>2</sub> en 1995 soit la valeur la plus élevée par habitant avec environ 10,5 tonnes par an.

La Turquie avait en 1997 un niveau d'émission comparable à celui de la Grèce avec 132 Mt eq CO<sub>2</sub>. Cependant, comme dans la plupart des Pays du Sud et de l'Est de la Méditerranée (PSEM), le niveau d'émission par habitant est inférieur à 4 tonnes par an : Egypte 2 t/hab, Turquie 2,1 t/hab en 1997 ; Syrie 2,5 t/hab en 1994 ; Tunisie 2,5 t/hab en 1995. Seul le Liban avec 4,9 tonnes par habitant en 1994 a un taux d'émission proche des pays des Balkans.

	ESPAGNE	FRANCE	ITALIE	GRECE	MONACO	SLOVENIE	CROATIE	BOSNIE-H.	YUGOSL.	ALBANIE	MALTE
Emissions de gaz à effet de serre (millions de tonnes Eq CO <sub>2</sub> )	301,4	553,6	532,9	103,8	0,1	19,2	-	-	-	-	-
1990	301,4	553,6	532,9	103,8	0,1	19,2	-	-	-	-	-
1995	325,5	546,2	542,3	108,6	0,1	18,6	27,1	-	-	6,5	-
1997	-	550,3	-	-	0,1	-	-	-	-	9,7	-
	SPAIN	FRANCE	ITALY	GREECE	MONACO	SLOVENIA	CROATIA	BOSNIA-H.	YUGOSL.	ALBANIA	MALTA

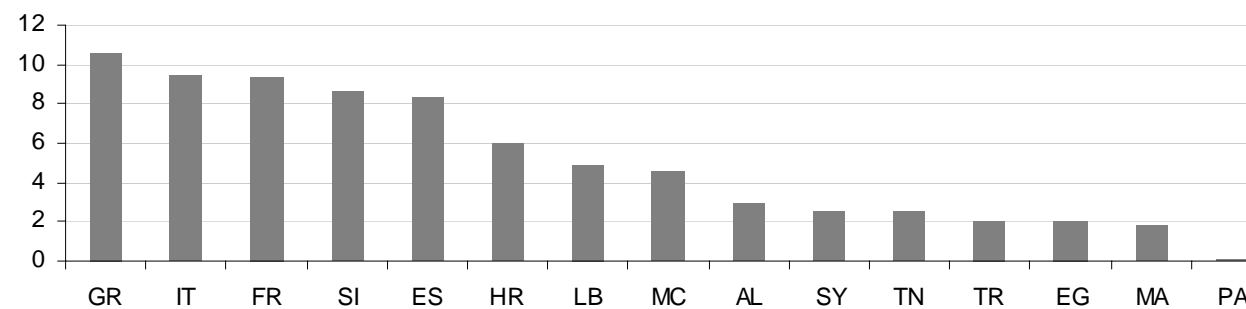


MAROC	ALGERIE	TUNISIE	LIBYE	EGYPTE	GAZA	ISRAEL	LIBAN	SYRIE	TURQUIE	CHYPRE	1990	1995	1997	Emissions of greenhouse gases (million tons of CO <sub>2</sub> Eq)
44,0	-	-	-	106,7	-	-	-	28,9	-	-	-	-	-	-
-	-	22,0	-	-	-	-	19,4	35,2	120,7	-	-	-	-	-
-	-	-	-	-	0,3	-	-	-	132,8	-	-	-	-	-
MOROCCO	ALGERIA	TUNISIA	LIBYA	EGYPT	GAZA	ISRAEL	LEBANON	SYRIA	TURKEY	CYPRUS				

Source : Plan Bleu, UNFCCC

### Emissions de gaz à effet de serre par habitant / Greenhouse Gas Emissions per inhabitant.

Tonnes Eq CO<sub>2</sub> / hab dans les années 90 - dernière année disponible  
Tons of CO<sub>2</sub> Eq / inhab in the 90's - last available year



## EMISSIONS OF GREENHOUSE GASES

At the Mediterranean level the gas emissions of greenhouse gases (GHG) has slightly increased for the period 1990-97.

Most of national GHG emissions (and particularly CO<sub>2</sub>) are linked to the population size and to the level of industrialization in the country. The European union countries emit the highest quantities of GHG with: 550 CO<sub>2</sub>-equivalent million tons (Mteq-CO<sub>2</sub>) for France in 1997, 542 for Italy and 325 for Spain in 1995. It will be noticed that in the case of France and Spain these quantities could be more significant without the policies of nuclear energy production

Greece produced 108 Mteq-CO<sub>2</sub> in 1995, which is the highest value per inhabitant, with approximately 10,5 tons/inhab.

In 1997, Turkey had a level of emission comparable with the one of Greece with 132 Mteq-CO<sub>2</sub>. However, like in the majority of the Countries of the South and the East of the Mediterranean (SEM), the level of emission per capita is lower than 4 tons per annum: Egypt 2 T/inhab, Turkey 2,1 T/inhab in 1997; Syria 2,5 T/inhab in 1994; Tunisia 2,5 T/inhab in 1995. Lebanon is an exception with 4,9 T/inhab, close to the Balkans countries.

### Data source

Blue Plan /METAP project: « Environmental Performance Indicators», 1998-99, for Southern and Eastern Mediterranean Countries (SEM) and some countries in the Balkans.

Secretariat of the United Nations Framework Convention for Climatic Changes (UNFCCC) for the countries of Annex1: FR, IT, ES, GR, MC, SI. Data on line : <http://www.unfccc.de/>.

### Notes on tables

For TN, LB et SY : 1995 = 1994.

For EG : 1990 = 1991

### Note on the chart

Data for population in the calculation of emission per inhabitant comes from the United Nations

## 2 SOx emission sheet ;

## EMISSIONS D'OXYDES DE SOUFRE

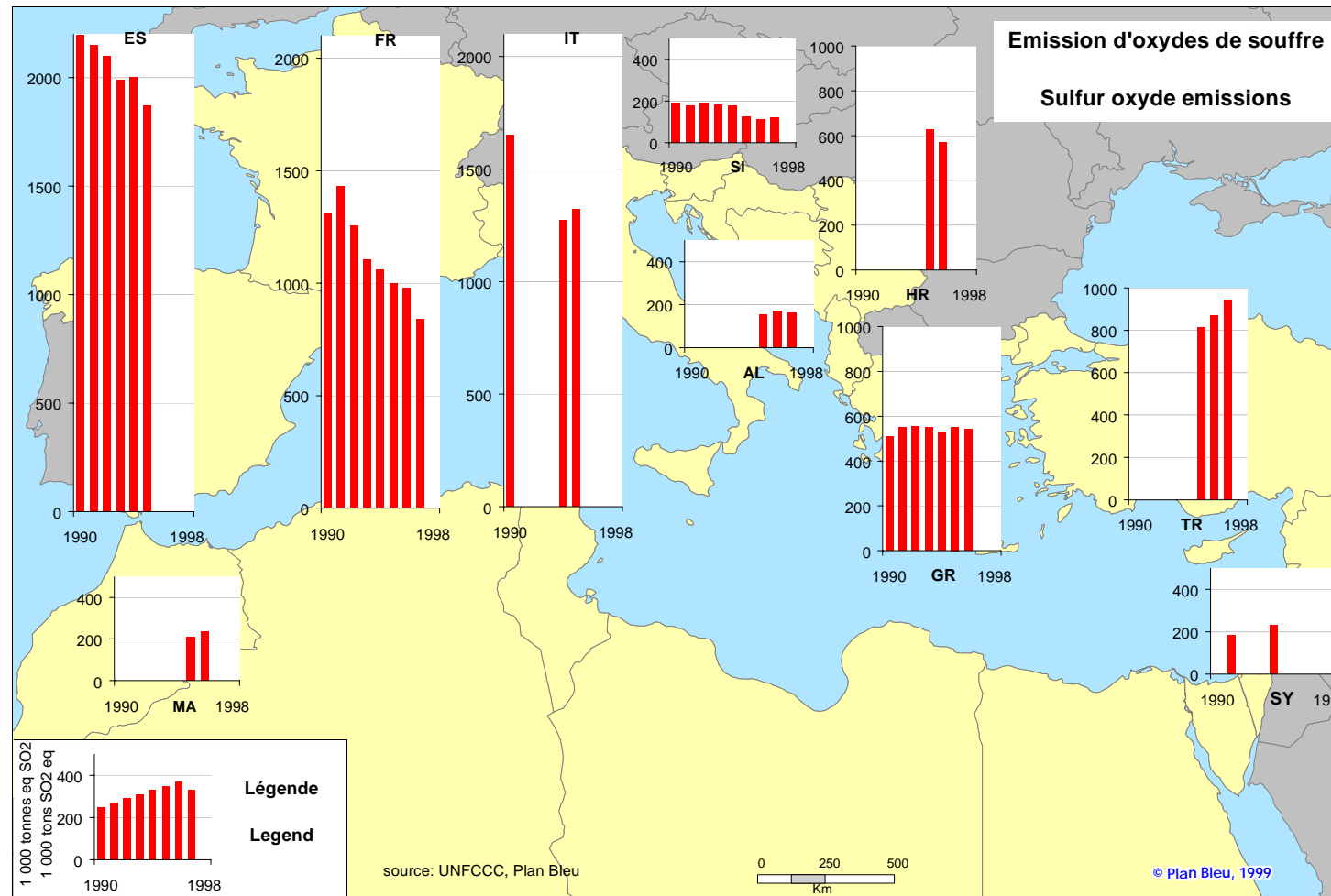
Les émissions de SO<sub>x</sub> sont globalement en diminution en Méditerranée. Toutefois, cette tendance concerne surtout les pays de la rive nord : 2 195 millions de tonnes en Espagne en 1990 contre 1 873 millions de tonnes en 1995, soit -15% en cinq ans ; pour la France, c'est -36% entre 1990 et 1997 ; pour l'Italie, c'est -20% entre 1990 et 1995. La Grèce est le seul pays de l'Union européenne dont les émissions ont augmenté depuis 1990, avec +9% en 1995.

Dans les Balkans, la Slovénie (-38% entre 1990 et 1997) et la Croatie montrent les mêmes tendances, alors que en Albanie on observe un légère augmentation (+6% entre 1995 et 1997).

La baisse des émissions de SO<sub>x</sub> dans les pays de la rive nord vient des programmes d'économie d'énergies, que l'on peut voire par la baisse de l'intensité énergétique (IDD 234), et pour la France du nucléaire.

Dans les pays du sud et de l'est de la méditerranée (PSEM), les émissions augmentent : +16% en Turquie entre 1995 et 1997, +25% en Syrie entre 1991 et 1994, et +12% au Maroc entre 1995 et 1996.

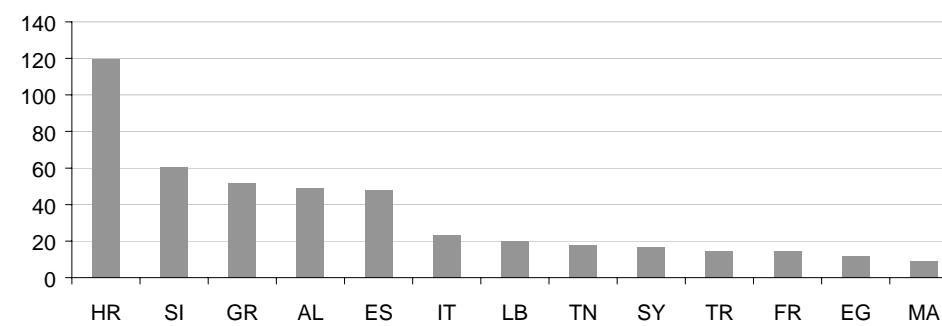
	ESPAGNE	FRANCE	ITALIE	GRECE	MONACO	SLOVENIE	CROATIE	BOSNIE-H.	YUGOSL.	ALBANIE	MALTE
Emissions de SO <sub>x</sub> (1 000 tonnes de SO <sub>2</sub> eq)	1990 2195,0	1312,0	1650,0	509,0	0,0	193,7	-	-	-	-	-
	1995 1873,0	1001,0	1322,0	553,0	0,0	124,0	630,0	-	-	154,8	-
	1997 -	842,0	-	-	0,0	120,4	-	-	-	163,1	-
Kg SO <sub>x</sub> /an/hab	48,2	14,8	23,3	53,4	0,0	60,3	119,3	-	-	49,7	-
	SPAIN	FRANCE	ITALY	GREECE	MONACO	SLOVENIA	CROATIA	BOSNIA-H.	YUGOSL.	ALBANIA	MALTA



MAROC	ALGERIE	TUNISIE	LIBYE	EGYPTE	GAZA	ISRAEL	LIBAN	SYRIE	TURQUIE	CHYPRE	1990	SO <sub>x</sub> emissions (1 000 tons of SO <sub>2</sub> eq)
-	-	-	-	-	-	-	-	184,1	-	-	1995	-
210,3	-	158,0	-	-	-	-	-	230,2	815,1	-	1997	-
-	-	-	-	700,0	4,8	-	-	-	942,7	-		
9,9	-	19,4	-	13,3	2,7	-	21,7	19,0	16,8	-		Kg SO <sub>x</sub> /year/inhab
MOROCCO	ALGERIA	TUNISIA	LIBYA	EGYPT	GAZA	ISRAEL	LEBANON	SYRIA	TURKEY	CYPRUS		

Source : Plan Bleu, UNFCCC

### Emissions de SO<sub>x</sub> en kgs par habitant (dernière donnée disponible)/ SO<sub>x</sub> emissions in kg per inhabitant (last available year)



## EMISSIONS OF SULPHUR OXIDES

SO<sub>x</sub> emissions are in reduction all over the Mediterranean. However, this trend is especially related to the evolution in the Northern countries. In Spain, emissions have decreased by 15% from 1990 to 1995 (with 2 195 million tons in 1990 and 1 873 million tons in 1995), in France, they decreased by 36% between 1990 and 1997; in Italy, by 20% between 1990 and 1995. Greece is the only European union country where the emissions have increased by 9% from 1990 to 1995.

In the Balkans, Slovenia (-38% between 1990 and 1997) and Croatia show the same tendencies, whereas in Albania a slight increase can be seen (+6% between 1995 and 1997).

Lower SO<sub>x</sub> emissions in the Northern countries are due to programmes encouraging energy savings (see indicator on "energy intensity") or due to the use of nuclear power (France)

In the countries of the South and East of the Mediterranean (SEM), the emissions have increased by +16% in Turkey (from 1995 to 1997), by +25% in Syria (from 1991 to 1994), and by +12% in Morocco (from 1995 to 1996).

### Data source

Project Blue Plan /METAP : « Environmental Performance Indicators », 1998-99, for Southern and Eastern Mediterranean Countries (SEM) and some countries in the Balkans. (SO<sub>x</sub> in SO<sub>2</sub> equivalent, except for Lebanon: only SO<sub>2</sub>.)

Secretariat of the United Nations Framework Convention for Climatic Changes (UNFCCC) for the countries of Annex1: FR, IT, ES, GR, MC, SI. Data on line : <http://www.unfccc.de/>. only SO<sub>2</sub>

### Notes on tables

TN : 1995 = 1994

EG : 1997 = 1996

SY : 1990 = 1991 et 1995 = 1994

PA : 1997 = 1998

### 3 NOx emission sheet

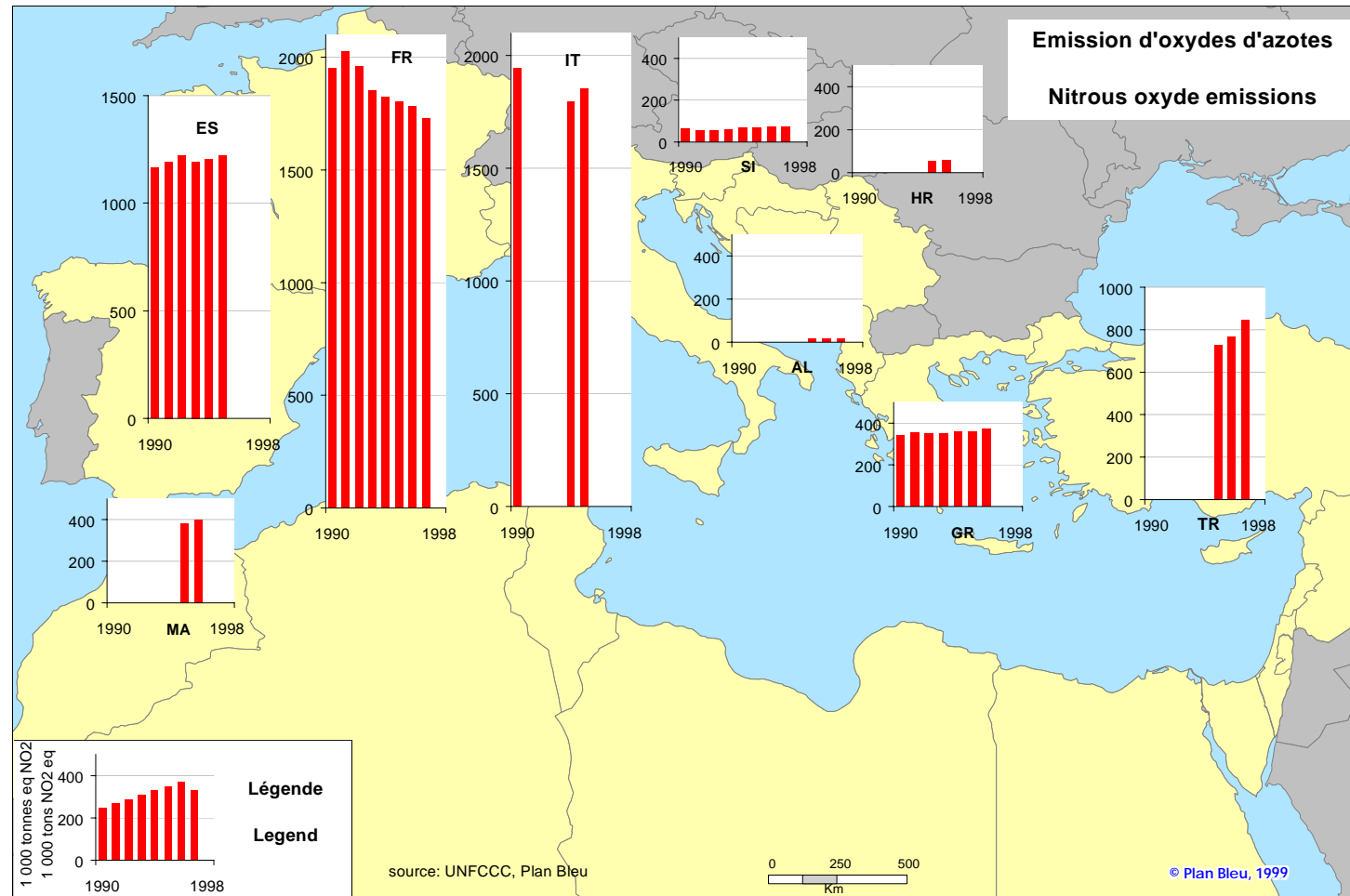
## EMISSIONS D'OXYDES D'AZOTE

Les émissions de NOx ont baissé dans peu de pays méditerranéens. C'est en France, -10% entre 1990 et 1997, et en Italie, -5% entre 1990 et 1995, que l'on observe les seules réductions d'émissions.

Autrement, les émissions de NOx augmentent dans tous les autres pays : +5% en Espagne et +4% en Grèce entre 1990 et 1995, +15% en Slovénie entre 1990 et 1997, +16% en Turquie entre 1995 et 1997.

On constate également une bonne corrélation entre niveau de développement et émissions de NOx par habitants. Elles sont environ deux fois plus élevées dans les pays Européens, ce qui est normal car le trafic automobile est le premier responsable de la production de NOx.

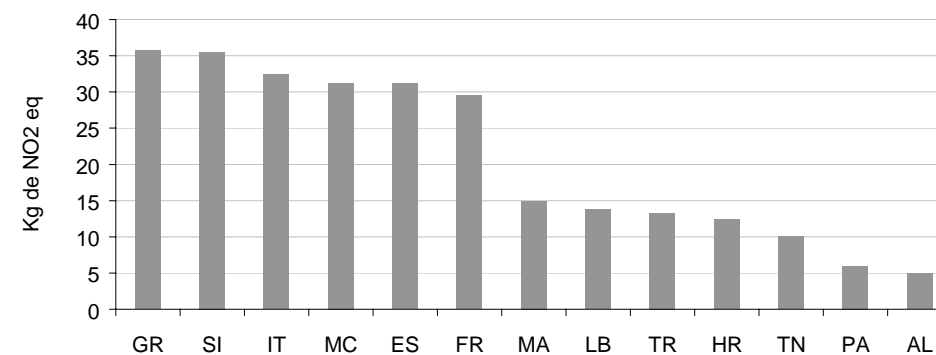
		ESPAGNE	FRANCE	ITALIE	GRECE	MONACO	SLOVENIE	CROATIE	BOSNIE-H.	YUGOSL.	ALBANIE	MALTE
Emissions de NOx (1 000 tonnes de NO2 eq)	1990	1164,0	1951,0	1945,0	343,0	1,0	61,7	-	-	-	-	-
	1995	1222,0	1804,0	1853,0	358,0	1,0	66,5	57,0	-	-	15,6	-
	1997	-	1730,0	-	-	1,0	70,6	-	-	-	16,5	-
Kg NOx/an/hab		31,2	29,5	32,4	35,7	31,3	35,5	12,4	-	-	5,0	-
		SPAIN	FRANCE	ITALY	GREECE	MONACO	SLOVENIA	CROATIA	BOSNIA-H.	YUGOSL.	ALBANIA	MALTA



MAROC	ALGERIE	TUNISIE	LIBYE	EGYPTE	GAZA	ISRAEL	LIBAN	SYRIE	TURQUIE	CHYPRE	
-	-	-	-	-	-	-	-	-	-	-	1990
380,0	-	89,0	-	-	-	-	54,2	-	727,1	-	1995
-	-	-	-	-	-	-	-	-	844,1	-	1997
14,9	-	10,1	-	-	-	-	13,8	-	13,2	-	Kg NOx/year/inhab
MOROCCO	ALGERIA	TUNISIA	LIBYA	EGYPT	GAZA	ISRAEL	LEBANON	SYRIA	TURKEY	CYPRUS	

Source : Plan Bleu, UNFCCC

Emissions de NOx en kgs de NO2 équivalent / habitant / an (dernière donnée disponible)  
Nox emissions in kg/year/inhab (last available data)



## EMISSIONS OF NITROGEN OXIDES

The emissions of NOx dropped in few Mediterranean countries. In France, it decreased by 10% from 1990 and 1997, in Italy, by 5% from 1990 to 1995.

A part from these countries, NOx emissions have increase in all other countries: +5% in Spain and +4% in Greece between 1990 and 1995, +15% in Slovenia between 1990 and 1997, +16% in Turkey between 1995 and 1997.

There is a good correlation between the level of economic development (GNP) and emissions of NOx per capita (no decoupling effect can be shown).

Emissions are approximately twice higher in the European countries than in the rest of the Mediterranean. This is mainly due to the car traffic.

### Data source

Blue Plan /METAP project: « Environmental Performance Indicators», 1998-99, for Southern an Eastern Mediterranean Countries (SEMC) et and some countries in the Balkans.

Secretariat of the United Nation Frame Convention for Climatic Changes (UNFCCC) for the countries of Annex1: FR, IT, ES, GR, MC, SI. Data on line : <http://www.unfccc.de/>.

### Notes on tables

Gaza = Palestinian Authority : 1997 = 1998

## 4 Energy intensity sheet

## INTENSITÉ ÉNERGÉTIQUE

Au niveau mondial, l'intensité énergétique continue à diminuer et se situe autour de 0,42 TEP/1000 \$. Dans les pays développés, l'intensité énergétique a fortement diminué et tend maintenant à se stabiliser vers 0,3 TEP/1000 \$, ceci en raison de la baisse du potentiel d'économie d'énergie.

Dans les pays Méditerranéens de l'Union Européenne, l'intensité énergétique a baissé de 13 % en près de 25 ans. (0,2 TEP/1000 \$ en 1973 et 0,175 TEP/1000 \$ en 1996) malgré une croissance en Grèce (0,22 en 1973 et 0,26 en 1996) et la stabilité en Espagne.

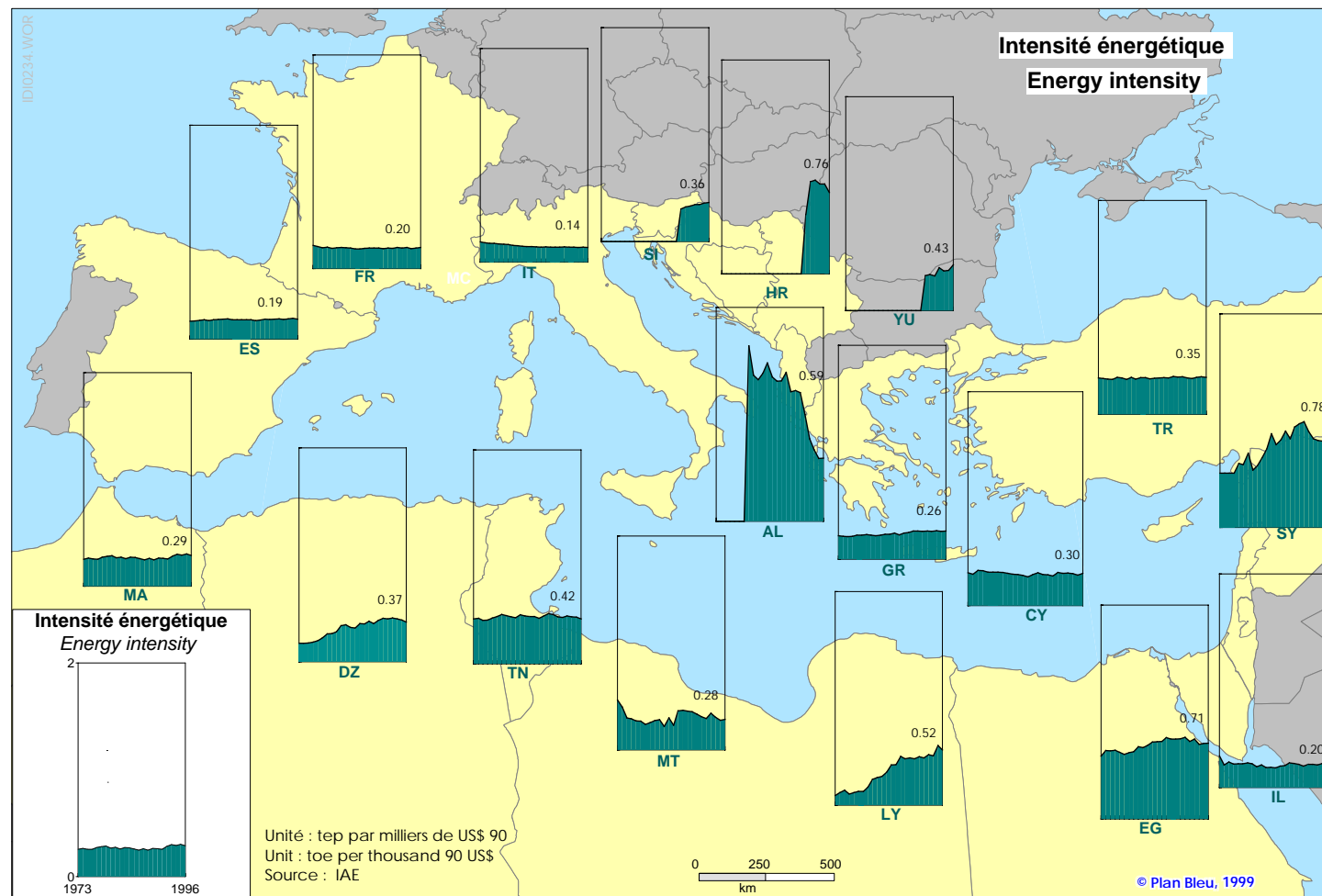
En Turquie et à Chypre, l'intensité énergétique est stable, respectivement, autour de 0,35 et 0,3 TEP/1000 \$. En Israël et à Malte, l'intensité énergétique a diminué pour arriver respectivement à 0,2 et 0,28 TEP/1000 \$.

En Egypte et en Syrie, l'intensité énergétique continue d'augmenter pour arriver respectivement à 0,7 et 0,8 TEP/1000 \$.

Au Maghreb, l'intensité énergétique a plus que doublé depuis 1973 pour arriver à 0,4 TEP/1000 \$. La consommation d'énergie a crû plus vite que le PIB notamment en Algérie et en Libye, ce qui illustre le découplage entre la consommation et l'économie dans certains pays producteurs de pétrole.

Le Liban et la Bosnie-Herzégovine ne sont pas représentés sur la carte en raison des trop fortes fluctuations du PIB.

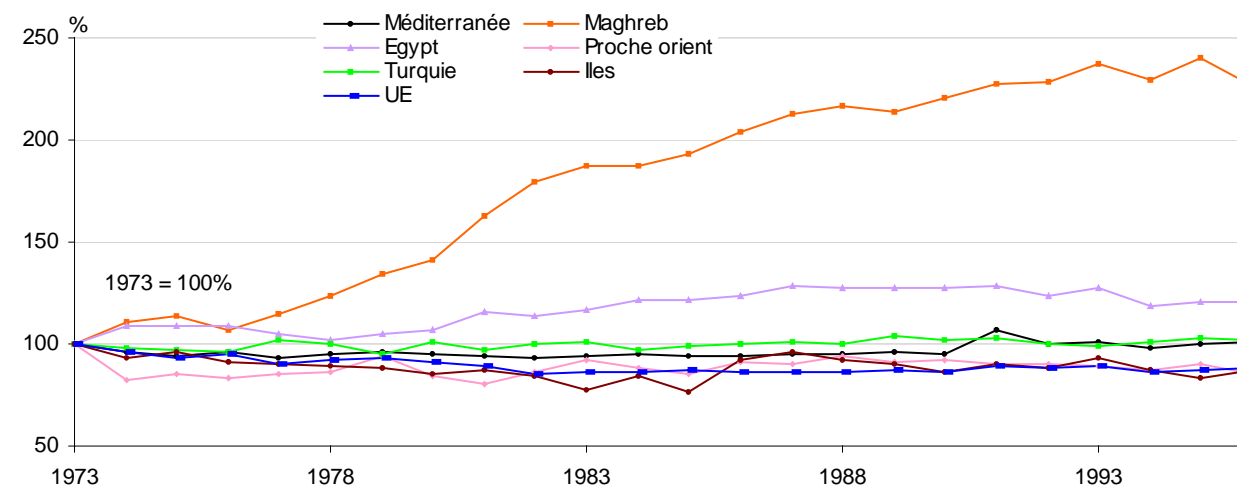
	ESPAGNE	FRANCE	ITALIE	GRECE	MONACO	SLOVENIE	CROATIE	BOSNIE-H.	YUGOSL.	ALBANIE	MALTE
Intensité énergétique (TEP par millier de dollars US 90)	0,17	0,22	0,19	0,22	-	-	-	-	-	-	0,47
1980	0,19	0,20	0,16	0,23	-	-	-	-	-	1,64	0,26
1985	0,18	0,19	0,14	0,25	-	-	-	-	-	1,35	0,23
1990	0,18	0,19	0,14	0,27	-	0,30	-	-	0,33	1,22	0,34
1996	0,19	0,20	0,14	0,26	-	0,36	0,76	1,34	0,43	0,59	0,28
	SPAIN	FRANCE	ITALY	GREECE	MONACO	SLOVENIA	CROATIA	BOSNIA-H.	YUGOSL.	ALBANIA	MALTA



MAROC	ALGERIE	TUNISIE	LIBYE	EGYPTE	GAZA	ISRAEL	LIBAN	SYRIE	TURQUIE	CHYPRE	
0,26	0,17	0,42	0,09	0,59	-	0,30	85,68	0,51	0,34	0,31	1973
0,27	0,26	0,45	0,17	0,63	-	0,22	67,12	0,54	0,35	0,31	1980
0,26	0,32	0,44	0,38	0,72	-	0,18	1,11	0,78	0,34	0,27	1985
0,26	0,39	0,46	0,43	0,75	-	0,22	0,81	0,97	0,35	0,28	1990
0,29	0,37	0,42	0,52	0,71	-	0,21	0,90	0,79	0,35	0,30	1996
MOROCCO	ALGERIA	TUNISIA	LIBYA	EGYPT	GAZA	ISRAEL	LEBANON	SYRIA	TURKEY	CYPRUS	

Source : IEA

Evolution de l'intensité énergétique depuis 1973 / Energy intensity evolution since 1973



## ENERGY INTENSITY

World-wide, energy intensity continues to decline to approximately 0.42 TOE/1000 \$. In developed countries, energy intensity has strongly decreased and tends now to stabilise at about 0.3 TOE/1000 \$, because of the decline of the potential to save energy.

In European Union Mediterranean countries, energy intensity has dropped by 13% in about 25 years (0.2 TOE/1000 \$ in 1973 and 0.175 TOE/1000 \$ in 1996) in spite of growth in Greece (0.22 in 1973 and 0.26 in 1996) and stability in Spain.

In Turkey, and Cyprus, energy intensity has stabilised close to 0.35 and 0.3 TOE/1000 \$, respectively. In Israel and Malta, energy intensity has declined to 0.2 and 0.28 TOE/1000 \$.

In Egypt and in Syria, energy intensity keeps on rising and has reached 0.7 and 0.8 TOE/1000 \$ respectively.

In the Maghreb countries, energy intensity is over twice as high as in 1973 and has reached 0.4 TOE/1000 \$. Energy consumption has grown faster than GDP in particular in Algeria and Libya, and this illustrates the lack of a connection between consumption and the economy in some oil producing countries.

The Lebanon and Bosnia-Herzegovina are not shown on the chart because their GDP fluctuations are too large.

### Data source

The indicator is calculated with data from International Energy Agency: *Statistiques et bilans énergétiques des pays de l'OCDE 1995-1996* OCDE Edition 1998 and International Energy Agency: *Statistiques et bilans énergétiques des pays non-membres 1995-1996* OCDE Edition 1998.

## 5 Water exploitation index sheet

## INDICE D'EXPLOITATION

Excepté dans les pays des Balkans, avec 3% pour l'Albanie au maximum, l'indice d'exploitation de la majorité des pays est supérieur à 10%. Il dépasse même les 100% pour la Libye et les 200% la bande de Gaza.

À l'échelle nationale, un indice d'exploitation compris entre 10 et 20 % est généralement considéré comme révélateur de tensions déjà appréciables au moins dans certaines régions, y compris au plan des qualités des eaux, puisque les retours d'eaux usées croissent avec les prélèvements (surtout des secteurs collectivités et industries).

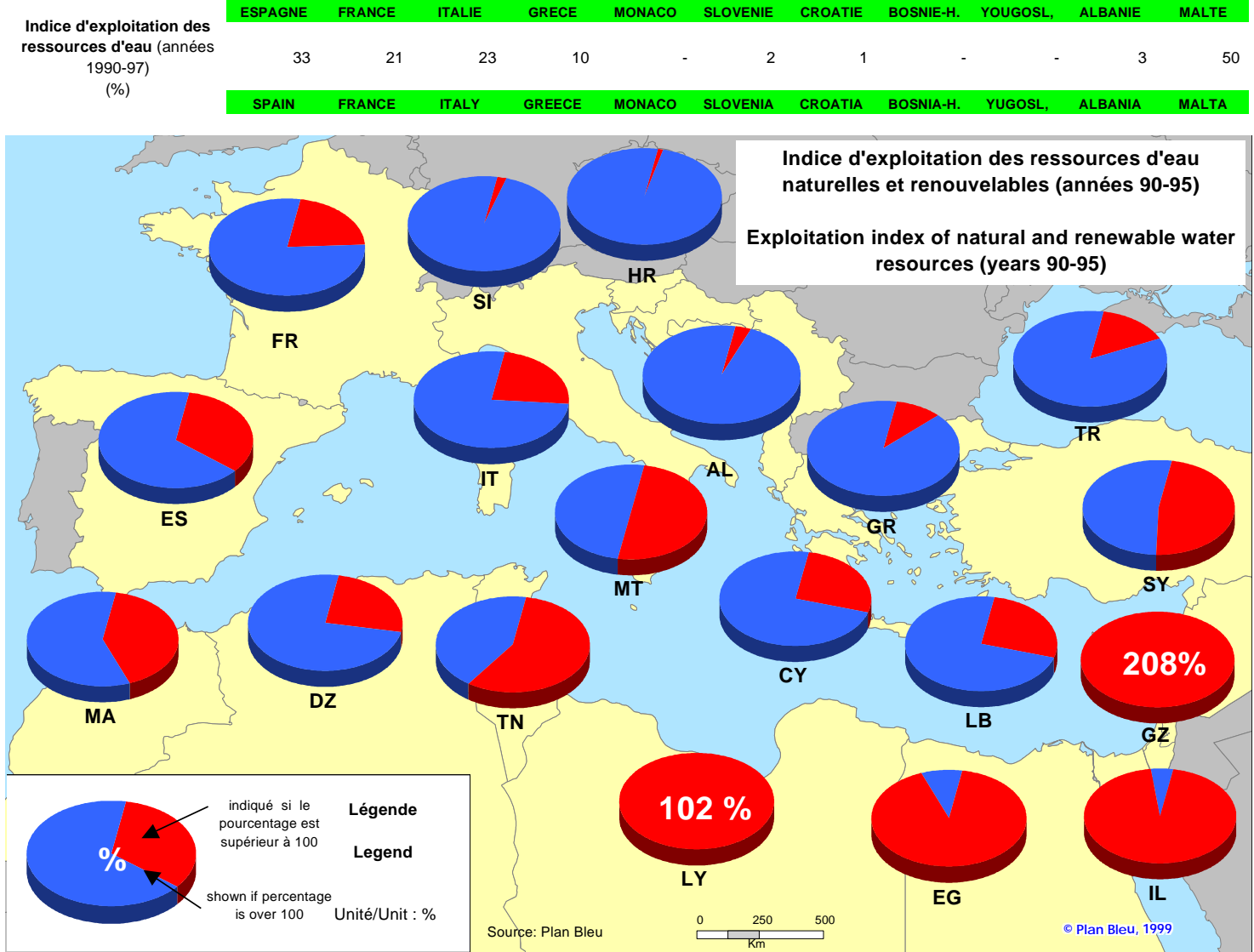
Au-dessus de 50 %, c'est un indicateur de tension et indique la nécessité de rationaliser la gestion des utilisations et des demandes en eau. C'est le cas de la Tunisie et de l'Égypte en Afrique du nord et d'Israël au Proche Orient.

Un indice d'exploitation de plus de 100 % est souvent un indicateur de pénurie et de " surexploitation " globale des ressources d'eau renouvelables. La bande de Gaza (208%) et la Libye (102%) sont dans ce cas.

À l'échelle d'un grand pays à bassins étendus et à réseaux hydrographiques actifs, les activités utilisatrices d'eau peuvent être réparties dans l'espace de manière séquentielle et peuvent remobiliser les mêmes volumes d'eau (réutilisation, recharge d'aquifère, etc.) justifiant alors un indice d'exploitation élevé.

Réciproquement, des indices inférieurs à 100 % n'excluent pas la possibilité de surexploitation locale.

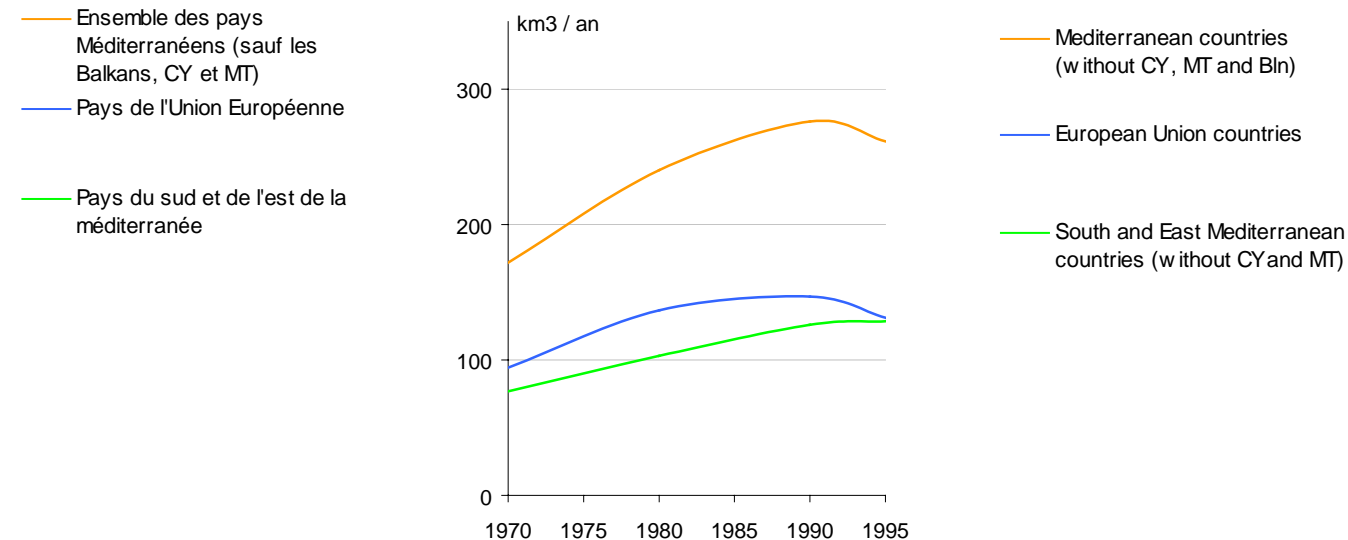
Afin de compléter de façon indispensable la situation sur les prélèvements d'eau, il convient de se référer à l'indice de production d'eau non-durable (IDD 344) qui montre l'exploitation d'eau non renouvelable dans certains pays.



MAROC	ALGERIE	TUNISIE	LIBYE	EGYPTE	GAZA	ISRAEL	LIBAN	SYRIE	TURQUIE	CHYPRE	Exploitation index of water resources (years 1990-97) (%)
41	25	57	103	91	208	95	27	48	15	27	
MOROCCO	ALGERIA	TUNISIA	LIBYA	EGYPT	GAZA	ISRAEL	LEBANON	SYRIA	TURKEY	CYPRUS	

Source : Plan Bleu

### Evolution des prélèvements totaux d'eau (renouvelables et non renouvelables) pour des groupes de pays (estimation Plan Bleu) Total water withdrawals (renewable and non renewable) evolution in country groups (Blue Plan estimation)



## EXPLOITATION INDEX

Except in the Balkans countries, with 3% maximum for Albania, the exploitation index of the majority of the countries is higher than 10%. It exceeds even the 100% for Libya and the 200% in the Gaza Strip.

At a national scale, an exploitation index ranging between 10 and 20 % is generally already regarded as possibly revealing some local high pressure on environment, especially in terms of water quality, since the waste water flows increase when withdrawals increase (especially for municipal and industrial sectors).

Above 50 %, it is an indicator of high pressure and indicates the need for rationalizing the management of water uses and demands. Tunisia and Egypt in North Africa and Israel in Near East are in this case.

An exploitation index of more than 100 % is often an indicator of shortage and total " overexploitation " of the renewable water resources. The Gaza Strip (208%) and Libya (102%) are in this case.

In large scale countries, benefiting from wide river basins, a high exploitation index can be reached with low damage to resources; this might be the case if there is a high rate of re-use of water and/or refilling of aquifers or if economic activities are well distributed over time and space.

On the contrary, indexes below than 100 % do not exclude the possibility of local overexploitations.

To give a better overview of the situation, this indicator should be compared to the "non-sustainable" water production index, which indicates the exploitation of non-renewable water in some countries.

*Data source*  
Blue Plan: MARGAT (J.), VALLEE (D.) – Water Resources and uses in the Mediterranean countries: figures and facts, 2000.