

Strategic Environmental Assessment, ex-ante evaluation EUROPEAID/119860/C/SV/multi

Strategic Environmental Assessment for the Mediterranean Sea Basin Programme

Prepared for DG AIDCO / Cross Border Cooperation Programmes
European Commission

June 2007

LOT N° 6: Environment
REQUEST N° 2006 / 130525

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Project title:	Strategic Environmental Assessment, ex-ante evaluation - EUROPEAID/119860/C/SV/multi	
Contract no:	LOT N° 6: Environment - REQUEST N° 2006 / 130525	
Country:	Mediterranean region	
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Date of Report: June 2007

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ABBREVIATIONS

CBA	Capture-Based Aquaculture
CBC	Cross Border Cooperation
EC	European Commission
EIB	European Investment Bank
EMP	Euro-Mediterranean Partnership
ENP	European Neighbourhood Policy
ENPI	European Neighbourhood and Partnership Instrument
EUMC	EU Mediterranean Countries
EUPC	EU Partner Countries
FAO	Food and Agriculture Organisation of the UN
FDI	Foreign Direct Investment
FEMISE	Euro-Mediterranean Forum of Economic Institutes
GDP	Gross Domestic Product
GHG	Green House Gases
HAB	Harmful Algal Blooms
ICT	Information Communication Technologies
IFI	International Funding Institutions
IPCC	Intergovernmental Panel on Climate Change
IUCN	The World Conservation Union
JMA	Joint Management Authority
JTF	Joint Task Force
JTS	Joint Technical Secretariat
MAP	Mediterranean Action Plan
MENA	Middle East and North Africa
MSSD	Mediterranean Strategy for Sustainable Development
MCSD	Mediterranean Commission on Sustainable Development
N1	Comprises the 22 countries and territories bordering the Mediterranean (Mediterranean countries in the EU and Mediterranean countries not in the EU - Partner countries)
N3	Mediterranean coastal regions
NEUPC	Non-EU Partner Countries
NGO	Non Governmental Organisation
NMC	Northern Mediterranean Countries
Non EUPC	Non EU Partner Countries
NV	Mediterranean catchment area / basin
OME	Observatoire Mediterranéen de l' Energie
PAHs	Poly-Aromatic Hydrocarbons
PCBs	Poly-Chlorinated Biphenyls
POPs	Persistent Organic Pollutants
PPP	Purchasing Power Parity
PSC	Project Selection Committees
PTS	Persistent Toxic Substances
RE	Renewable Energy
SEA	Strategic Environmental Assessment

SEMC	South East Mediterranean Countries
SME	Small to Medium Enterprise
SPAMI	Specially Protected Areas of Mediterranean Interest
STB	Seafood Toxic Blooms
UAA	Usable Agricultural Area
UNCTAD	United Nations Conference on Trade and Development
UNEP	United Nations Environment Programme
UNWTO	World Tourism Organization of the UN
USAID	United States Agency for International Development
WSSD	World Summit on Sustainable Development

Codes of Partner Countries

ISO CODES	COUNTRIES	
DZ	Algeria	Maghreb
CY	Cyprus	
EG	Egypt	Mashrek
FR	France	
GR	Greece	
IL	Israel	
IT	Italy	
JO	Jordan	Mashrek
LB	Lebanon	Mashrek
LY	Libya	Maghreb
MT	Malta	
MA	Morocco	Maghreb
PS	Palestinian Authority	Mashrek
PT	Portugal	
ES	Spain	
SY	Syria	Mashrek
TN	Tunisia	Maghreb
TR	Turkey	
UK	United Kingdom	

1. INTRODUCTION

Under the new financial perspective 2007-2013, the European Commission has proposed a new instrument, the European Neighbourhood and Partnership Instrument (ENPI), to operate from 2007 onwards. A specific component of this Instrument will support cross border co-operation (CBC) along the EU's eastern and southern border.

Multi-annual co-operation programmes will be developed by the partners in the programme area, subject to approval of the programme document by the Commission services.

The Guidelines on how to prepare ENPI CBC programmes foresee that, if applicable, the programmes shall be subject to a Strategic Environmental Assessment (SEA) in accordance with Directive 2001/42. The objective of the environmental assessment is to integrate environmental considerations into the programme with a view to promoting sustainable development.

This report has been prepared in accordance with the requirements of the *Directive 2001/42/EC* of the European Parliament and of the Council on the assessment of the effects of certain plans and programmes on the environment.

However, *Directive 2001/42 does not apply to non EU partner countries* (non EUPC) taking part in the Mediterranean Sea Basin Programme. This could result in certain difficulties at least at the level of related administrative procedures, due to lack of similar experience. To overcome this barrier, EC funded this project, in the framework of which non EUPC will be provided assistance, especially in the consultation process.

1.1 The SEA Directive – general provisions

The so called “SEA Directive”, entered into force on 21st July 2001 and had to be implemented by Member States before 21st July 2004. Although the word 'strategic' does not appear in either the title or the text of the Directive, it is often referred to as the “Strategic Environmental Assessment” Directive (or SEA Directive) because it deals with environmental assessment at a higher, more strategic, level than that of projects (which are dealt with in the Environmental Impact Assessment (or EIA) Directive (Directive 85/337/EEC as amended by Directive 97/11/EC)).

The purpose of the SEA-Directive is to ensure that environmental consequences of certain plans and programmes are identified and assessed during their preparation and before their adoption.

The public and environmental authorities can give their opinion and all results are integrated and taken into account in the course of the planning procedure. After the adoption of the plan or programme the public is informed about the decision and the way in which it was made.

By involving the public and by integrating environmental consideration, SEA contributes to more transparent planning and to the achievement of the goal of sustainable development.

Experience of Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment (the Environmental Impact Assessment or EIA Directive) has shown that it is important to ensure a consistent implementation and application across the whole Community to achieve the maximum potential for environmental protection and sustainable development.

To this effect, EC prepared a document entitled as “Implementation of Directive 2001/42 on the assessment of the effects of certain plans and programmes on the environment” which was consulted during the preparation of this report.

1.2 Report contents

The environmental report is the central part of the strategic environmental assessment required by the SEA Directive. It is an important tool for integrating environmental considerations into the preparation and adoption of plans or programmes since it ensures that their likely significant effects on the environment are identified, described and assessed and taken into account in that process. The preparation of the environmental report and the integration of the environmental considerations into the preparation of plans and programmes form an iterative process that should contribute to more sustainable solutions in decision-making.

This report is comprised of a *Non – Technical Summary* followed by the Chapters:

- Chapter 1:** Introduction
- Chapter 2:** Description Of The Mediterranean Sea Basin Programme
- Chapter 3:** Description And Analysis Of The Geographical Areas Affected By The Programme
- Chapter 4:** Environmental Characteristics Of Areas Likely To Be Significantly Affected
- Chapter 5:** Existing Environmental Problems In the Area Relevant To The Programme
- Chapter 6:** Integration Of Environmental Protection Objectives In The Programme
- Chapter 7:** Likely Effects On The Environment
- Chapter 8:** Preventive And Mitigation Measures
- Chapter 9:** Monitoring The Environmental Effects

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2. DESCRIPTION OF THE MEDITERRANEAN SEA BASIN PROGRAMME

2.1 Introduction

ENPI CBC Mediterranean Sea Basin Programme 2007-2013 provides the framework for the implementation of cross border and cooperation activities in the context of the European Neighbourhood Policy, with the final aim of developing an area of prosperity and good neighbourliness involving EU countries and Partner Countries as they are listed in the Strategy Paper on ENPI.

The countries bordering the Mediterranean Sea are largely diversified, in terms of geographical structure, economic specialization, social organization, political and cultural forms. This very diversity is at the origin of the deep economic and cultural exchanges that historically have characterized and enriched the region.

Following the principle of co-ownership as an horizontal element of the Programme, the entire process of defining its strategy and structure have been characterised by a participatory approach of the whole partnership through continuous consultations within task forces and working groups that have led to a shared vision of the Programme among the participating countries.

The strategy of the Programme is based on the combination of three main components:

- the institutional, economic, social, cultural, environmental characteristics of the cooperation area
- the strategy of ongoing and future programmes in the Mediterranean area
- the finalities and objectives of the territorial cooperation component in the framework of the ENPI

The socio-economic background of the concerned area underlines the relevance of the Mediterranean Sea as a resource and the need of maximising the size, quality and sustainability of the material and immaterial flows across the Sea. The main potentialities and challenges highlighted by the SWOT ¹ analysis of the concerned area reveal that even though a significant income gap still characterizes the region, there are relevant potentialities for its containment in the future. The common challenges of the area involve the vulnerability of common natural resources subject to various pressures (demographic, economic and social pressures). These challenges are paralleled by shared potentialities, especially on natural and cultural heritage. Challenges and potentialities also relate to trade and migration flows, and to their management through regional, multilateral or bilateral agreements. Human capital development and intercultural dialogue also emerged from the analysis as relevant issues of the area.

The definition of the Programme strategy takes into serious account strategies and programmes interesting the concerned cooperation area, drafting an overall framework of actions, projects and programmes implemented by different partners, in order to ensure the due consistency and to create effective synergies among initiatives. In particular Euro Mediterranean programmes' strategies of international actors, multi and bilateral programmes have been carefully considered throughout the development process of the Programme.

In the definition of the contents of the Programme, participating countries agreed on a set of principles (co-ownership, common benefits, partnership, sustainable development, equality of opportunity, territorial dimension of the processes of development, reinforcing the level of competitiveness of the Mediterranean basin countries) mainly stemming from those set by ENPI,

¹ Please refer to the Mediterranean Sea Basin Programme

further complemented, in order to guarantee the respect of the aims of the Programme while ensuring its effectiveness.

2.2 An outline of the Programme

The Mediterranean Basin, in accordance with 2006 figures covers 6.9% of the world's population which relates to 441 million inhabitants. Economically the Mediterranean Basin accounts for 10.7% of the world GDP at purchasing power parity (PPA), or 13.9% of world GDP computed at current prices.

The countries surrounding the Mediterranean Sea, although viewed as similar, will actually be considered very different with only their common placement a similarity as they are not only diverse in terms of geographical structure but also vary culturally, socially, politically and economically.

It has been noted in the last two centuries that one of the largest gaps between the Mediterranean nations is that of their income which mainly separates the North and the South-East regions. More specifically, in 2006 EU Mediterranean countries (EUMC) produced 75% of the total Mediterranean GDP (at PPA; 86% if the GDP is computed at current prices), a much higher share than their share in the total Mediterranean population (42%).

Decreasing this gap by boosting economic growth in Southern and Eastern Mediterranean countries (SEMC) is a major target of the Euro-Mediterranean Partnership. It is envisaged that this will be achieved partly through the gradual establishment of a free trade area, and partly through the European Neighbourhood Policy which aims to offer a deeper political and economic relationship between the Mediterranean nations.

As far as the cross-border cooperation component is concerned, these objectives are, namely, to support processes of sustainable development for the two sides of EU external borders, to contribute to reduce disparities and improve living conditions in the border territories, to face challenges and seize opportunities deriving from the enlargement of the EU or from the proximity among regions located all along the land or maritime borders.

An effort has been made to tailor these general objectives to the specific context of the Programme considering the characteristics of the cooperation area.

The joint analysis carried out by the participating countries led to the identification of a strategy where some basic elements emerged, which were based on the relevance of the process of harmonisation of procedures and exchange of best practices. The four priority areas include:

1. Economic promotion and enhancement of territories
2. Promotion of environmental sustainability at the Basin level
3. Promotion of better conditions and modalities for ensuring the mobility of ideas, persons, goods and capitals
4. Promotion of cultural dialogue and local governance

Due to the cross border co-operation nature of the Programme, its strategy was built around the objectives of the European Neighbourhood Policy (ENP) as defined by the Regulation of European Neighbourhood and Partnership Instrument (ENPI). The formulation of the strategy descends from the effective implementation of the culture of dialogue among the concerned actors. Furthermore this is required in order to establish trust-based relationships among partners and to stimulate a process of continuous exchange that is essential to achieve an effective and shared planning, defining the principles governing the Programme, the general aim and the strategy adopted as well as the contents of specific and operational objectives.

It is foreseen that a total of 19 countries will be influenced by this programme and within some selected countries specific regions will be targeted.

The list below represents the territories and areas which will be included in this programme:

A/A	Country	Area
1	Algeria	Tlemcen, Ain Temouchent, Oran, Mostaganem, Chlef, Tipaza, Alger, Boumerdes, Tizi Ouzou, Bejaia, Jijel, Skika, Annaba, El Tarf
2	Cyprus	the whole country
3	Egypt	Marsa Matruh, Al Iskandanyah, Al Buhayrah, Kafr ash Shaykh, Ad Daqahliyah, Dumyat, Ash Sharquiyah, Al Isma'iliyah, Bur Sa'id, Shamal Sina'
4	France	Corse, Languedoc-Roussillon, Provence-Alpes-Côte d'Azur
5	Greece	Anatoliki Makedonia - Thraki, Kentriki Makedonia, Thessalia, Ipeiros, Ionia Nisia, Dytiki Ellada, Sterea Ellada, Peloponnisos, Attiki, Voreio Aigaio, Notio Aigaio, Kriti
6	Israel	The whole country
7	Italy	Basilicata, Calabria, Campania, Lazio, Liguria, Puglia, Sardegna, Sicilia, Toscana
8	Jordan	Irbid, Al-Balga, Madaba, Al-Karak, Al-Trafila, Al-Aqaba
9	Lebanon	The whole country
10	Libya²	Nuquat Al Kharms, Al Zawia, Al Aziziyah, Tarabulus, Tarunah, Al Khons, Zeleitin, Misurata, Sawfajin, Surt, Ajdabiya, Banghazi, Al Fatah, Al Jabal Al Akhdar, Damah, Tubruq
11	Malta	The whole country
12	Morocco	Oriental, Taza-Al Hoceima-Taounate, Tanger-Tetouan
13	Palestinian Authority³	The whole country
14	Portugal	Algarve
15	Spain	Andalucía, Cataluña, Comunidad Valenciana, Murcia, Islas Baleares, Ceuta, Melilla
16	Syria	Al Ladhiqiyah, Tartus
17	Tunisia	Madanin, Qabis, Safaqis, Al Mahdiyah, Al Munastir, Susah, Nabul, Bin Arous, Tunis, Al, Arianah, Banzart, Bajah, Juridubah
18	Turkey:	Tekirdağ, Balıkesir, Izmir, Aydın, Antalya, Adana, Hatay
19	United Kingdom	Gibraltar

² Eligible country; not participated in the preparation of the Programme.

³ Willingness to participate in the Programme, not expressed.

In order for the Programme to succeed its strategy the follow assumptions must pre-exist, which form the set of principles of the Programme as well:

- A. Co-ownership** - This aspect is important to promote the sustainability of the project following its completion and the smooth implementation of activities. In this case the Programme contents as well as its implementation modalities have been jointly drafted through contributions from all participating countries. Furthermore, management structures of a joint nature have also been developed for the purposes of the Programme.
- B. Common benefits** - The Programme aims to highlight the benefits common to participating countries by combining the territories' potential and enhancing regional and local partner capacities to solve common problems which, will in turn improve social cohesion and enhance competitiveness in the cooperating areas. The common benefits principle is a milestone of the Programme, and actions will be implemented within the EU and Mediterranean context, while neighbouring countries will be encouraged to approach EU policies.
- C. Partnership** - Partnerships are essential for the successful implementation of the Programme and are expected to contribute to the better governance of the local development process. It is therefore important for the Programme to ensure appropriate and balanced access opportunities to all the key actors (national, regional and local authorities, economic and social partners, civil society) so to allow integration to the partnership according to interested sectors.

These may include:

- local/regional partnership among the public and private actors, according to the different subjects (horizontal partnership);
 - local/national partnerships where local actors and national authorities engage a constructive dialogue according to the different subjects (vertical partnership)
 - partnerships among countries, through the Programme's joint bodies; trans-national partnerships, through the implementation of projects associating territories of different countries;
 - partnership between the European Commission and the countries participating in the Programme.
- D. Sustainable development** - Sustainable development is an issue that is important to the Programme as, if following its completion no further initiatives are taken in line with those implemented under the programme the envisaged long-term effects of the programme will be compromised. Sustainable development therefore requires a long-term vision of development perspectives and the analysis of the consequences of the activities implemented by the different countries of Mediterranean Basin. More specifically, the cooperation area will identify solutions facing the main challenges of the area which at the same time ensure sustainability of development. Environment protection, management of natural resources, economic development, social cohesion will be integrated. In particular it is necessary that economic growth supports social progress and respects the environment, that social policy supports economic performance, and that environmental policy, horizontal to different subjects, is cost-effective. Sustainable development also requires that programme partners involve themselves.
 - E. Equality of opportunity, non-discrimination, respect for human rights.** The Programme will include in an operative way (at project level) the principles of non-discrimination and respect for human rights in all its activities, ensuring gender equality and preventing any discrimination based on gender, nationality, language or religion. Special attention will be paid to promote respect for workers' and immigrants' rights.

- F. Territorial dimension of the processes of development and enhancement of endogenous potential within the cooperation area.** As opposed to macro and sector-based policies, the aims of a cross-border cooperation programme will be to provide a territorial perspective of development. The emphasis is put on the "local" within the territorial cooperation which comes to enhance local territories. In addition to environmental and cultural heritage, the local territories often share a commonality in skills, knowledge and know-how in both public and private organisations. The institutional, environmental, geographical, economic and social specificities must therefore be given careful consideration by the key actors in the local territories when identifying activities to be implemented in order to promote cooperation in the form of harmonisation rather than standardisation. It will also be emphasised that making full use of endogenous potential must be integrated in a sustainable way, with the principle of territorial cohesion. This is to ensure that disadvantaged areas are also taken into account (for example, rural areas, small towns, declining industrial areas, landlocked territories, etc.), with the aim of reinforcing a process of balanced and polycentric development.
- G. Reinforcing the level of competitiveness of the Mediterranean basin countries -** The Mediterranean Basin is a "macro region" in itself and competitiveness will stem from within the diverse economic sectors present in the area rather than with other geo-economic areas. While integration of the Euro-Mediterranean area will be in-line with the cohesion criteria and will address the participating territories, it will also be the result of joint work based on a coherent strategy designed within the framework of competitiveness strategies as they exists on the world scene.
- H. Integration:**
- Integration between territorial approach and multi-country/transnational approach.
 - Cross-sector integration of initiatives considering that the Programme's purpose is to promote the process of local development with a view to cohesion and sustainability.
 - Integration of different competencies and missions of the major actors in the concerned territories (stakeholders and decision-makers).
 - Integration, complementarily and coordination with macro-regional, national and local initiatives interesting the Programme cooperation area in order to promote synergies among different initiatives and to bring a real contribution to a strategic and sustainable development of the territories in a medium and long term perspective;
 - Integration and resources concentration.

2.3 Objectives of the Programme

Elements determining the Programme's strategy include the following

- 1. Specific characteristics and trends of the cooperation area:**
 - Maximisation of flows of goods, people, ideas and capitals among the territories of the Mediterranean Basin countries.
 - Establishment of an area of exchange, dialogue and cooperation able to enhance cultural, human, social, natural and economic dimensions of Mediterranean countries.
 - Production of real and sustainable effects on local development of the territories through transnational cooperation.
- 2. Strategies and programmes implemented, ongoing and planned in the Mediterranean area**
- 3. Specific nature of the Programme**
- 4. Willingness of participating countries to avoid the fragmentation and dispersion of the Programme's actions**

The identified objectives priorities and measures of the programme

General objective:

To contribute to promoting the sustainable and harmonious cooperation process of the Mediterranean Basin by dealing with the common issues and enhancing its endogenous potential.

The elements described below allowed the partner countries to redefine the objectives retained by the ENPI Regulation for the cross-border cooperation component, further developed in the Strategy Paper 2007-2013, and to project them on the specific framework of the cooperation area of the Mediterranean basin Programme by focusing their contents on four priorities, which the partner countries consider more appropriate to establish stable cooperation processes among their territories. Some measures are also identified relating to each priority, which will be described in detail in the following paragraph.

Identified priorities:

Priority 1: Economic promotion and enhancement of territories

Due to the socio-economic imbalances of the territories of the co-operation area of the Programme, the resolute commitment of the partners is required for the promotion of actions able to ensure the population conditions of prosperity and stability at both a social and economic level. Considering the results of the SWOT analysis and the nature of the Programme, the measures adopted by this priority relate to the promotion of technology innovation in different areas of local development, integration of local productive systems and strengthening the capacity of strategic planning at different levels.

Priority 1/ Measure 1.1: Support to innovation and research in the process of development of Mediterranean territories

Initiatives included in this measure will contribute to the promotion of innovation inputs in territorial systems to make innovation functional to the strengthening of economic activities and to the improvement of the quality of life of the population. In particular, innovation will support the modernisation of local economic systems and the diversification of activities (production of goods and services giving priority to those with strong added value).

This means working to make innovation available to “mature” productive sectors, frequently the most subject to competitiveness on a global level, but also to promote economic activities based on natural and cultural specificities of territories and on the know-how of their population, as well as responding to new demands mainly emerging in the service sector.

The diffusion of innovation technologies requires the promotion of a better cooperation through the setting up of trans-national networks among production clusters, as well as the development of cooperation among companies, research institutions (universities and research centres), incubators, technology parks, public and private organisations offering financial and non financial services to SMEs and public authorities.

To this extent, based on the results of the analysis carried out on the cooperation area, participating countries attached priority to the following sectors: i) Marine sciences (marine and coastal ecosystems; ii) Agro-food technologies and biotechnologies; iii) Technologies for protection, maintenance and optimisation of historical and archaeological resources; iv) Logistics and harmonisation of port procedures v) Development of alternative energy sources (solar, photovoltaic, wind, etc.) and promotion of energy efficiency in production activities and in public affairs; vi) Technologies applied to public services (management of urban transport, waste treatment and recycling, water desalinisation, rational use and reuse of wastewater for productive purposes, etc.); vii) Biomedical sciences and monitoring/treatment of common health pathologies of Mediterranean countries.

Local actors – potential beneficiaries

For the implementation of the activities envisaged within this measure, in addition to the relevant local and national authorities, research institutions of different kinds (universities, public or private research centres, technological and scientific parks, and business incubators) as well as SMEs (clusters and individual SMEs), will be mobilised.

Priority 1/Measure 1.2: Strengthening trans-Mediterranean economic clusters synergies among potential of territories

The economic sectors in the Mediterranean Basin include sectors that in terms of competitiveness would benefit from enhanced north-south as well as south-south integration. The Programme aims to pursue this by strengthening the trans-national partnership between SMEs and SMEs clusters. This aims to integrate certain production chains which are built on the transfer of new technologies and adoption of more efficient production and management procedures. The promotion of processes of integration will be conducted through modalities able to ensure:

- Quality and security of products and services, reduction of environmental impacts (land and sea), use of renewable energy, efficient use of energetic resources, adoption of mechanisms for social accountability of SMEs aimed at creating a new ethic of the productive sector starting from the respect of values as the responsibility of the company in the social environment, of the working right, the respect of international conventions, environment respect, commercial ethic and acquisition and dissemination of a responsibility towards consumers.

- Specialisation of production, product and process innovation, integration of production schedules, integration of marketing strategies, training, to ensure mutual competitiveness.
- Mobilisation of complementary actors all along the productive chain providing services essential for effective cooperation and stimulation of the territories involved (transports, logistics, certification and quality analysis, financial services, packaging, distribution, marketing).
- Promotion of better living conditions for the population of areas interested by the process of integration of productive chains, paying specific attention to young people and rural population.

Countries participating in the Programme, taking into account the results of the analysis of the cooperation area, as well as its feature of trans-national cooperation initiative, identified the following priority sectors to implement actions contributing to a cooperation with a strong Mediterranean characteristics: i) agriculture and agro-food (including zootechnic and milk productive chains); ii) fishery; iii) handicrafts and Mediterranean habitat; iv) textile and clothing; v) sustainable tourism based on the enhancement of cultural and natural common assets.

Local actors – potential beneficiaries

Actions within this measure will involve companies (individual, clusters, and professional associations), local and national public institutions, development agencies, actors working in the whole process of integration of chains offering financial and non financial services, trade unions and consumers' organisations.

Priority 1/Measure 1.3: Supporting to the development of Mediterranean strategies of territorial development integrating different levels: local, metropolitan urban rural and basin

This measure is based on trans-national exchanges among communities on the subject of territorial planning. The initiatives will involve territorial planning, diagnostics, evaluation and perspectives, and transfer of experiences to address the common territorial issues of the territories participating in the Programme, providing them solid basis for cohesion and competitiveness.

The initiatives included in this measure will relate to the development of trans-national co-operation, mainly aimed at territorial planning, integrating the different levels, diagnostics, evaluation and environmental certification, transfer of experiences and good practices, joint development of procedures and laws (regulatory and fiscal) in order to respond to common territorial issues and ensure the strengthening of the basis for cohesion and competitiveness. Considering that the co-operation area is characterised by strong differences among and within its territories, this measure will also take into account actions of exchange and transfer of good practices in the areas of welfare, education and employment, as well as the promotion of sustainable economic activities in rural areas meant as territorial strategies to safeguard the natural environment.

Following the results of the analysis of the area and considering the nature of the Programme, sectors included in trans-national actions of joint planning are: i) Relations between coasts, urban areas and hinterlands (particularly rural areas); ii) Polycentric development and urban and peri-urban sustainable development and policies on management of natural areas; iii) Planning of public services (health, education, water, transport, energy, waste, etc.) at local level and their co-operation with macro-regional networks.

Local actors – potential beneficiaries

Actions envisaged within this measure will entail the particular involvement of local authorities as well as of development agents, private actors (individuals and professional associations), civil society organisations, universities and research centres. The competent national authorities may become involved to ensure the coherence of national strategies to development policies at local level.

Priority 2: Promotion of environmental sustainability at the basin level

Participating countries decided to focus this priority exclusively on environmental challenges considering their relevant impact on the social and economic life of the territories and considering that they refer to areas likely to be considered at basin level.

Safeguarding and enhancing of natural, maritime and land heritage, promotion and use of renewable resources and energy savings (at the level of economic and domestic activities), also in terms of contribution to the reduction of greenhouse effects following Kyoto commitments, have been adopted as priority areas actions of the Programme. This approach aims to contribute to the reduction of the pollution of natural of resources.

Priority 2/Measure 2.1: Prevention and reduction of risk factors for the environment and enhancement of natural common heritage

All territories participating in the Programme have a large natural and diversified heritage mainly composed of a rich maritime and land bio-diversity together with a unique landscape resulting from the combined effects of the natural elements and of the know-how of their population which have left their mark over the centuries. This capital is nevertheless fragile. Environmental risks and degradation affecting the Mediterranean basin are different and originate from human activities (industry, intensive agriculture, mass tourism, intensive and growing maritime traffic, etc.), but they are also linked to geographic specificities of the territories and to demographic trends. Considering their relevance, participating countries, decided to adopt the following areas of intervention: i) fighting against land desertification and coastal erosion; ii) prevention of natural risks (floods and fires); iii) water cycle management and fighting against sea and river pollution; iv) reduction of the effects of different sources of pollution at the level of urban, industrial, and agricultural areas; v) waste management and recycling; vi) Protection and sustainable enhancement of natural, land, and marine resources for economic and tourism purposes and the adoption of sustainable fishery techniques.

These areas of intervention will be taken into account especially through trans-national actions and the transfer of prevention practices with specific reference to new technologies, of harmonisation of procedures (for prevention, evaluation of impacts and joint intervention in case of natural disasters or caused by human activities), of management and monitoring of phenomena, of communication and awareness raising of local actors.

These actions could be complemented by pilot projects which have a strong transferability potential, through research and innovation.

Local actors – potential beneficiaries

Actors to be involved in activities related to this measure include local authorities, local development agencies, environmental agencies or similar organisations, governmental public national services centralised and decentralised, universities (particularly in terms of research and monitoring), community and environmental associations and economic operators.

Priority 2/Measure 2.2: Diffusion of renewable energies and improvement in energy effectiveness

This measure is part of a wider logic aimed at reducing pollution sources (urban, industrial, agricultural, domestic) so as to safeguard natural heritage. The promotion of renewable energies (solar, photovoltaic, wind, geothermic, etc.) and the improvement of energy effectiveness at the level of productive activities, of buildings, transport and domestic activities may greatly contribute to reduce greenhouse effect emissions and to mitigate the effects of climate changes. Orienting the process of local development in this direction is not only a contribution to the reduction of polluting sources but it opens up an economic opportunity (research, innovation, investments, etc.). This opportunity may be supported as a trans-national activity since it is a tool to reach necessary critical

mass to proceed in the introduction of alternative energy sources, enhancing natural issues of the Mediterranean countries.

Diversification of energy sources using renewable sources as well as the improvement of energy performance require an evolution in the way of producing and consuming which will be supported by technology innovation, by the adoption of rules encouraging a change of behaviour (for example as far as buildings is concerned) or making investments aimed at energy effectiveness more attractive.

Local actors – potential beneficiaries

Actors to be involved in the actions envisaged for this measure are: local authorities, environmental agencies or similar institutions, central and decentralised governmental public services, universities (mainly for research), environmental associations, economic actors (producers and distributors of renewable and non renewable energies).

Priority 3: Promotion of better conditions and modalities for ensuring the mobility of ideas, persons, goods and capitals

The subjects covered by this priority mainly relate to the capacities of national institutions. They are largely considered at the level of strategies and initiatives planned in the framework of European Neighbourhood Policy. Since these subjects have relevant impacts on social and economic development of border areas they will be considered within the framework of cross border cooperation only in close co-ordination with national policies and initiatives. Measures identified by this priority are related to the facilitation of flows of people among territories, with reference to the welcoming of migrants, as well as to the improvement of mechanisms and procedures ensuring effectiveness and quality in exchange of goods and capitals.

Priority 3/Measure 3.1: Support to people flows among territories as a means of cultural, social and economic enrichment

Territories of the Mediterranean area are to be involved in the search for the most appropriate tools to face the impacts generated by the nature of an area with relevant migration, frequently being only a transit area. Impacts of moving are, first of all, of a social nature since they create a demand of sanitary services, education, housing, etc. They also have an influence on economy since welcoming territories usually need labour, also on a seasonal basis, in the productive sectors and in domestic and care activities.

Interventions to be submitted within this measure include transnational activities of observation, impact analysis, communication, information and awareness rising about migration (legal and illegal) aimed at different target groups (migrants according to their status and age, economic actors, institutions, communities, associations, etc.). This measure will also include initiatives aimed at promoting exchanges of public and private good practices supporting social and economic integration of migrants (inclusion in the labour market, education, languages, dedicated services related to housing, social services and legal assistance, etc.) Immigrants can also provide impetus for activities to develop and create/strengthen relations between their home communities and those where they live. This could be achieved by means of cultural and exchange initiatives, but also through a better use of migrants transfers, using these resources in initiatives of local development in their country of origin.

Local actors – potential beneficiaries

In addition to the local authorities, the actors that should be mobilised to carry out these activities are local authorities, immigrants and their associations, associations from the local communities, NGOs, immigrants welcoming centres, social research centres, public and private services supporting immigrants' integration, local development agencies and the competent national authorities.

Priority 3/Measure 3.2: Improvement of conditions and modalities of circulation of goods and capitals among the territories

The establishment of an integrated cooperation area with a view to sustainable socioeconomic development requires dissemination, adoption and application of shared procedures and of mechanisms related to the circulation of goods and capital, fully compliant with international, national and regional regulations. The activities implemented in connection with this objective therefore refer to the opportunity to increase efficiency of trans-national trade through the improvement of connections and competitiveness of logistic structures (harmonisation of procedures, enhancement of operations, specifically with the application of information and communication technologies (ACT) to maritime transportation activities) and its enhanced security, particularly in terms of quality. As a matter of fact, these elements are crucial for security and protection of consumers (method to trace product's origin). These actions will also be integrated with the realisation of joint information, education and awareness raising campaigns on the circulation and movement of goods and capital.

Local actors – potential beneficiaries

Considering the activities envisaged within this measure, the actors involved are the local authorities, the competent national authorities, those responsible for the management of ports and related operations (customs, logistics, health, etc.), as well as banking and financial institutions. Private economic operators, such as service users and providers, should also be involved, along with local communities.

Priority 4: Promotion of cultural dialogue and local governance

Co-operation among communities is particularly effective to contribute to making the Mediterranean an area of joint peace, cohesion, prosperity. This priority will thus be addressed to consolidate the territorial organisations and institutions, to support administrative reforms, to stimulate social and cultural exchanges and dialogue, mainly among young people, and to promote co-operation and relationships among the communities of the territories involved in the Programme.

Priority 4/Measure 4.1: Support to mobility, exchanges, training and professionalism of young people

Young people are an important component of the communities, in terms of quantity and even more of quality: They are the main group for the dissemination and the consolidation of a real and continuous culture of dialogue and relationships among communities. In other words, they are one of the fundamental elements in order to create an area of stable and flourishing exchange, dialogue and cooperation. Initiatives targeted at young people will not be limited to exchanges, and to promotion of dialogue, but they will also include the designing of joint measures to improve standards of training and skill certification, and the introduction of young people in the European/Mediterranean labour market. The activities undertaken for this operational objective will be such as to make young people, able of continuing the dynamic of change which the Programme aims to promote through territorial co-operation. In dealing with young people special attention will be paid to young women, who often may have some difficulties in the access to education and, above all, to the labour market.

Local actors – potential beneficiaries

Key actors in this measure, along with the local authorities (and possibly their specialised services), are schools (students, teachers, educators, parent-teacher organisations, etc.), universities, training centres and local socio-cultural organisations. The competent national authorities might also be involved, particularly to enhance co-ordination with measures they have taken to support young people (from education and training to integration in the labour market).

Priority 4/Measure 4.2: Support to the artistic creativity in all forms to encourage dialogue among communities

While the Mediterranean has a consistent, unique cultural heritage to be enhanced in order to benefit its citizens and for tourism purposes, transnational initiatives must also be promoted to support cultural and artistic common sector (artistic and industrial creation, fashion and design, architecture, literature, cinema and media, etc.). This effort will be focused on helping to overcome existing divisions, particularly through co-production of cultural events, as a source of pride and confidence in belonging to a living Mediterranean culture. Dialogue, networking exchanges and communication will promote interactions of Mediterranean cultures. Actions will be oriented towards the raising up of innovative development potentialities linked to an economy based on the enhancement of cultural assets of the Mediterranean territories and to innovation and development of new technologies related to creativity.

Local actors – potential beneficiaries

The actors involved are local authorities, and competent national authorities, specialised public and private operators such as art academies and conservatories, museums and libraries, cultural associations, permanent organisations responsible for organising festivals, universities, journalists, communication operators including publishers, etc.

Priority 4/Measure 4.3: Improvement of the governance process at local level

This measure includes cooperation activities supporting civil society of local communities and local institutions in the sector of administrative reform and good governance. Exchange of experiences and of good practices and dialogue at local level, as well as training and capacity building activities focused on different types of local actors (elected officials, public administrators, NGO's operators and associations, including professional ones) will be accompanied by specific activities to highlight the benefits that transnational co-operation can bring to local development strategies.

Local actors – potential beneficiaries

The target actors for this measure are all types of territorial organisations - public and private - representing the different groups of citizens on a geographic and/or sectorial basis.

Nature and features of the projects

It has been envisaged that the objectives of the programme will be fulfilled through the launching and implementation of two different kinds of projects:

- A. Strategic projects, whose sectors are identified beforehand by the Monitoring Committee in relation to measures, and further detailed through the formulation of terms of reference;
- B. Projects proposed by the local actors organised in trans-national partnerships, following the calls for proposals issued within the Programme.

A. Strategic projects

Considering the Programme covers an extensive area, diverse in terms of institutional, economic and social characteristics, strategic projects could be regarded as:

- a) Horizontal strategic projects giving priority to a specific thematic approach considered of a strategic value for the Mediterranean basin and involving the active participation of several territories and partners on the two shores of the Basin;
- b) Geographically concentrated strategic projects: focusing on the identification of shared solutions to problems and common challenges in a limited number of territories (of different countries on the two shores) within the framework of a partnership composed of actors of a different nature. Geographical concentration makes it necessary to implement explanatory activities with a strong impact, and to address jointly identified needs and opportunities which have an added value for the whole Mediterranean basin.

Strategic projects		
Ceilings of the total budget for project	Minimum 3,000,000 €	Maximum 5,000,000€
Countries represented within the partnership proposing the project	Minimum number: 4	

B. Projects promoted by local actors organised in trans-national partnerships

This type of project aims to encourage the emergence of joint initiatives prepared by partnerships including public and private actors in the co-operation area, on the basis of calls for proposals launched by the Programme. Such projects could fall under the following categories:

- *Integrated*: partners implement on their territory a part of the actions of the project.
- *Symmetric*: similar activities are implemented by the partners in parallel, from one side in the EU partner countries and from the other in non-EU partner countries.
- *Simple*: implemented mainly or only in EU partner countries or in non-EU partner countries, but for the benefits of the whole partnership.

Projects promoted by local actors organised in trans-national partnerships		
Ceilings of the total budget for project	Minimum 500,000 €	Maximum 2,000,000€
Countries represented within the partnership proposing the project	Minimum number: 3	

Joint Structures and Designation of the Competent Authorities

According to the Implementing Rules for ENPI Programmes, the organisation of joint structures for management and administration of the Mediterranean Basin programme will consist of:

- A Monitoring Committee (MC)
- Project Selection Committees (one for each call for proposals) (PSC)
- A Joint Management Authority (JMA)
- A Joint Technical Secretariat (JTS)

Taking into account the nature of the Programme as well as its wide geographic range of action, setting up of decentralised structures have been considered. During the transitional period, the countries non-EU partner countries, which are still waiting to sign the “Financing Agreement”, can take part in the managing structures as observers. The Technical Assistance can be used to prepare the launching of the Programme.

2.4 Relationship With Other Relevant Plans and Programmes

The European Union is particularly focusing on the countries participating in the Programme, either through its internal policies, which concern Member States, or through instruments of external policy aimed at countries of the Mediterranean southern shore.

Table 2.1: Synopsis of relevant plans and programmes

Euro-Mediterranean Partnership (EMP)	This work programme aims at progressing political dialogue and reforms; facing regional and international threats to stability and security; supporting sustainable socio-economic development; fostering the passage to a free trade zone; working to de-pollute Mediterranean sea; increasing cooperation in the field of education and culture; approaching migratory flows globally and in an integrated manner.
MEDA Programme	The MEDA programme is the principal financial instrument of the European Union for the implementation of the Euro-Mediterranean Partnership. The programme offers technical and financial support measures to accompany the reform of economic and social structures in the Mediterranean partners and it is implemented by DG EuropeAid
ERDF (European Regional Development Fund)	In 2003 the European Commission began a procedure of revision of its policy vis-à-vis neighbouring countries (transition period 2004-2006) which led to the definition of the European Neighbourhood Policy and to the identification of modalities for its implementation. During this phase, the existing INTERREG programmes were integrated into the MEDA proximity programmes.

European Neighbourhood Policy (ENP)	The European Neighbourhood Policy (ENP) reinforces and completes the EMP while using all its instruments and mechanisms. It provides to Partners the possibility of stake in the EU internal market and the chance to participate in EU programmes and policies and it will help to strengthen cooperation between countries in the Barcelona Process also through the promotion of regional and sub-regional cooperation.
“Horizon 2020”	At the summit to celebrate the 10th Anniversary of the EMP the partners committed to endorse a feasible timetable to de-pollute the Mediterranean Sea by 2020. To follow up the commitment, the EC launched the initiative known as “Horizon 2020” that aims to tackle the top sources of Mediterranean pollution. In the development of this initiative, the Mediterranean partners made specific reference to the Regional Strategy for Sustainable Development in the Mediterranean, developed in 2005 by the Mediterranean Commission for Sustainable Development (MCSD)
Satellite Navigation	Project concerning transport issues launched at the end of 2004. Other projects referring to this sector include: Indicative Regional Programme 2004-2006 such as the SAFEMED project on maritime safety and security
The “Cooperation project on the social integration of immigrants, migration and movement of persons” (EuroMed Migration)	A MEDA regional initiative launched by the European Commission in February 2004. Its goal is to create an instrument for observing, analysing and forecasting migratory movements, their causes and their impact, in Europe and in the Mediterranean partner countries.
Cohesion Policy for 2007-2013	It is based on the Lisbon and Gothenburg strategies, orienting regional development policies in EU countries and their regions and sets out three objectives: i) convergence (for less developed regions), ii) regional competitiveness and employment (for the other European regions), iii) European territorial cooperation (for cross border, transnational and interregional cooperation programmes). These objectives will be addressed via national and regional plans.
Other programmes and strategies	World Bank and the UNDP / United Nations agencies / GOLD/Maghreb (Tunisia, Morocco, Libya, Algeria)

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3. DESCRIPTION AND ANALYSIS OF THE GEOGRAPHICAL AREAS AFFECTED BY THE PROGRAMME

3.1 DEMOGRAPHICS

Between 1970 and 2005 the birth rates in SEMC increased by 116% and although an increase was also noted on the Northern shores (18%), the difference in this rate continues to reflect the difference between the two shores. Furthermore, life expectancy has gone up with the improvement of health care with an average life expectancy rate of 77/83 years (male/female) in EUMC and 69/73 years (male/female) in SEMC.

The coastal zone is home to a large population of permanent residents and tourists as well as many transport infrastructures and industrial sites. In all, the Blue Plan recorded nearly 2300 large coastal settlements in 2000, an average of one every 20km.

The permanent population of the Mediterranean coastal regions (N3) is projected to continue to grow to 108 million in 2025 in the south and east (1.4% growth per year), stabilizing at about 68 million in the north. These growth rates may be higher near the coastline itself, because of its highly attractive nature and the rural to- urban migration that risks being reactivated when agriculture is liberalized. Population statistics are not available at the coastal district level for the whole Basin. However, population data for cities located on the coastline give a good idea of the probable development of coastal populations. The population of coastal cities could increase 1% per year between now and 2025 and reach 90 million by 2025 compared with 70 million in 2000 (Figure 3.1), in other words 20 million additional urban dwellers on the coasts in 25 years¹.

This growth will occur mainly on the southern and eastern shores, which will add 18.4 million coastal urban dwellers and will reach 50 million by 2025. On the northern shore, coastal cities may start losing people in 2020 and would have only 1.7 million additional city dwellers between 2000 and 2025. This coastal urban population will increasingly be concentrated in the very big cities. In 1995 41% of the coastal urban population lived in cities of more than 1 million, compared with only 30% in 1970.

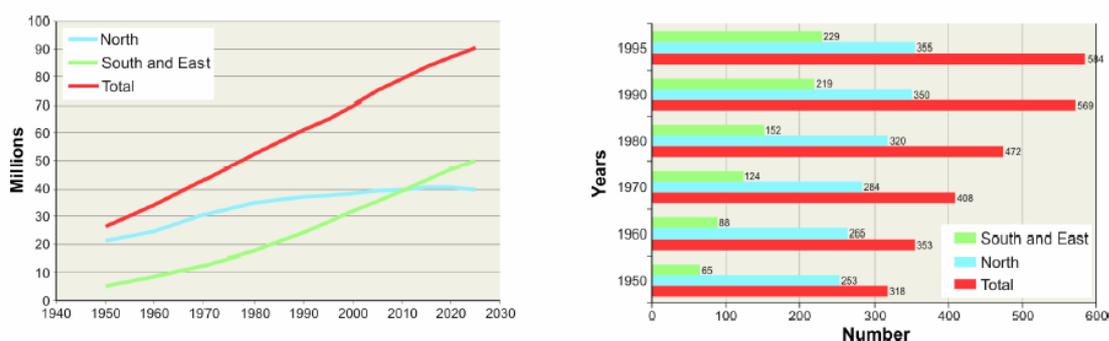


Figure 3.1: a) Coastal city population, 1950-2025 and b) Number of coastal cities with population more than 10,000, 1950-1995²

The number of coastal cities nearly doubled since 1950, from 318 in 1950 to 584 by 1995 (Figure 3.2). The number of small cities has grown steadily in the south and the east (Libya, Egypt and Turkey) while it has stabilized in the north. There are 196 cities on the Italian coastline alone, nearly a third of the total Mediterranean number.

¹ Estimated projections – Blue Plan 2005 (baseline scenario)

² Source: Geopolis 1998, Attané & Courbage, 2001

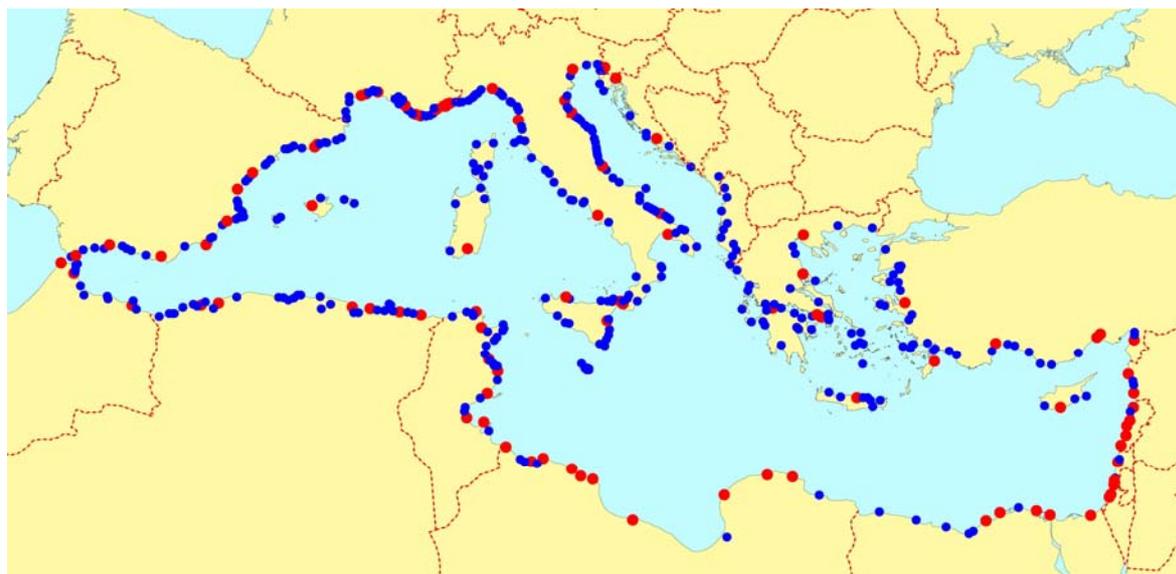


Figure 3.2: Mediterranean coastal cities (Red dots pop. >100,000, blue dots 10,000-100,000) ³

In the Mediterranean, as elsewhere, the family unit is undergoing major change. In practically all countries, the size of households is falling. On average, it fell from 4 people per household in 1985 to 3.7 in 2000 and could reach 3.3 by 2025. With urbanization and the reduction in fertility, relationships with children are changing and the role of women is evolving. As fertility continues to fall and life expectancy to rise, it is the number of people aged 65 years or over that has increased the fastest in most Mediterranean countries since 1970. This ageing has been particularly noticeable in the north. With the ageing population and the long-term widening of demographic deficit, the NMC are faced with new problems that could lead them to look again at their social 'model', particularly at pensions and the distribution of health costs.

The SEMC are very different from the NMC having, still, a high proportion of people under the age of 15 (32% in 2000 compared with 17% in the north) but they are already at the start of an ageing process. The proportion of the population under 15 will probably continue to fall, to 22% in 2025, while the number over 65 years will double, from 6% of the total population in 2000 to more than 10% in 2025. This could create a new opportunity for a rebalancing between the active and inactive (young and old) population. It would reduce the costs to the active population and result in a stabilization of the numbers to be educated. However, it presents a major challenge for the SEMC in terms of employment.

3.2 URBANISATION

At the beginning of the 21st century, Mediterranean peoples and societies are mainly urban (Figure 3.3). The total urban population of the countries bordering the Mediterranean increased from 94 million in 1950 (44% of the population) to 274 million in 2000 (64%).

³ Source: EEA, 2006 based on UNEP/MAP/MEDPOL/WHO, 2004

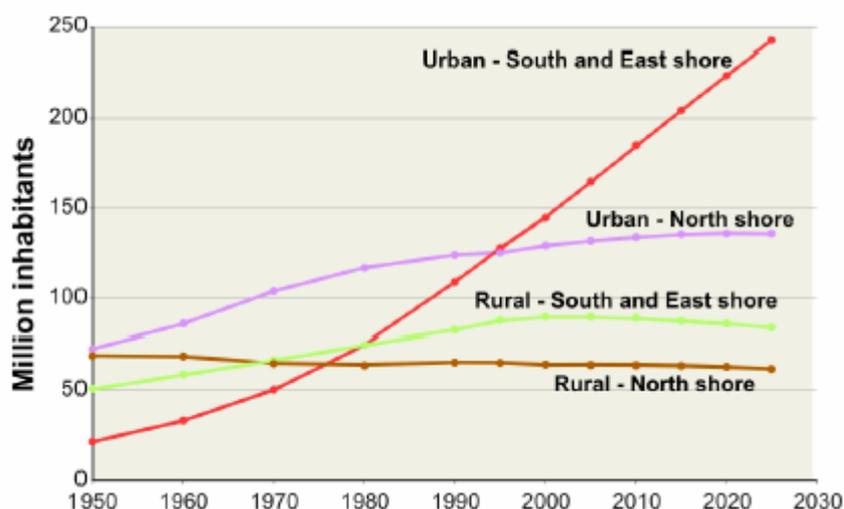


Figure 3.3: Urban population in the Mediterranean countries, trends and projections⁴

The southern and eastern Mediterranean countries (SEMC – from Turkey to Morocco) have, for the past two or three decades, seen an accelerated rate of urbanization, 3–5 times faster than the northern countries. Whereas European countries needed a whole century to absorb urban growth, southern and eastern ones take only a few decades. Thus, in spite of a recent slowdown in population growth in the southern countries – along with a spectacular decrease in fertility rates and a relative decrease in rural–urban migration – the strong trend towards urbanization is expected to continue during the next 50 years.

It would certainly be more stimulating to look into the future in more than one way, but, except for immigration policies, the prospects to 2025 more or less follow current trends. In absolute figures, the urban population could reach more than 243 million in the southern and eastern countries (145 million in 2000) and nearly 135 million in European coastal countries (129 million in 2000). Approximately a third of this growth would take place in the coastal regions (Figure 3.4).

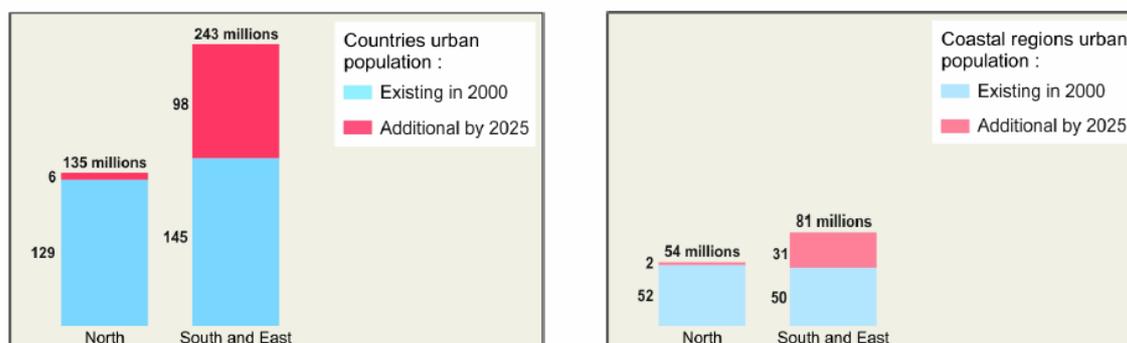


Figure 3.4: Urban population in the countries and their Mediterranean coastal regions, projections 2000 – 2025⁵

According to United Nations (UN) estimates, the urbanization rate in the SEMC in 2000 was already slightly higher than in the NMC. By 2030, three-quarters of the population will be urban (Figure 3.5). Apart from the convergence observed in urbanization rates, urban issues in different countries are seldom comparable. The southern and eastern Mediterranean countries experienced very clear urban growth (an annual average of 4% between 1970 and 1990, 3% in later years). In spite of the decreasing fertility rate in most countries, population growth will only slow after 2030 or even 2040. Till then, the challenge will be to achieve the economic development needed to be able to deal with urban growth.

⁴ Source: Attané and Courbage; *Plan Bleu*, 2002

⁵ Source: Attané and Courbage; *Plan Bleu*, 2001

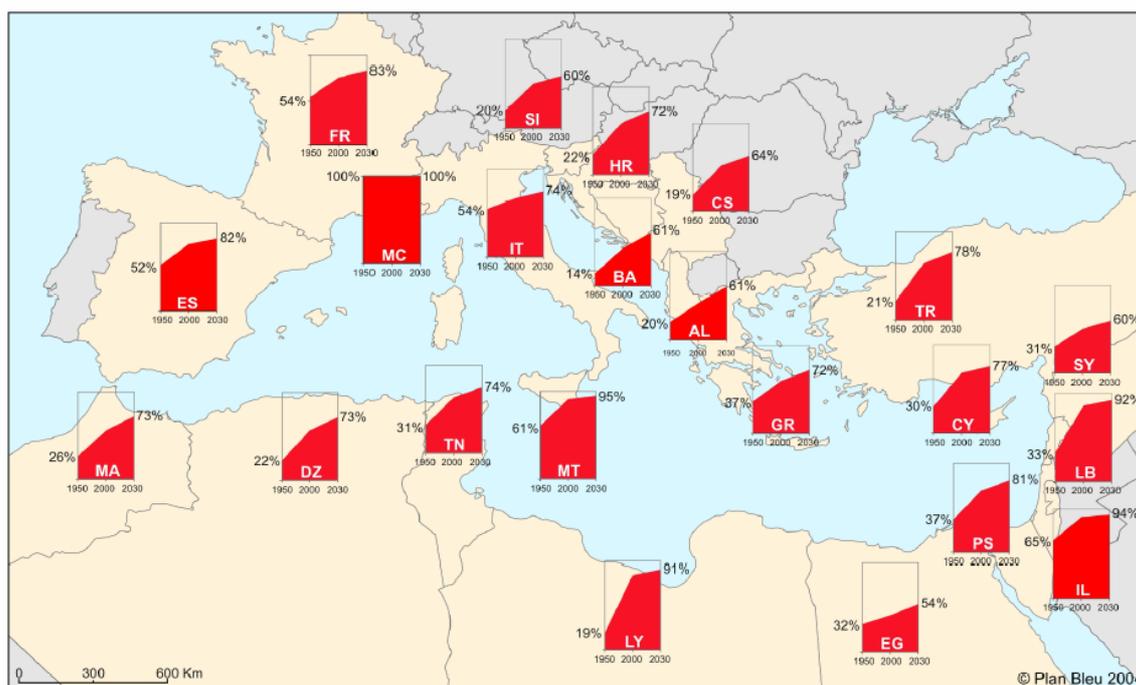


Figure 3.5: Urbanization rate in the Mediterranean countries, 1950, 2000 and projections to 2030⁶

With nearly 100 million extra inhabitants between 2000 and 2025, including 23 million in Turkey, 36 million in Egypt, 10 million each in Algeria and Morocco respectively, cities are, and will be, undergoing major economic, social and environmental change. Economies of scale certainly need to be taken into account, but the marked concentration of populations creates difficult problems in the fields of employment, infrastructure and services, pollution management, and waste production – where there is an alarming increase in quantity.

In the northern Mediterranean countries (mainly Spain, France, Italy and Greece, but also Malta and Cyprus), as in all European countries, the transition from the rural settlements of a largely agriculture-based economy to the urban settlement patterns characteristic of an industry- and service-based economy has now ended. The urbanization process has reached ‘saturation’, with the population concentrated in the central areas of agglomerations apparently unable to grow and sometimes even tending to decrease.

It is true that around the Mediterranean basin, strictly defined, cities have seldom been transformed by the industrial revolution. However, they do show the demographic stagnation that prevails in other European towns. But when considering total land area and urban land use, it appears that urbanization is far from over. The urbanized area continues to expand. At the local level, cities reach out towards the outskirts, even if the total population has stopped growing.

Urban sprawl started in north-western Europe, spread to countries in the western Mediterranean, and then to the east (Athens, small Greek towns, Nicosia, etc.) Although this sprawl is occurring with time-lags, with limited effects, and in particular ways, it is becoming extensive and widespread, creating heterogeneous peri-urban areas with transport and commercial infrastructures, small businesses and low density housing. At the same time, the agricultural and rural areas around cities, whether it is of good or poor quality, it is shrinking and often being converted to urban use. In addition, tourism, common in many cities, is adding to ‘urban’ growth, in the form of built-up areas that are often only seasonally occupied.

⁶ Source: UN Population Division, World Urbanisation Prospects. The 2003 Revision

The process of extensive urbanization in the north, and increasingly in the south, has become so widespread that the traditional concepts of town/country, urban /rural, are no longer of great help when considering these new types of area, which are occupied by residents and 'urban' activities, but are not towns in the traditional sense. The phenomenon calls for new regional development policies involving exchange of best practices and planning techniques between different administrative levels that can limit or forestall mushroom development, wastage of land, and long-term human and environmental impacts such as the greenhouse effect and pollution.

3.3 SANITARY PUBLIC SERVICES (WATER, WASTEWATER, SOLID WASTE)

While drinking water is still allocated priority over other uses such as agriculture or industry and still represents much smaller volumes than the other sectors, the limiting factor for access to drinking water is very rarely the quantitative availability of the resource but much more the quality of service of water distribution and the access conditions to these services for the poorest. There were nearly 30 million Mediterranean inhabitants who officially did not have permanent access to drinking water in 2002 (Figure 3.6). The largest numbers were in Turkey, Algeria, Morocco, Egypt and Syria. Rural dwellers and the poorest in suburban neighbourhoods are often the worst affected.

The following Figure 3.6 presents the people who do not have access to an improved source⁷ of drinking water or improved sanitation.

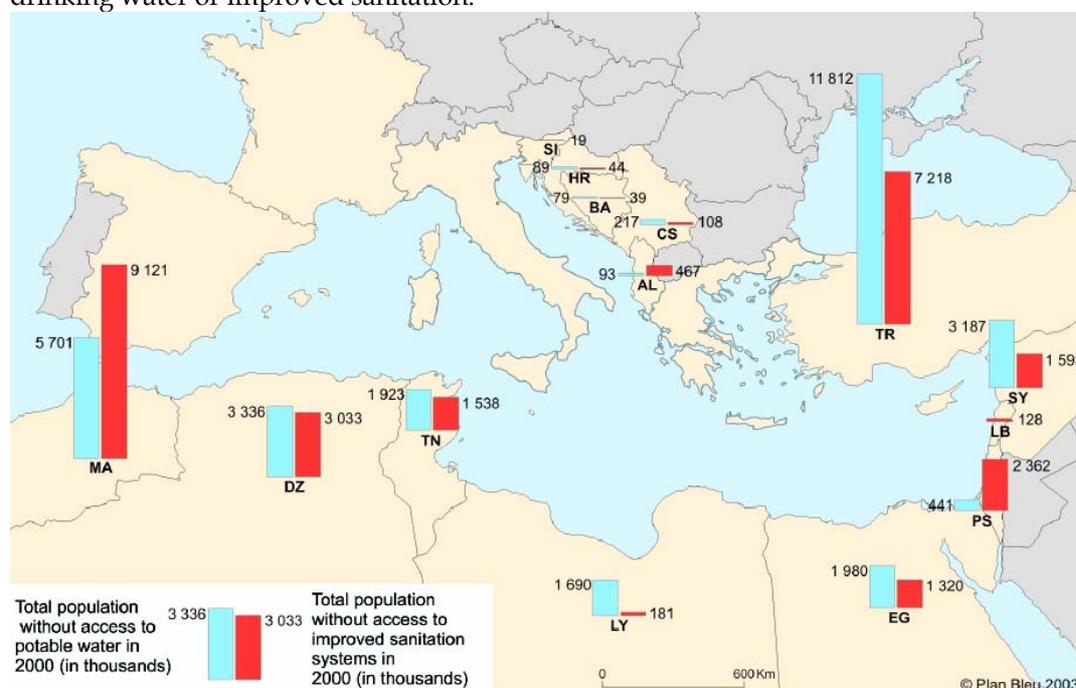


Figure 3.6: People not having access to an improved source of drinking water or improved sanitation, N1⁸

⁷ Note: 27 million Mediterranean inhabitants may be deprived of an adequate sanitation system, and 30 million of access to safe water. In the sense of the World Health Organization, 'improved' water supply technologies are household connections, public standpipes, boreholes, protected dug wells, protected springs and rainwater collection. 'Not improved' are unprotected wells, unprotected springs, vendor-provided water, bottled water (due to concerns about the quantity of supplied water, not the water quality) and tanker truck-provided water. 'Access' implies a source would be likely to provide 20 litres per capita per day at a distance no greater than 1000 metres. In the sense of the World Health Organization, 'improved' sanitation technologies are connection to a public sewer, connection to a septic system, a pour-flush latrine, a simple pit latrine and a ventilated, improved pit latrine. The excreta disposal system is considered adequate if it is private or shared (but not public) and if it hygienically separates human excreta from human contact. 'Not improved' are service or bucket latrines (where excreta are manually removed), public latrines and open-pit latrines.

⁸ Source: World Health Organization and United Nations Children's Fund. Water Supply and Sanitation Collaborative Council. Global Water Supply and Sanitation Assessment

The *quality of distributed water* is a growing concern in all Mediterranean countries. In 1997 in Turkey, quality was not acceptable in 12% of the samples taken at the national level. In France in 1998, 8% of the population was served by water with a non-conformity rate of over 5% from the bacteriological point of view. These figures conceal problems of management capacity and equipment condition, and the pollution of springs. With an increase in chemical substances poured into freshwater, *uncertainties* persist about the long-term effects on health and ecosystems. Knowledge about the effects on health of many substances included in water (but not regularly measured, such as plant-protection products) is still sketchy, especially if one takes the possible synergistic effects of the different compounds into account. Epidemiological studies that show the effects on health of the poor quality of distributed drinking water are lengthy, scarce and difficult to access. A study begun by the EU in 1991, which was to test the health effect of 900 active compounds, was, by 2003, able to reach conclusions on only 5% of these products.

The poorest populations are the hardest hit by these shortcomings in terms of both resources and management facilities. They are often the first affected by disease (e.g. gastro-enteritis, hepatitis diseases and diarrhoea) or forced to buy high-priced water (in comparison with their incomes) from tankers or in bottles. The scope for progress in improving access to safe water lies far more in protecting upstream resources and improving management than exploiting new resources. It is also about the implementation of compensation systems to allow the poorest to have access to water distribution services.

3.3.1 Wastewater treatment

Information on the rates and levels of collection and *treatment of wastewater* are highly variable and difficult to compare. According to the WHO, for the countries publishing such data, the proportion of the population with access to an adequate sanitation system in 2000 was more than 85% everywhere except in Morocco (68%) and the Palestinian Territories (25%).

Between 1990 and 2000, an additional 10% of the population in Morocco, Egypt and Tunisia gained access to an adequate sanitation system. However, 27 million Mediterranean inhabitants do not have adequate sanitation systems. The percentage of the population not connected to a treatment plant, on the other hand, remains high (between 30 and 70% depending on the SEMC). In Turkey, for example, in 1998, 69% of the population was connected to a collection system but only 23% to a joint collection and treatment plant.

The levels and efficiencies of effluent treatment are even less well known; the efficiency of treatment plants is rarely measured and published. It is often very low in many SEMC because of the inadequate maintenance and the poor training of maintenance staff. Although treatment rates in the industrial sector are generally higher, they seldom exceed 50%. In the northern countries, there is more pollution, which is coming more and more effectively under control, but the NMC still have some way to go to meet the requirements of the 1991 European Waste Water Directive.

Although the EEA has welcomed the improvements in urban wastewater treatment in Europe, it has stressed the low treatment rates of southern European wastewater, where less than 50% of the population is connected to a treatment plant and only between 30 and 40% to a secondary or tertiary treatment system. In 1995, 64% of the population in the four EU-Med countries were connected to a system for purifying urban wastewater with primary treatment.

In the southern and eastern countries, the levels of collection and (in particular) treatment are very low, not to say non-existent. Many large cities still have no treatment plants. Investments in pollution control are very low. Given the large growth expected in the urban populations of the SEMC (98 million between 2000 and 2025) and the low current level of waste water treatment, there is an urgent need to develop simple treatment technologies that are not too expensive, such as lagooning. Israel is the exception, with 85% of the population connected to tertiary treatment in 1999.

Table 3.1: Percentage of population connected to sewage collection network and benefiting from treatment, N1⁹

	Year	Resident population (thousands)	% of population connected to public collecting sewer (1)	% of population connected to public treatment plant (2)	% of population connected to a collecting system & benefiting from treatment (2/1)
Algeria		29,100	66	4	6
Cyprus	2000	669	34	34	100
France	1998	58,497		77	
Greece	1997	10,507		56	
Italy	1995	57,268		63	
Israel	1999		100	89	89
Malta	2001	391	100	13	13
Morocco	1996	26,848		3	
Spain	1995	39,433		48	
Syria	1994	13,782	59	10	17
Tunisia	2000	9,618	47	42	89
Turkey	1998	62,810	59	23	39

The permanent population on the Mediterranean coast is in the order of 150 million inhabitants. However, this figure could be doubled during the summer period as the area is one of the most frequented tourist destinations of the world. Along the Mediterranean coast, 601 cities with a population above 10 000 inhabitants were reported from 19 countries, making a resident population of 58.7 million (UNEP/MAP/MEDPOL/WHO, 2004). 69% of these cities operate a wastewater treatment plant (WWTP), 21% do not possess a WWTP while 6% were at the time (data reported in 2004) constructing a plant and 4% had a plant out of operation for various reasons (Figure 3.7). Secondary treatment is mostly used (55%) in Mediterranean WWTPs, while 18% of the plants have only primary treatment (Figure 3.7). The distribution of treatment plants is not uniform across the Mediterranean region, the northern Mediterranean coast having a greater part of its urban population served by a WWTP than the southern coast. Also, due to increasing population in cities and failures in treatment plant operation, some WWTPs cannot produce effluent of an adequate quality as initially planned.

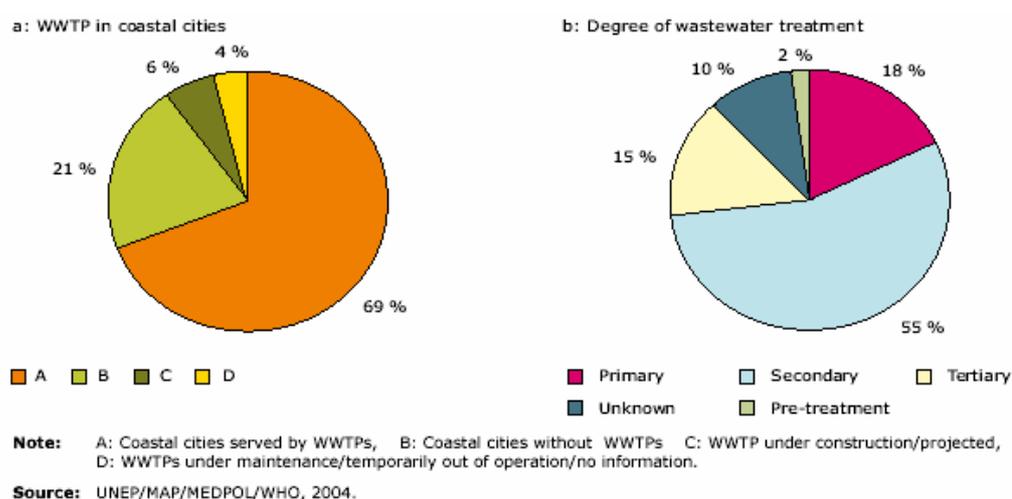


Figure 3.7: Wastewater treatment in 601 Mediterranean coastal cities with a population > 10,000

⁹ Source: Eurostat. New Cronos 2003. Statistiques de l' environnement dans les pays Méditerranéens.

Note: The last column is estimated as the ratio of the % of population concerned, not in pollutant loads.

Even among the EU member countries, the Directives are only gradually being implemented. While cities with populations of more than 150,000 were supposed to install at least secondary wastewater treatment before 31 December 2000, the EC reported many delays in 2001 in large Mediterranean cities.

The following Figure 3.8 presents the wastewater treatment by coastal cities with more than 10,000 inhabitants.

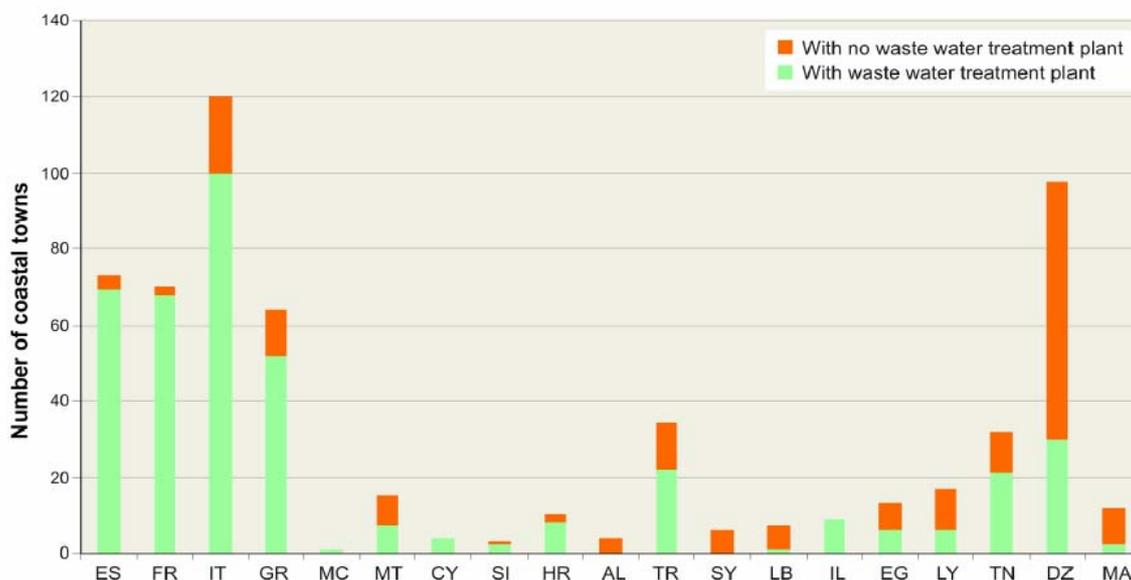


Figure 3.8: Wastewater treatment by coastal cities with more than 10,000 inhabitants, 2002¹⁰

In 2002 (Figure 3.8), some countries had no wastewater treatment system (e.g. Syria) or only a small proportion of the population was linked up, (Turkey, Egypt and Tunisia). The average yield of treatment plants is low – less than 70% – which corresponds with the spread of secondary and primary treatment plants. Yields are lowest in Lebanon, Turkey where plants only provide primary treatment. Average yield in Greece is lower than in other EU countries because of the high proportion of primary treatment plants; but progress has been made since these statistics were gathered, with a secondary treatment plant in Patras completed in 2001 (another one for the sewage of Athens was under construction in 2003). Several countries retain at best some 10% of the BOD5 (Lebanon, Morocco, Turkey and Egypt).

3.3.2 Solid waste treatment and recycling

Since the mid-1970s, urban waste has become a concern of utmost importance in urban management in the Mediterranean countries. It mainly concerns waste produced by households, collected and treated by municipalities or by private operators on their behalf.

Volumes of waste have doubled or tripled in 30 years (

Figure 3.9 and Table 3.2). On the northern shore, the very strong growth in waste volumes reflects the excesses of consumer societies as well as the rapid increase in packaging. On the southern and eastern shores, the challenge for local authorities is to be able to cope with a growth in waste closely coupled to urban growth.

¹⁰ Source: MEDPOL 2003

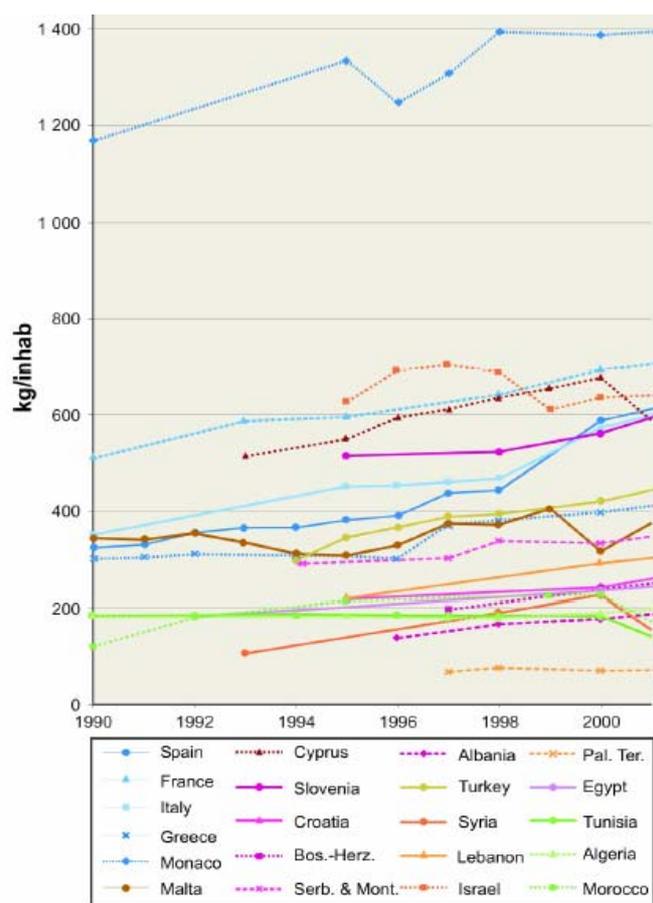


Figure 3.9: Produced waste quantities¹¹ (kg/ inhab)

Over the 1980–1998 period, the amount of organic matter has generally decreased: from 38 to 29% in France, 43 to 32% in Italy, 60 to 44% in Spain, 62 to 47% in Greece, and 85 to 64% in Turkey. There has been a more or less parallel increase in packaging, plastic and toxic waste in dispersed quantities, such as solvents, car batteries, paint and pharmaceutical products. If these trends continue, the future risk of running into a very difficult-to-manage situation is high, particularly as regards treatment facilities.

Table 3.2: The yearly urban waste production per inhabitant for the period between 1990 and 2000

Country	Production of waste kg/inhab./year
Algeria	from 183 to 190
Cyprus	513 to 677
Egypt	183 to 234
France	509 to 694
Greece	300 to 397
Italy	350 to 573
Israel	637
Lebanon	290 to 333
Morocco	120 to 226
Spain	323 to 588
Syria	106 to 226

¹¹ Source: Blue Plan estimates from Eurostat data and national sources

Turkey	297 to 419
Tunisia	184

First, the collection rate varies from 0% (in rural areas) to 90–100% in the large urban agglomerations and is closely correlated with the income level in the areas under consideration: collection is provided in wealthy neighbourhoods, while disadvantaged neighbourhoods are poorly served.

Uncontrolled dumping is still largely predominant. Since the mid-1990s, countries have begun to remove the main black spots, closing some open dumps and replacing them by controlled landfills, while recovery and recycling policies are being introduced. In 1991 Turkey abandoned incineration and developed a policy of systematic recycling through a legal obligation to annually reclaim a certain tonnage for some economic sectors that are large consumers of packaging. In Syria, Damascus opened its first controlled landfill in 1998 and the government decided to set up a controlled landfill in Aleppo. In the Lebanon, Beirut closed the Bourj Hamoud site in 1997, built two composting/incineration units (but with a tiny share for incineration) and a controlled landfill in Naameh. In 1999 Egypt opened three controlled landfill sites in Giza, Alexandria and Cairo, and has built several composting units since 1990.

In 1998, Tunisia granted a concession to a private operator for its first really controlled landfill in Djebel Chekir, meant to serve Greater Tunis. In addition, a national inventory listed 400 sites used for illegal storage of household waste, which would need to be reclaimed. As regards legislation, ongoing efforts are trying to fill inadequate texts and vague classifications. Syria, Lebanon are preparing new laws and in Algeria and Morocco new laws set the framework for solid waste management. However, the law is often not enforced. When national plans are defined, implementation difficulties appear at the local level. In addition, the intervention of multiple donors with different approaches to waste clouds the issue through a lack of synergy with the objectives of national plans. Although progress observed in both the south and the north, should not, however, hide the fact that, except in France, Italy and Spain, dumping is still widespread.

3.4 ECONOMY

The relevance of the socio-economic challenges in the Mediterranean region is shown by the very large difference in average income level on the two sides of the Basin. EU membership has brought a number of countries (Greece, Portugal, and Spain; more recently Cyprus and Malta) nearer to the average EU income level. However, in the relations between the EU and non-EUPC (EU Partner (to the Mediterranean Basin Programme) Countries) financial support and trade cooperation were much lower; as a result, a similar convergence process in real income between the two shores has not yet materialised. The promotion of policies supporting a long-sustained income convergence process is one of the key socio-economic challenges of the region.

However, some progress has begun to emerge in the last few years, with early signs of per capita income convergence between the two shores of the Basin. In fact this Programme is being launched during a favourable economic phase: according to the International Monetary Fund in 2006 real economic growth has picked up throughout the Mediterranean region, and especially on the Southern and Eastern shores. In non-EUPC an average 5% real growth has been estimated for 2006, a fact that can be explained, among others, by the reform measures undertaken by these countries.

3.4.1 The Economic and productive sectors

The Mediterranean economy remains highly dependent on natural resources, such as on agriculture/water, tourism/coastal areas, residential economy/space, energy/hydrocarbons. The eligible territories of the Programme present considerable diversity from very rural areas to industrial centres and to service oriented areas, especially in the numerous tourism sites. EUPC structure is characterized by a low share of agriculture (less than 10%) and a high share of services (greater than 65%). A similar structure emerges also in Israel, Jordan, and Lebanon among non-EUPC.

The Mediterranean territories eligible under this Programme are active in the following economic sectors: rural, industrial, and service oriented especially in nations of tourist interest, however, the type of activity varies greatly between the countries.

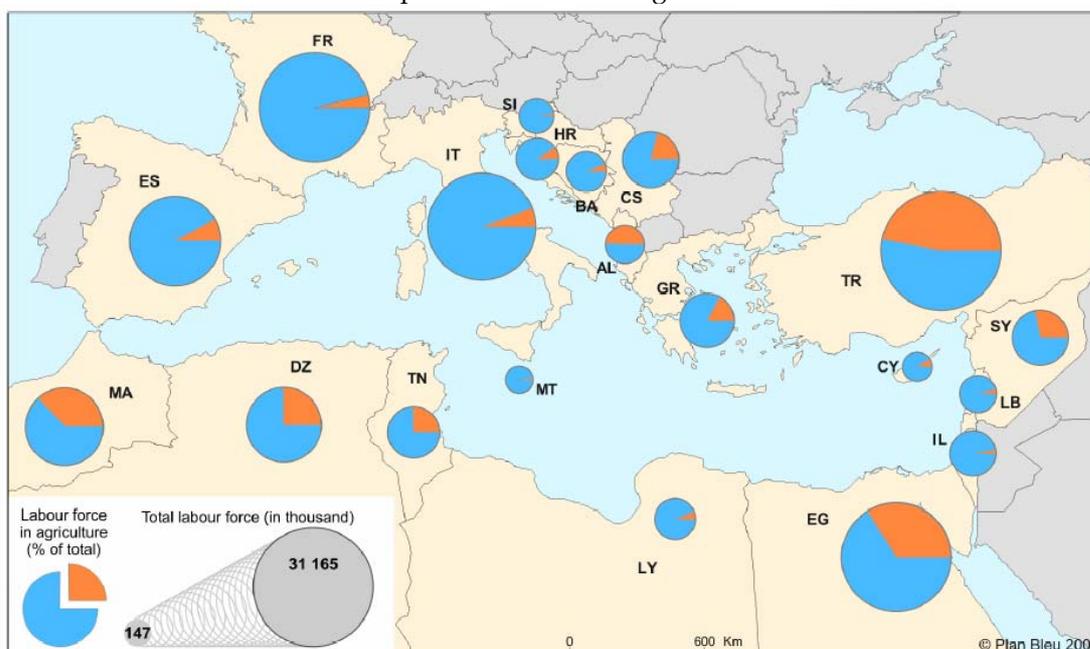
EUPC structure, characterized by a low share of agriculture and a high share of services is present in Israel, Jordan, and Lebanon, whereas agriculture is still of major importance in Egypt, Morocco, Syria, Tunisia, and Turkey giving these regions higher potential for agro-industry exports targeted to the EU.

Algeria and Libya favour the industrial sector and are characterized by the dominant role of energy and heavy industries. Other non EUPC however follow the partner of the traditional industrial sectors, especially the textiles and clothing one. In 2004, textiles and clothing exports represented more than 30% of total exports in Jordan and Turkey and close to 50% of total exports in Morocco and Tunisia. This sector is mainly compromised by Asian countries and thus needs upgrading in the form of new technology application for both production and marketing.

Non EUPC expansion to new economic sectors such as ICT, banking and tourism will hopefully have the added effect of expanding employment opportunities and exports. In many Mediterranean countries, both EUPC and non EUPC, the informal economy plays a significant role in production, trade, and job creation, a role which does not fully emerge from statistics.

Agriculture

Despite a relative decline, agriculture is still a driving sector for the economy in several countries (Figure 3.10). Agriculture accounts for between 10 and 16% of GDP in all Maghreb countries, 12% in Lebanon, 13% in Turkey, 17% in Egypt, and up to 23% in Syria in 2002 (against 2% for the 15 EU countries in 2001). Being the main water consumption sector (but also a sector consuming marginal lands in the poor countries), agriculture always makes a large contribution to employment (46% in Turkey, 36% in Morocco, 33% in Egypt, 28% in Syria, 25% in Tunisia against roughly 4% in the EU-15 in 2000). The agro-food network represents no less than 10% of manufactured production. By far the first sector in terms of water consumption, agriculture is, in several countries, at the root of serious problems of water resource overexploitation and soil degradation.

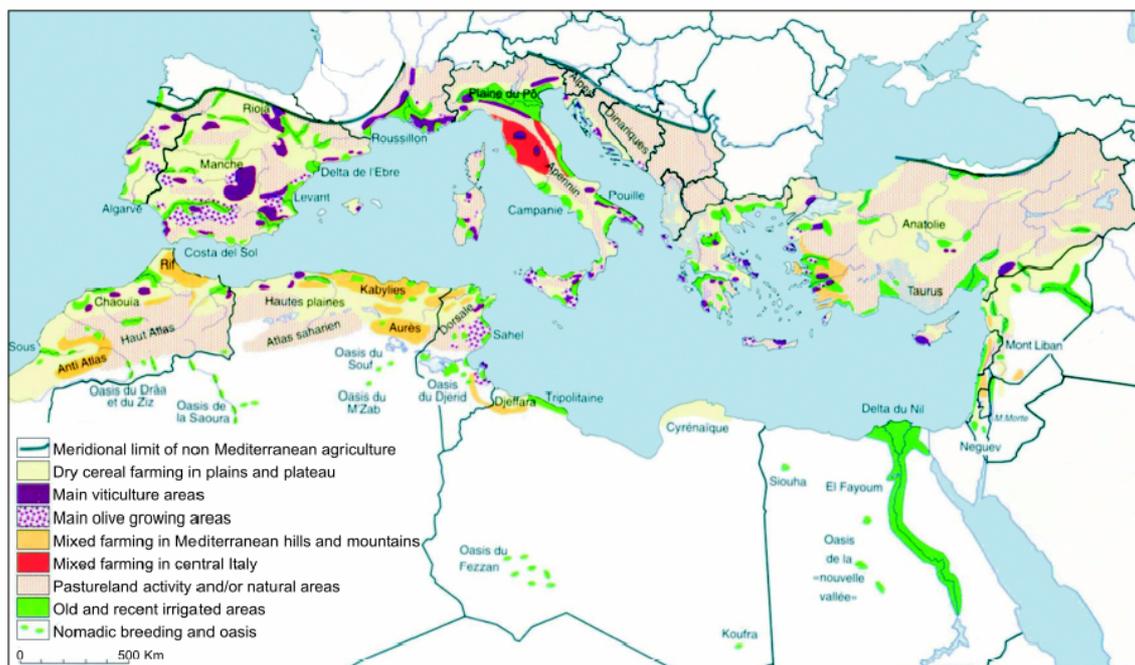


Source: FAO (<http://faostat.fao.org>)

Figure 3.10: Agriculture and economy¹²

¹² Source: FAO (<http://faostat.fao.org>)

The Figure 3.11 below provides a good picture of the current distribution of the main agricultural and 'natural' systems in the region. The map covers most, if not all, the rural areas of the region (as well as some countries not bordering the Mediterranean such as Portugal).



Source: Méditerranée, vol 97, no 3-4, 2001

Figure 3.11: The Mediterranean's main agricultural and natural systems ¹³

Industrial sector

The share of the industrial sector in national economies has tended to increase in the SEMC but has fallen in the four EU-Med countries. It generally accounts for between one-third and one-fifth of GDP and shows signs of gradual diversification. The share of 'low-technology industry based on resources is still high in the SEMC, and accounts for 61% of the added value in the manufactured sector (Egypt) and 81% (Tunisia) compared with 46% (France) and 69% (Greece). Four Mediterranean countries remain highly dependent on the extraction industry: Algeria with 23% of GDP, Libya with 18%, Syria with 12% and Egypt with 6%. The proportion of energy product sales account for more than 95% of Algerian and Libyan export income and 32% of Algerian GDP. Agricultural products retain an important position in total foreign trade (imports + exports): 9% in the Maghreb countries, 19% in the Mashrek countries in 2001. A recent Femise study indicates that several SEMC are specialized at the international level in intensive non-skilled products (particularly the textile and clothing industry) or in natural resources exploitation.

As for industry, Algeria and Libya are characterized by the dominant role of energy and heavy industries. Other non-EUPC have largely founded their economic development on traditional industrial sectors, especially those of textiles and clothing. In 2004, textiles and clothing exports represented more than 30% of total exports in Jordan and Turkey and close to 50% of total exports in Morocco and Tunisia.

The upgrading of the textiles and clothing sector is a common concern for both shores of the Basin, also given its relevance in many EUPC. Moreover, in non-EUPC the development of new sectors may act in the medium to long term as an engine for growth of both employment and exports. It is interesting to note that the recently growing inflow of FDI in non-EUPC has been largely directed to new sectors such as telecom and ICT, followed by other services, especially banking and tourism.

¹³ Source: Méditerranée, vol 97, no 3-4, 2001

The industry located in coastal areas (chemicals, petrochemicals, metallurgy, food processing, waste treatment plants), at present mostly in Spain, France and Italy, will also increase in other countries. In 1989 the Blue Plan had already estimated the number of major industrial plants on the coast from Morocco to Turkey at 157, plus 67 planned. Strong industrial growth is projected for the south and east to meet increasing demands due to population growth and rising living standards. Stable in the north, steel production in the south and east increased from 8.5 million tonnes in 1985 to 21 million by 2002 and could reach more than 50 million by 2025. Cement production will probably decline in the north and increase by more than 150% in the south and east. This growth will particularly affect the coastal zone.

It should be also mentioned that in many Mediterranean countries, both EUPC and non-EUPC, the informal economy plays a significant role in production, trade, and job creation, a role which does not fully emerge from statistics.

The **services sector** generally accounted for more than 50% of GDP in the SEMC in 2002 and more than 60% in the NMC. However, in the SEMC this sector has a dual economic nature with formal major added-value activities (banking, finance, mass marketing) coexisting with informal activities, often at the survival level (door-to-door salesmen, shoe-shiners, car minders, servants, etc.).

Finally, it should also be remembered the importance of environmental labels and standards (EMAS, ISO 14001). In the Mediterranean, some 7380 companies, still mostly on the northern shore, conform to exercises of the ISO 14001 type, sometimes in groups as part of professional branches (work with UNEP in 2002–2003) or with encouragement from chambers of commerce.

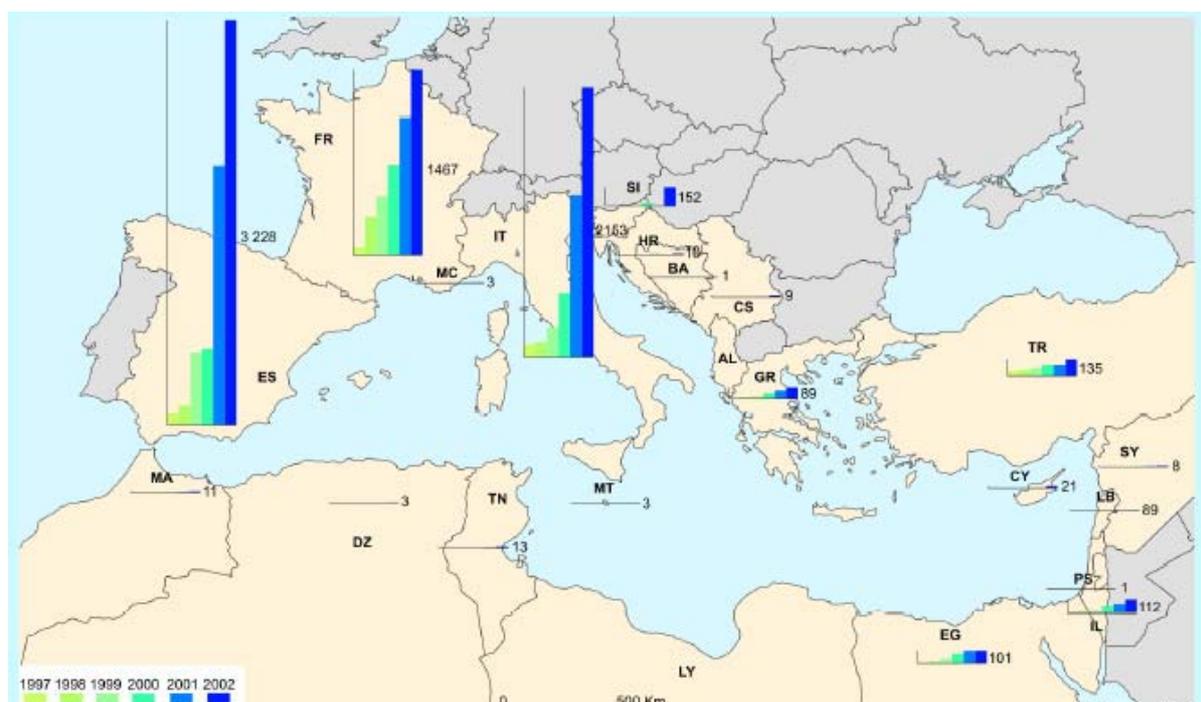


Figure 3.12: ISO 14001 certified companies as from 15/10/2003¹⁴

3.4.2 Trade

Trade in the Mediterranean Basin is dominated by EU Mediterranean countries representing over 80% of the total trade flows of the Basin, a share similar to their GDP share in the Basin.

Most SEMC have adopted the Pan-Euro-Mediterranean Protocol on Cumulation of Origin, allowing for diagonal cumulation within the region. Trade cooperation among the Mediterranean countries – necessary to avoid the distortions produced by an EU-centred hub-and-spoke system and to exploit cumulation of origin – is not yet complete. However, significant progress has been achieved recently:

¹⁴ Source: ISO survey of ISO 9000 and 14001 certificates

the Agadir Agreement for the establishment of a free trade zone among Mediterranean Arab countries has been concluded in 2004 by four countries (Egypt, Jordan, Morocco and Tunisia) and entered into force in 2006; in 2006 came into force also the amended Trade and Cooperation Agreement between Israel and Jordan, which now allows for diagonal cumulation of origin between the two countries.

3.4.3 Investment

For both EUPC and non-EUPC Foreign Direct Investment (FDI) inflows are of growing relevance in the globalisation and development process, and play a major role in the transfer of technology and knowledge, between both firms and economic systems. Recent figures highlight progress in this area on both shores of the Basin, with results especially encouraging for non-EUPC. FDI has registered a massive increase in 2005 when, according to UNCTAD figures, the growth rate of FDI inflows in non-EUPC was the highest in the developing world.

As a result, in 2005 non-EUPC achieved a percentage of world FDI inflows (3.3%) much higher than their share in world GDP (2% at current prices; 2.8% at PPP). To highlight the progress in this domain it may be recalled that in 1980 the non-EUPC share in world FDI was only equal to 0.6%.

Moreover in 2005, thanks to the increase of FDI inflows, EUPC managed to reach a share of world FDI inflows (12.2%) equal to their share in world GDP (current prices). Thanks to the very noticeable performance of non-EUPC, in 2005 EUPC received only 79% of total FDI inflows in Mediterranean countries, a share smaller than EUPC share in Mediterranean GDP.

On the contrary, EUPC still overwhelmingly dominates FDI outflows, with a 95-98% share of total Mediterranean FDI outflows. Only minor exceptions exist for the time being, even though evidence seems to indicate that the phenomenon of developing country multinationals is progressively emerging also in non-EUPC.

Besides economic reforms, another factor played a relevant role in the recent FDI increase into non-EUPC: the massive growth registered by outward FDI of Gulf countries, a significant share of which was directed to non-EUPC. This trend – being dependent on oil price growth – may not necessarily be permanent.

Therefore, notwithstanding the very positive 2005-2006 figures, there is still great need for investment promotion in the Mediterranean region. Moreover non-EUPC attach a high priority to investment as a cooperation sector within the EMP: the Five- Year Work Programme adopted by the Euro-Mediterranean Summit held in November 2005 provides for the establishment of an ad-hoc group to examine ways and means of enhancing investment flows in the Mediterranean region.

3.5 TOURISM

In almost all the Mediterranean countries, the service sector has become the largest as a result of tourism-connected activities, which particularly exploit shared public assets such as the sea and the coasts. The very favourable prospects of this sector are largely due to the climate, the quality of the environment and the Mediterranean cultural heritage. The cultural heritage of the Mediterranean region is of exceptional value to the whole world.

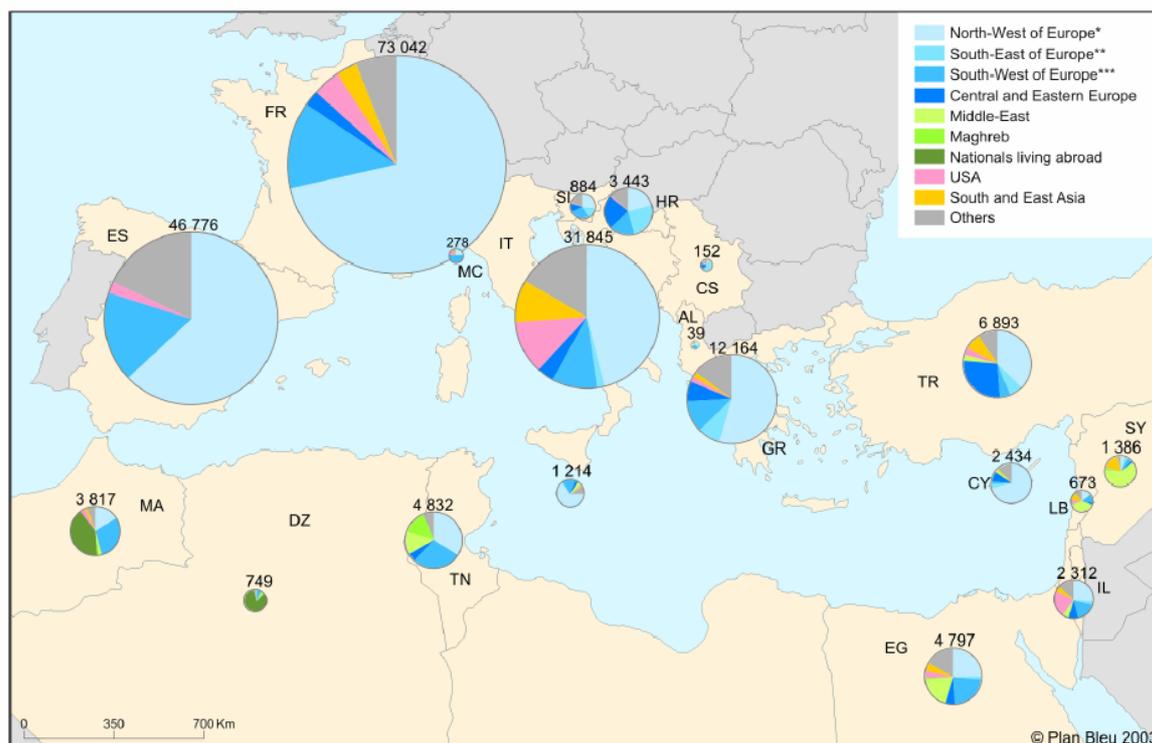
The Mediterranean's position as a premier tourist destination goes from strength to strength. Preliminary results for the year 2006 estimated by the World Tourism Organization (UNWTO) confirm that tourism demand has again been highly resilient since the region continues to enjoy an above average growth in international tourist arrivals, notwithstanding the July-August 2006 conflict. According to UNWTO figures, in 2006 international tourist arrivals increased in Mediterranean Europe from 158.4 to 165.0 million, in North Africa from 13.9 to 14.7 and in the Middle East (which, according to UNWTO classification, includes also Arab Gulf countries) from 39.2 to 40.8 million.

Apart from providing considerable employment, the tourism sector constitutes an important source of currency for Mediterranean countries. Between 1990 and 2002, it accounted for approximately 27% of world tourism receipts. For the Mediterranean countries, this is equivalent to 12% of total receipts

from the export of goods and services (compared with a 6% world average). Tourism receipts have been particularly important for the economic growth of some east Adriatic countries, Lebanon and Cyprus where they were equivalent to between 35 and 53% of the export value of goods and services in 2002. The contribution was also significant in Syria, Malta, Greece, Egypt, Tunisia, Morocco, Turkey and Spain, where the ratio is around 20% on average.

Tourism can provide an important avenue of economic development for both EUPC and non-EUPC, as it has a very positive impact on employment and income. Prospects for the sector - a major internationalisation factor of the Basin - are very promising. However, receipts from tourism require major investments, often from public sources, and tourism can have negative impacts on the environment. Thus, its environmental impact should be considered, especially given that tourism is currently primarily concentrated in the coastal areas (mass seaside tourism).

The number and origin of international tourists in the Mediterranean countries, for 1999 (in thousands) is presented in the Figure 3.13 below.



* North-west Europe: Belgium, Germany, Netherlands, Sweden, Switzerland, United Kingdom.

** South-east Europe: Albania, Bosnia-Herzegovina, Croatia, Cyprus, Greece, Slovenia, Turkey and Serbia-Montenegro.

*** South-west Europe: France, Italy, Malta, Monaco and Spain.

Figure 3.13: The number and origin of international tourists in the Mediterranean countries, for 1999¹⁵

The figure below (Figure 3.14) presents the cumulative density of resident and tourist populations in the peak month in coastal regions, 2000–2025 N3 level (inhabitants per km²).

¹⁵ Source: World Tourism Organisation, 2001

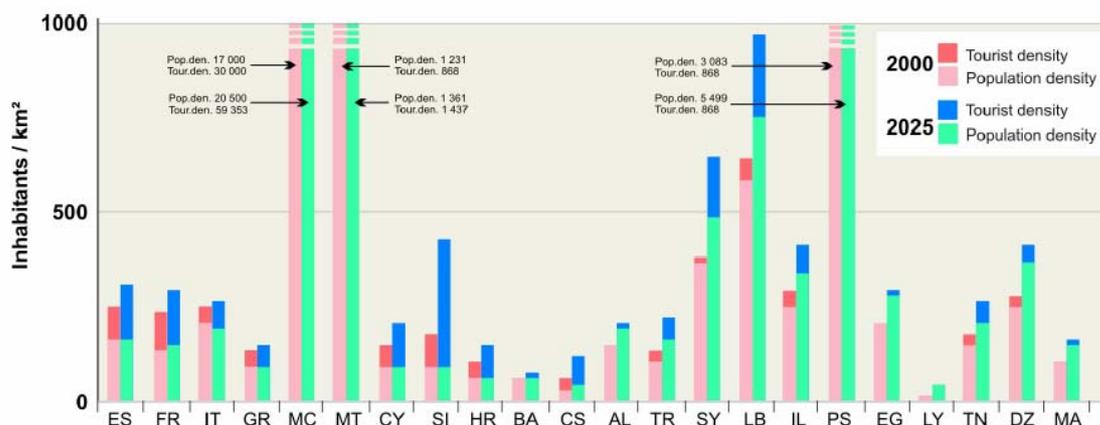


Figure 3.14: Cumulative density of resident and tourist populations in the peak month in coastal regions, 2000–2025 N3 level (inhabitants per km²)¹⁶

Note: The cumulative urban and tourist linear densities give an idea of the enormous pressure on the Mediterranean coast in peak periods. The total could reach 3330 people per km of coast by 2025 compared with 2300 in 2000. Pressure would be especially high in the Levant (from Syria to Egypt), Spain, Slovenia and Algeria.

3.6 FISHERIES

3.6.1 Fishing

The Mediterranean Sea’s vast variety of fish diversity facilitates the significant fishing activity present in the area. Mediterranean fishery has been one of the oldest in the world. Fisheries in the area are extremely diverse, targeting a great number of species, and have an extensive scope of fishing gear and methods, some of them, unique. Catches are highly multi-specific.

Fishing in the Mediterranean is a major economic activity, in terms of jobs, revenues and food supply. Fishing products are an important component of the Mediterranean diet, and fishery has been one of the pillars of the Mediterranean civilization and culture.

Fishing is an artisan sector in which a large number of small boats are used. Mediterranean fisheries are usually small scaled in professional fishing and often local. Small inshore fishing is common, producing high-commercial-value fish, a source of many jobs compared with the quantities landed, and is much more selective in its catch than industrial fishing (trawl nets in particular). Small-scale fishing concerns more than 85% of the boats (71,800 out of a total of 84,100). Boats are sometimes not motorized (4000 of the 13,700 boats in Tunisia), and many fishermen have several jobs (80% in Malta, 92% in Syria). The percentage of inshore fishing of the total catch varies between countries (Syria 87%, Cyprus 58%, Greece 56%, Tunisia 44%, Italy 41%, Israel 39%). The industrial fleet is concentrated mainly in the EU-Med countries (57% of the total). Sport fishing accounts for 10% of the total catch, which is a lot.

The Mediterranean is also depending more and more on imported fish-based products (processed fish, and especially ready-made fish dishes, etc.) which account for over 50% of total fish consumption in some European countries.

Small, open-water fish (pelagics) make up around half of all Mediterranean catches, with anchovies and sardines being the two most important such species. Bottom-dwelling (demersal) fish such as hake, red mullet, and blue whiting account for around 40 percent of catches.

Fishing is currently undergoing domestic competition. Fishing activity has increased and fishing practices have changed. Modern fishing techniques are being used making fishing more intense, while industrial fishing is growing. More powered engines are used for fishing, the number of boats used has increased by about 20%, between 1980 and 1992, and an increase in the number of trawl nets (137 and 170% respectively in Algeria and Morocco between 1980 and 1992) have been noted.

¹⁶ Source: Plan Bleu, 2003

Industrial fishing practices have changed. Fishing is now carried out up to 800 metres in depth, exploiting fishing resources in greater depths.

Increased catches (about 1 million tonnes in 2001) have resulted in a drop in yield, a sign of the start of degradation of stocks, especially in the areas where industrial fishing is occurs (i.e. Adriatic, Sardinia). For some species, the overall catch per fishing unit is 60% less today, compared with about 20 years ago.

Some of the most important fisheries in the region, such as blue fin tuna, albacore, hake, swordfish, marlin, red mullet and sea bream are threatened. According to the European Environment Agency, more than 65 percent of all fish stocks in the Mediterranean are outside safe biological limits.

Large open water fish like tuna have been a shared fisheries resource for thousands of years. In 1999 the amount of blue fin tuna in the Mediterranean had decreased by over 80 percent in the previous 20 years. The situation has not improved with pirate fishing, juvenile catches and the recent addition of tuna ranching dramatically depleting stocks to dangerous levels.

As part of an effort to reduce over-fishing, EU's common fisheries policy attempted to control the volume of fish caught in EU waters and to cut the number of boats, through the multi-annual guidance programmes for the fishing fleets. This reduction in fleet capacity increased unemployment in many coastal areas. Some traditional fishing ports have closed or reduced their activities, people have moved elsewhere, and this process has changed the fundamental character of many coastal regions. Many tourist towns that relied on their image as fishing communities have seen visitor numbers fall dramatically once the fishing activity there, dropped.

3.6.2 Aquaculture

Aquaculture has been the only segment of the fisheries industry in the European Community to experience a rise in employment. The sector accounts for approximately 60 000 full-time jobs, mostly in coastal and rural areas (Fischler, 1999). In the Mediterranean, aquaculture increased overall from 19 997 tonnes in 1970 to 339 185 in 2002 (Figure 3.15). However, recent expansion of aquaculture has often been associated with negative publicity. The fact that aquaculture takes place mainly in the coastal zone where biodiversity is high and human pressures are increasing has aggravated the effects of potential impacts. Additionally, although the industry has been developed under the claim that farmed seafood lessens the pressure on wild fish stocks, yet many of the farmed species are carnivorous, consuming up to five times their weight in wild fish.

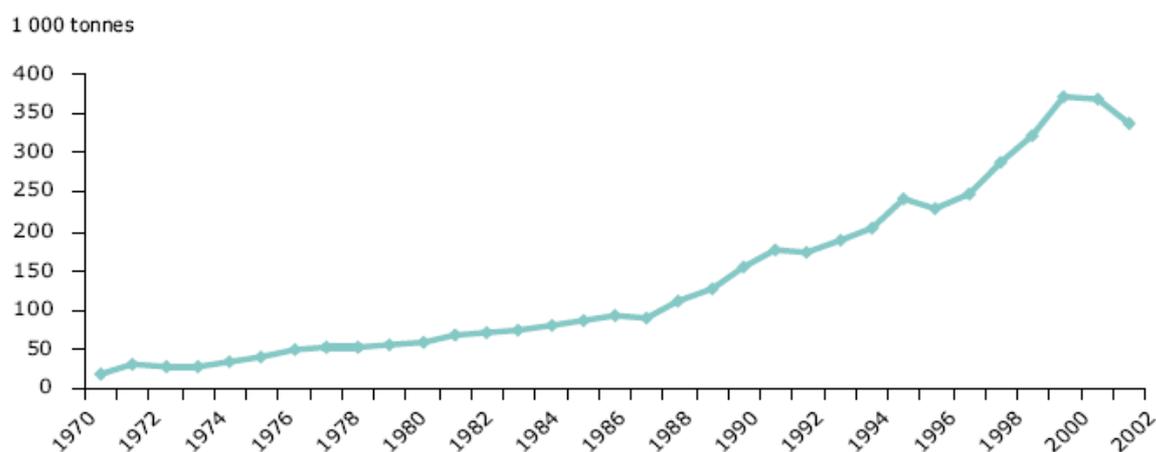


Figure 3.15: Aquaculture production (marine and brackish; thousand tonnes) in 1970–2002 in the Mediterranean Sea ¹⁷

The aquaculture sector is considered to be adding pressure to the already existing pressure of human activity, requiring areas of high water quality to set up the farms. The installation of fish farms close to vulnerable and important habitats, such as sea grass meadows is particularly considered as worrying. According to UNEP/MAP/MEDPOL, aquaculture is considered as a matter of concern.

¹⁷ Source: HCMR based on FAO Fishstat Plus, 2004b

ICCAT (International Commission for the Conservation of Atlantic Tuna and GFMC (General Fisheries Commission for the Mediterranean, have been established for the protection of these fisheries and Atlantic tuna in particular.

3.7 TRANSPORT

Transport and its effects on the environment are also expected increase. The EuroMed Transport Project denoted that excluding oil, freight flows are expected to on average double over the next 20 years though containerised goods are expected to increase by up to eight-fold in the period, while air passenger traffic is also expected to more than double over the next two decades. Some measures for the transport sector which have been identified under the Euro-Mediterranean regional cooperation are reflected in the ENP Action Plans already into force. They aim to improve the efficiency, security and safety of transport operations, in particular those in the fields of maritime and aviation.

The Mediterranean has always been an area of trade and high mobility. Although transport is fundamental to economic development, it is also, in addition to the continuing toll of accidents, the cause of ever-increasing pressures on the environment through land being taken up by infrastructures, air quality being degraded by emissions of pollutants into the atmosphere, noise nuisance and discharge of pollutants into the sea. This fundamental contradiction has a strong resonance because of the region's particular characteristics. Narrow coastal zones are criss-crossed by infrastructures that make them completely artificial; cities, poorly adapted to the car, lose their quality of life; mountain passes and valleys become corridors for lorries, and the environmental integrity and attractiveness to tourists of the sea itself is threatened by accidental or intentional pollution by regional and global maritime traffic. Thus the very identity of the Mediterranean is directly threatened by the development of transport. While other regions of the world are beginning to take notice of this contradiction, in particular the European Union, the development of transport in the southern and eastern Mediterranean, particularly that resulting from the liberalization of trade, is proceeding with no effective implementation of vital regulatory environmental and social measures. The basic trend in transport for the Mediterranean Region is a rapid increase that is much greater than that in the economy and population. This trend is expected to worsen the afore-mentioned situation.

Rapid growth of passenger and freight transport

The link between economic activity and the level of traffic is clear: the richer the country, the more passenger traffic there is. Traffic in the four Mediterranean countries of the EU (France, Italy, Spain and Greece designated 'four EU-Med') in 2000 accounted for 67% of all passenger traffic in the Mediterranean Basin. Moreover, the development of transport reflects the political and economic events that have marked the Basin. Wars resulted in a sharp drop in traffic in the eastern Adriatic and Lebanon. On the other hand, the boom in passenger traffic in Turkey appears to be a consequence of strong economic growth. Generally speaking, the annual increase in passenger traffic between 1970 and 2000, for all modes except sea, was much larger (4.9% per year) than that of population (1.4%) and the economy (2.9%), in both the northern Mediterranean countries (NMC) (0.5% for population, 2.7% for the economy and 4.4% for traffic) and the southern and eastern Mediterranean countries (SEMC) (2.4% for population, 4.6% for the economy and 6.6% for traffic).

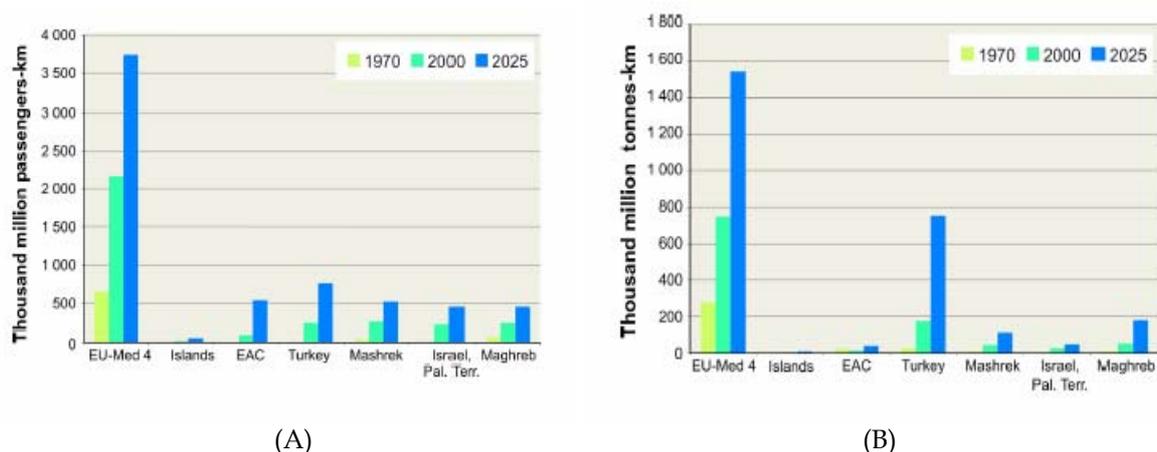


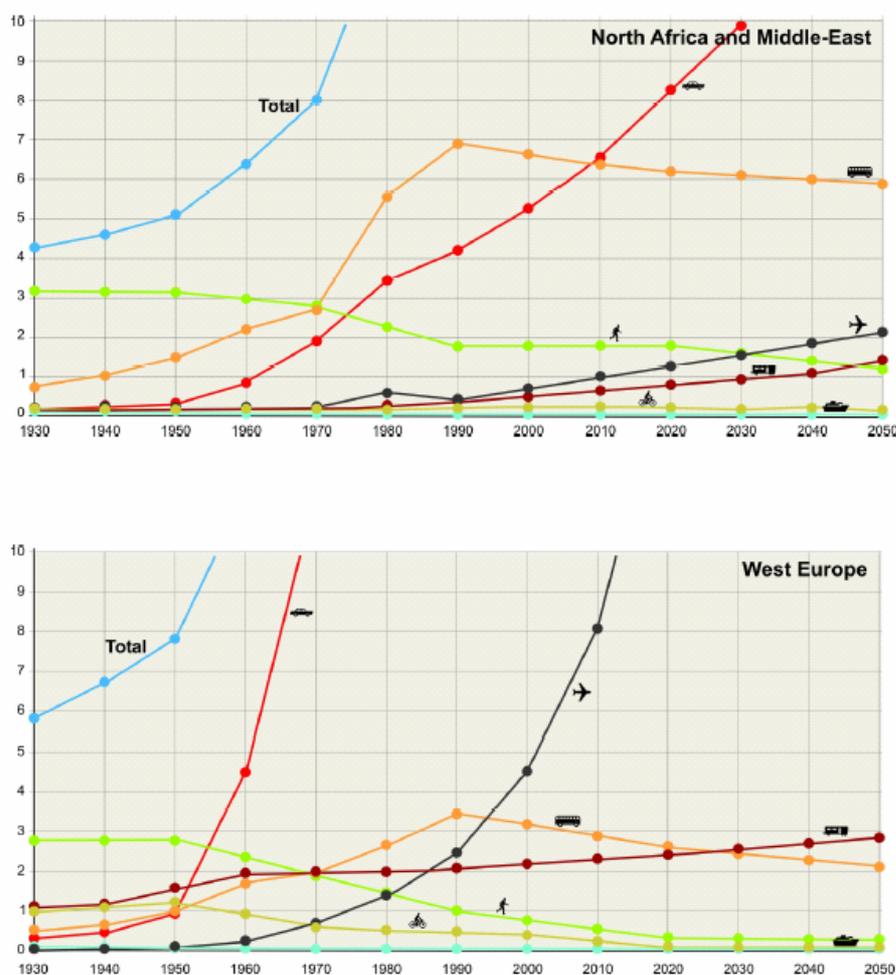
Figure 3.16: (A) Passenger traffic (air, road and rail), 1970-2000 and 2025 projections¹⁸
 (B) Freight traffic (air, rail and road), 1970-2000 and 2025 projections

Freight traffic by air, road, rail (but not sea), like passenger traffic, increased faster than the economy and the population (3.8% per year between 1970 and 2000 in the whole of the Mediterranean, 3.2% in the NMC and 6.4% in the SEMC) (Figure 3.16). Even more than for passenger traffic, this reflects differences in living standards (France, Spain, Italy and Greece alone account for 71% of the traffic), and political and economic developments (in particular the annual average growth of 6.8% in freight traffic in Turkey between 1970 and 2000).

Like road and air, the growth of freight traffic by sea was faster than GDP (4% per year between 1985 and 2000 in all of the Mediterranean, 4.7% in the NMC, but only 3% in the SEMC) (Figure 3.17). As with passenger traffic, it is important to distinguish domestic traffic, which is closely linked to growth in GDP, from international traffic, which is totally dependent on trade flows. While domestic freight traffic is increasingly dominated by road in all countries (despite resistance from rail in a few areas), international traffic has three distinct components related to trade flows: trade between the four EU-Med, trade between the EU and the other Mediterranean countries, and trade in transit through the Mediterranean.

¹⁸ Source: Plan Bleu

Rapid "Motorisation" of travel modes in the Mediterranean Basin.



Source: F. Papon (Inrets) for the Blue Plan, from A. Schafer's data for car, bus, train and airplane modes

Figure 3.17: Passenger travel modes in the Middle East, North Africa and Western Europe (estimates and forecasts (km/person/day))¹⁹

The ever-increasing shift to cars and airplanes, which are the main source of CO₂ emissions and air pollution, can be seen in both NMC and SEMC (Figure 3.17). However, rail, which is a more sustainable form of transport, is putting stiff resistance in countries where there is a tradition of rail travel (mainly in Egypt with 47.3% in 1999) and rail freight.

Transport growth and unsustainable transport modes have a significant impact on the environment of the Mediterranean Basin.

Mediterranean's large share of Maritime transport

The main maritime routes into the Mediterranean are Gibraltar, Suez and the Bosphorus. The most important intra-Mediterranean shipping lanes are those linking Greece with Egypt and Libya with Italy.

¹⁹ Forecasts through 2050 are based on historical trends everywhere in the world. Individual mobility increases with revenue, travel time remains relatively constant (1–1.5 hour per day), faster transport means are used to cover ever longer distances within the same time. In North Africa and Middle Eastern countries, motorized travel, essentially by bus and by car, has risen noticeably in the last 20 years. By 2010–2020, and even more beyond, the car will largely be the dominant travel mode (10km/inhab/day by 2030), while the bus will continue to decline. In west European countries, the 2050 prospect suggests that the mobility share of high speed transport (airplane, high speed trains, car) will significantly increase to cover longer distances. In 2004, car travel represented 60km/inhab/day (out of scale in the graph).

Of the total of 412 million tonnes of oil imported into Europe in 1999, 121 million came by intra-Mediterranean routes, and 278 through Gibraltar, Suez or the Bosphorus (the remaining 13 million tonnes correspond to trans-Atlantic trade), as presented in the following figure (Figure 3.18).

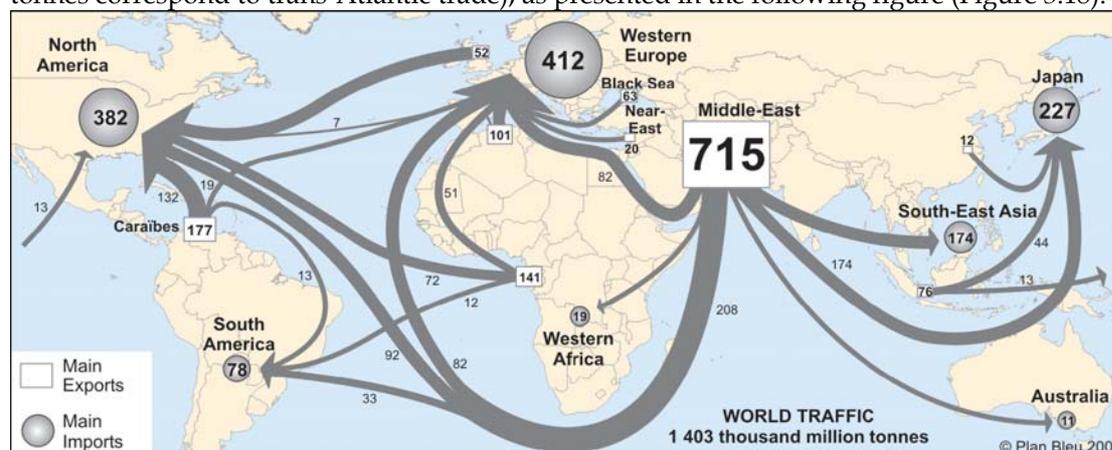


Figure 3.18: Maritime oil traffic - main trade inter-zones (in million metric tonnes)²⁰

Container traffic amounted to 1560 million TEUs (twenty-foot equivalent units) for the intra-Mediterranean in 1999 compared with 8025 million of Europe-Asia trade through Suez, Gibraltar or the Bosphorus.

In 2003, the Mediterranean had 286 *commercial ports*, of which **only 46 were fitted with receiving equipment for ship wastes**. Commercial ports are often surrounded by industrial areas, sometimes with free zones (Figure 3.19).

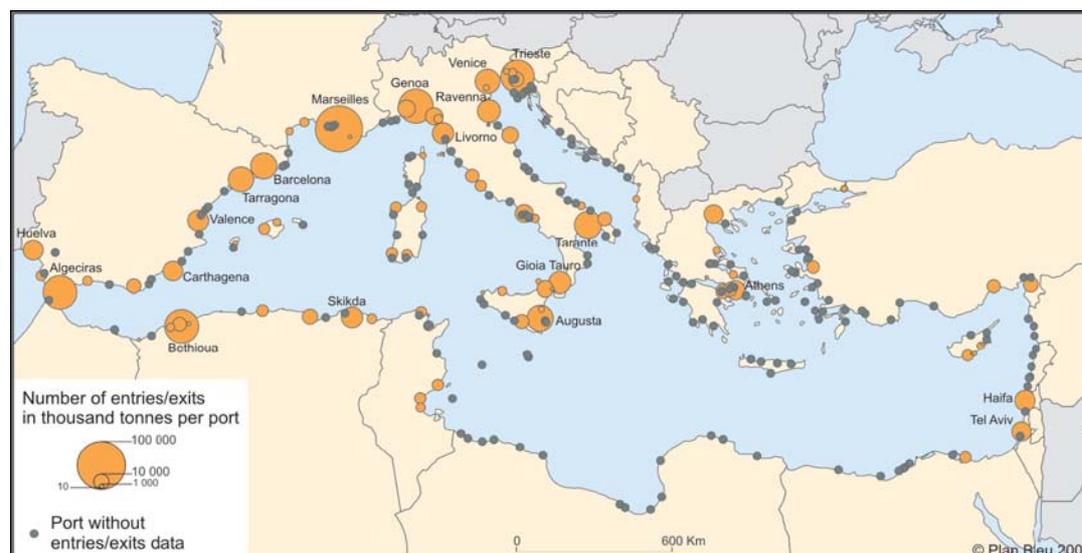


Figure 3.19: Mediterranean commercial ports²¹

The fleet licensed under Mediterranean flags carries a large proportion of *environmentally dangerous substances*. In 2001 nearly 42% of the Mediterranean merchant fleet carried hydrocarbons and chemical products, with the possibility of pollution from routine operations and accidents.

Mediterranean fleet also includes many ships with open-shiping registrations, which are or may be 'at risk'. Open-shiping registrations (Malta, Cyprus and Gibraltar), that allow the licensing of shipping companies with almost no formalities or prior checks, are reported ²²to generate considerable savings for ship owners in terms of manpower and lack of inspections of their vessels

²⁰ Source: IMO News (2000), no 3

²¹ Source: Lloyd's List: Ports of the World 2003; national statistical yearbooks

²² The Blue Plan's Environment and Development Outlook, A Sustainable future for the Mediterranean, 2005

(given the disproportion between the sizes of the countries that hold these registers and those of the fleets flying their flag).

It is noted that between 1987 and 2001, the deadweight (transport capacity) of the Mediterranean merchant fleet increased by 27%, but the open shipping registrations by 123%.

The high average age of the fleet is another issue of concern regarding the risks to marine environment, which are confirmed by the organization of the Paris Accord Memorandum that classifies all the world's flags every year according to the social and environmental risks involved. The average age of the fleets under Mediterranean flags often exceeds 20 years (19.7 years world average), indicatively: 23 years in Egypt and Greece, 24 years in Turkey and Algeria, 33 years in Lebanon, and 43 years in Syria.

3.8 ENERGY

The energy situation in the Mediterranean region is very diverse, with four hydrocarbon exporting countries (Algeria, Egypt, Libya and Syria); all the others are energy importers (including Tunisia, a small producer). The northern-rim countries (NMC), poorly endowed with fossil energy resources, consume two-thirds of the energy used in the Mediterranean region. Faced with a certain environmental impasse (in particular their responsibility for global warming), they are seeking to diversify their energy supply while trying to reduce the environmental impacts of their energy consumption. For the southern and eastern Mediterranean countries (SEMC), with rapid energy growth, the main challenge is to plan the future in such a way that their development patterns do not inevitably lead to the same impasse as in the northern countries and so that wasteful costs are avoided.

Rapid increase in energy demand

The demand for primary energy has increased rapidly in all Mediterranean countries during the past 30 years. In most countries, most of the energy consumed is primary commercial energy. But in some very rural countries, non-commercial energy, directly from biomass for domestic needs, still represents a large part of energy supplies that is not included in the statistics. In Morocco, for example, this is estimated at nearly 30% of overall energy consumption, about 15% in Tunisia and 10% in Turkey. Demand for primary commercial energy in the whole Mediterranean region has more than doubled over the past three decades (an increase of 2.7% per year) and in 2000 stood at 820 Mtoe (million tonnes of oil equivalent). The NMC, with an average annual increase of 1.9% per year since 1971, accounts for three quarters of the total, but the SEMC, with an increase of 6.1% per year since 1971, accounts for a growing fraction (Figure 3.20 (A)).

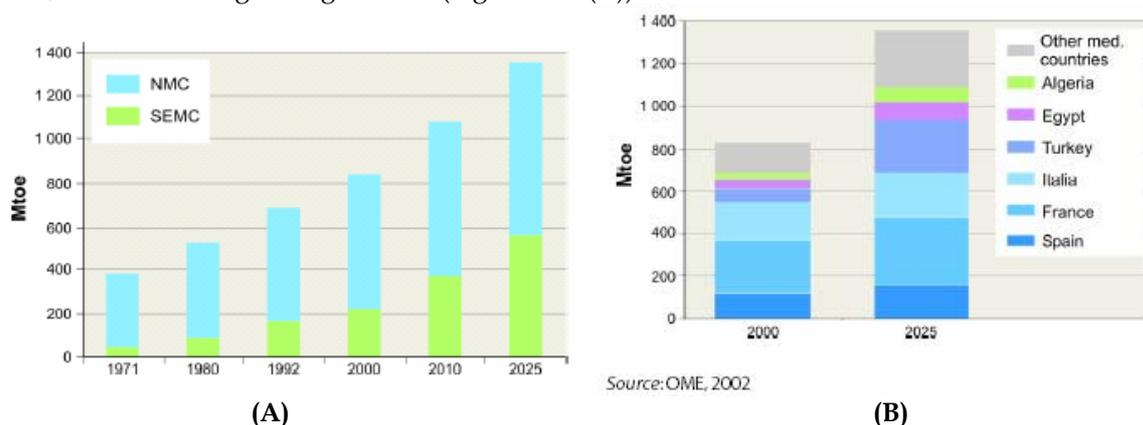


Figure 3.20: (A) Primary energy demand and 2025 projections,

(B) The six main energy consumers in the Mediterranean

It is projected that energy demand in the SEMC will increase at four times the rate in the NMC between 2000 and 2025, an increase of 340 Mtoe, or 3.8% per year, compared with 205 Mtoe, or 1.2% per year in the NMC. This growth will be the result of economic development in the SEMC and from the needs of an increasing population (16 million Mediterranean people still do not have access to

electricity). By 2025, Turkey is projected to become the second largest consumer of energy in the Mediterranean (Figure 3.20(B)). The relative share of the SEMC in total energy consumption in the Mediterranean will increase from 10% in 1970 to 40% by 2025.

Increased electricity demand

Total electricity demand in the Mediterranean countries has more than tripled over the past three decades and by 2000 stood at nearly 1500 terawatt hours (TWh). The average annual growth rate (AAGR) between 1971 and 2000 was 4.5%, well above that of primary energy consumption and even that of GDP.

Total electricity consumption (including all economic and domestic activities) per capita has increased since 1971 at a rate of 3.1% per year and has now reached an average of nearly 3500kWh per capita per year in the Mediterranean. In 2000, northern-rim countries consumed an average of 6000kWh per capita, or about four times more than in the south and east. The largest consumer (France with 9000kWh per capita) uses nearly 20 times as much electricity per capita as the smallest (Morocco with 500kWh per capita).

Energy Consumption: main consumers

In the NMC, the share of transport in final energy consumption has grown significantly and now stands at 32% of the total, compared with only 21% in 1971 (Figure 3.21). Growth in traffic and mobility has been well above economic growth and has not been compensated by technological improvements. Car manufacturers have made much technological progress (lower consumption for a given power, lower pollutant emission per car), but the size of the fleet has increased even more rapidly, increasing the total consumption by the sector in a way that seems to be out of control. In the SEMC, transport-related energy consumption is increasing at an average of 4% per year and this could accelerate with reductions in trade restrictions, the growth of the automobile fleet and urban sprawl. However, the most spectacular growth in final energy consumption in the SEMC has been in the residential sector (an increase of more than 5% per year between 1974 and 1999). Because of population growth, smaller families, very rapid urbanization and the spread of new lifestyles, the residential and service sectors have become the leading energy consumers (approaching 40%).

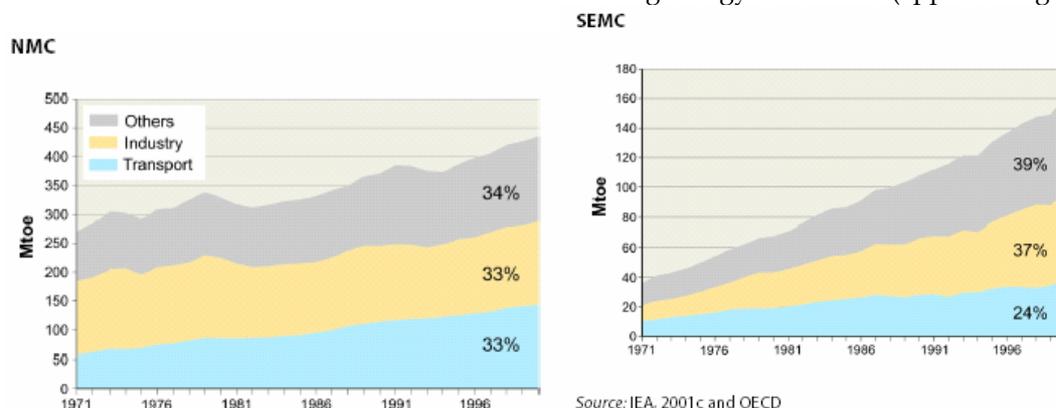


Figure 3.21: Final consumption per sector, 1971-2000 (% in 2000)

Dominance of fossil fuels and diversity of supply source between Mediterranean Countries

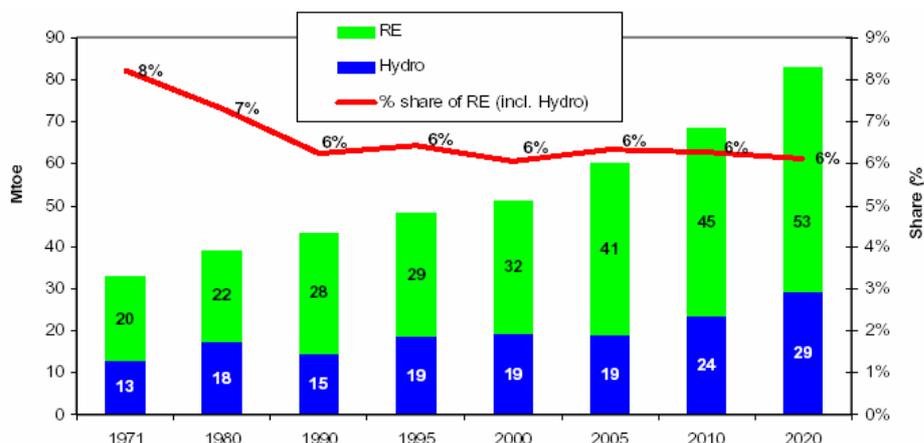
In 2000, fossil fuels (oil, coal and gas) dominated energy supply in the Mediterranean: more than 75% of consumption in the north and 96% in the south and east, the rest being mainly nuclear and hydroelectric. During the past few decades, it appears that the share of coal has remained constant, that of nuclear has stabilized and that of natural gas has increased rapidly at the expense of oil.

Since more than a third of primary commercial energy is used to produce electricity, the diversity of the supply facilities in the Mediterranean countries reflects the diversity of their power production systems. The choice of fuel types depends on the country's resources: gas in Algeria and Egypt, and coal in Greece, Turkey. Nuclear energy plays a substantial role in France, important in Spain. Hydroelectric power is only significant in the eastern shore countries (Syria and Turkey). The NMC intend to build coal and natural gas-burning power plants (except in France where the nuclear option

is being maintained). In the SEMC, natural gas plants are expected to predominate; only Turkey, Israel and Morocco plan more coal-burning plants.

Renewable share in the energy balance

Although the amount of renewable energy (including hydro) in the Mediterranean region increased from 33 Mtoe in 1971 to very 51 Mtoe in 2000 before reaching 60 Mtoe in 2005 (expected to reach 82 Mtoe by 2020), the corresponding share in the total energy balance decreased from 8% to 6% currently and is expected to remain at the same level by 2020 (Figure 3.22).



Source: OME

Figure 3.22: RE and Hydro sources in the Mediterranean region (Mtoe & %)²³

The break-down between the two sub-regions is given in Figure 3.23. In SEMCs, the amount of renewable energy (including hydro) increased from 8 Mtoe in 1971 to 14 Mtoe in 2000 before reaching 18 Mtoe in 2005 (expected to reach 26 Mtoe by 2020). The corresponding share decreased from 17% (when total primary energy consumption was still relatively low, giving mainly to hydro a more important share) to 6% currently and should represent 5% by 2020. For NMCs, the amount of renewable energy (including hydro) increased from 25 Mtoe in 1971 to 37 Mtoe in 2000 before reaching 45 Mtoe in 2005 (expected to reach 57 Mtoe by 2020). Although the amounts increase, the share stays at the same level of 6 to 7% in the period.

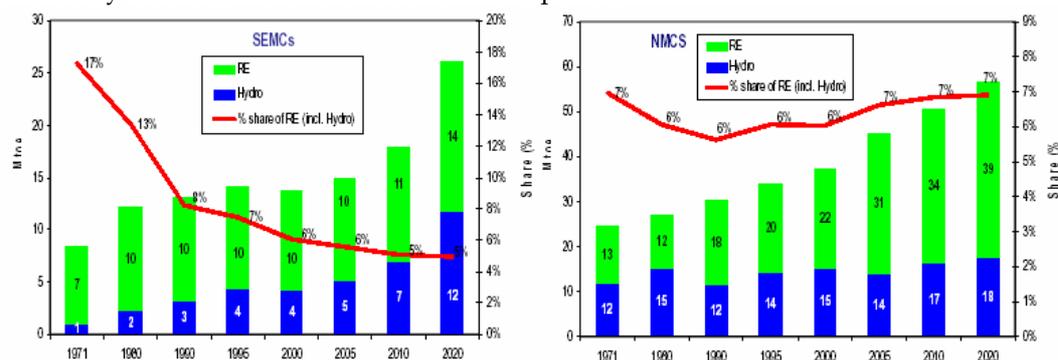


Figure 3.23: RE and Hydro sources in SEMCs and NMCs (Mtoe & %)

The greatest use of RE in Mediterranean is for power generation, in particular in some of the NMCs which have seen their wind park considerably grow over the past few years (e.g., Spain and Italy). Total RE-power generation in SEMCs shows a slower growth (total capacity of about 400 MW compared to 16500 MW in NMCs). In addition, solar collectors surface amounts 9 to 7.2 million m².

²³ Source: OME

The trends for 2020 should drive the installed RE capacity up to 60000 MW (48000 and 12000 MW in NMCs and SEMCs, respectively), consisting mainly of wind (80% of the total).

Table 3.3: RE installed capacity in 2005 and trends for 2020

2005	Hydro	RE	Total	2020	Hydro	RE	Total
Spain	18399	10378	28777	Spain	19921	22000	41921
France	26100	1500	27600	France	26100	12700	38800
Italy	20830	3998	24828	Italy	21904	11086	32990
Greece	3105	572	3677	Greece	3965	1800	5765
Cyprus		2	2	Cyprus		116	116
NMCs	68434	16450	84884	NMCs	71890	44702	116592
Turkey	12906	62	12968	Turkey	30795	3086	33881
Israel	3	30	33	Israel	5	300	305
PNA				PNA	0	0	
Syria	1528		1528	Syria	1700	0	1700
Lebanon	276		276	Lebanon	276	0	276
Egypt	2745	184	2929	Egypt	2859	3784	6643
Libya		26	26	Libya		511	511
Tunisia	63	24	87	Tunisia	63	1158	1221
Algeria	275	1	276	Algeria	257	1909	2184
Morocco	1729	54	1783	Morocco	1729	1132	2861
SEMCs	19525	381	19905	SEMCs	37702	11880	49582
TOTAL	87959	16831	104790	TOTAL	109592	59582	166174

Energy projections

Overall, according to the Blue Plan's projections, a very large increase in energy demand is expected if the countries of the Mediterranean region did nothing to change the current trend. By 2025 it is projected that 87% of energy demand will be met by fossil fuels with a growing share being taken by natural gas without, however, allowing the use of oil and coal to be reduced and no more than 4% of energy supply will be met by renewable energies. However, there is a great potential for the use of renewable energy sources in the region and with a combination of energy efficiency measures, the fossil fuels dependency could be reduced significantly.

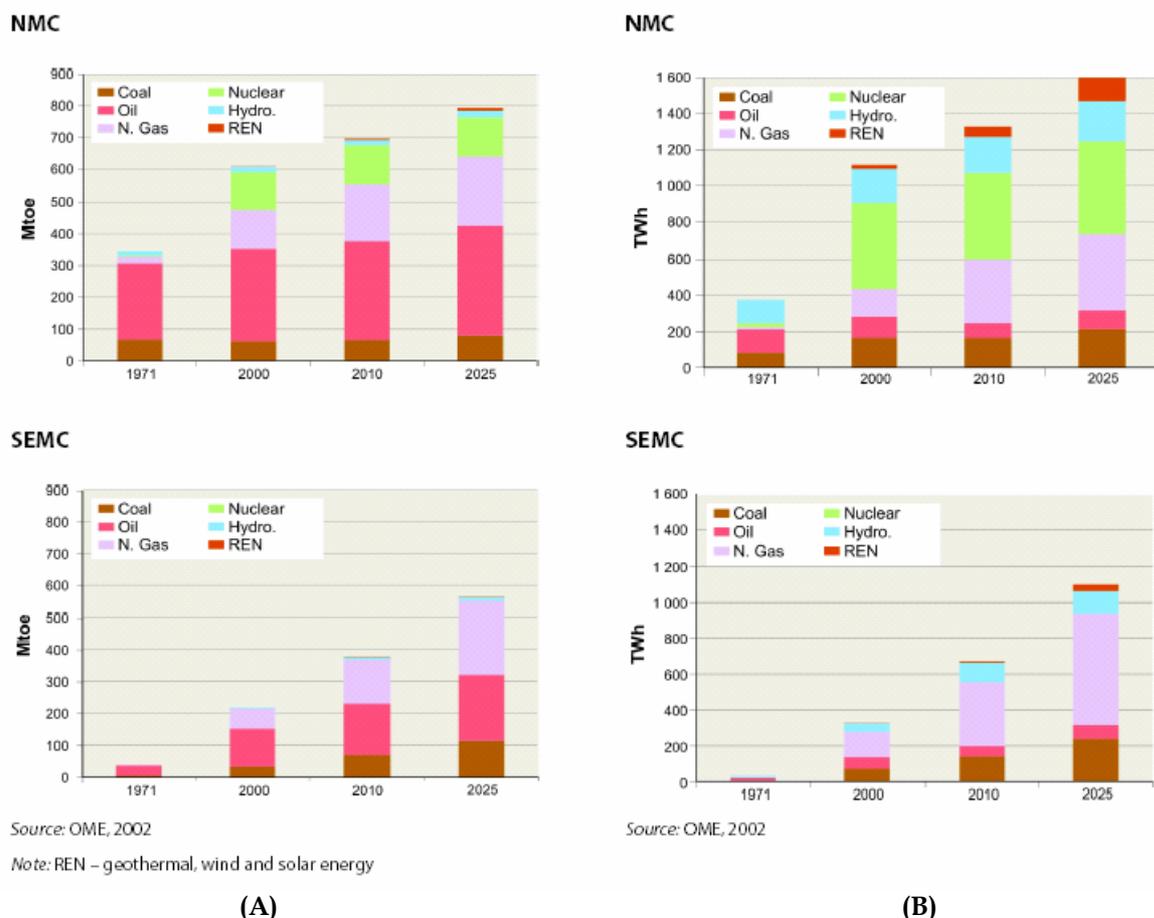


Figure 3.24: (A) Primary energy demands by source and 2025 projections
 (B) Electricity production by source and 2025 projections

3.9 INNOVATION AND RESEARCH

Innovation is a key element in the EU Lisbon strategy and is a major target for both the Northern and South-Eastern Mediterranean countries. More specifically it is a key target in the socio-economic development of SEMC, while new technologies create new opportunities for developing countries to participate in global knowledge networks

Innovation, together with absorption and application of technologies, will play a major role for the economic development of Mediterranean countries. It is also foreseen that through technologies the Northern, Southern and Eastern Mediterranean will be able to co-operate through interconnections or other links between technological poles and parks, incubators of innovative activities, R&D centres, etc. Innovation projects may have also a strong local aspect, supporting territorial development.

3.10 EMPLOYMENT AND EDUCATION

The Northern shores of the Basin face the challenge of an aging population which according to EC figures foresees a 20 million unit drop in the work force by 2010. The Southern shores however should expect a young population to enter the job market and a sharp increase in unemployment, an issue which is already affecting the area. According to FEMISE, an additional 34 million jobs have to be created over the next 15 years in SEMC if the unemployment levels are to stay at those already existing in SEMC. These new employment trends on the two shores of the Basin are expected to widen the migration flows across the Mediterranean.

Public expenditure on education has increased significantly since 1960. This reached an average of US\$700 per capita in 2000, 5% of Mediterranean GDP (varying in 2000 between 2.7% in Libya and 7.3% in Israel). The four EU-Med countries (Cyprus and Malta not included in the EU at the time), the islands and Israel increased public spending on education per capita threefold between 1980 and 2000, and reached US\$1000 per capita in 2000 (current \$), while such spending remained, at best, stagnant in Morocco, or even decreased in Syria and Algeria. Although this indicator does not necessarily reflect the quality of teaching, there is a high risk of an increase in the gaps between countries. The education system in many SEMC is deteriorating and it is often considered as not well adapted to the job market.

3.11 MIGRATION

The Mediterranean identity has been forged through periods of migration and intermixing. More recently, the period between 1950 and 1970 saw considerable migratory flows towards Europe and the Gulf countries to meet the need for predominantly unskilled manual labour. This work force came from the Maghreb countries and Turkey, and from Mashrek and Egypt. Since 1973, when the EU closed its borders, the large projects of the 1980s in the Gulf countries came to an end, and the first Gulf War occurred, migratory flows have taken other forms: families coming together, refugee flows, political asylum seekers and illegal immigration. Despite the difficulty in measuring migration flows with reliable statistics, it is estimated that 10 million foreigners, 5 million of whom are from other Mediterranean countries, are living in the Mediterranean countries. Foreign immigrants of Mediterranean origin accounted on average for 4% of the total population in the Mediterranean countries, without counting people who have been naturalized, who are the descendants of immigrants, or who are illegal immigrants. These past and future migratory flows are expected to strengthen the economic, social and cultural interdependency between Mediterranean countries.

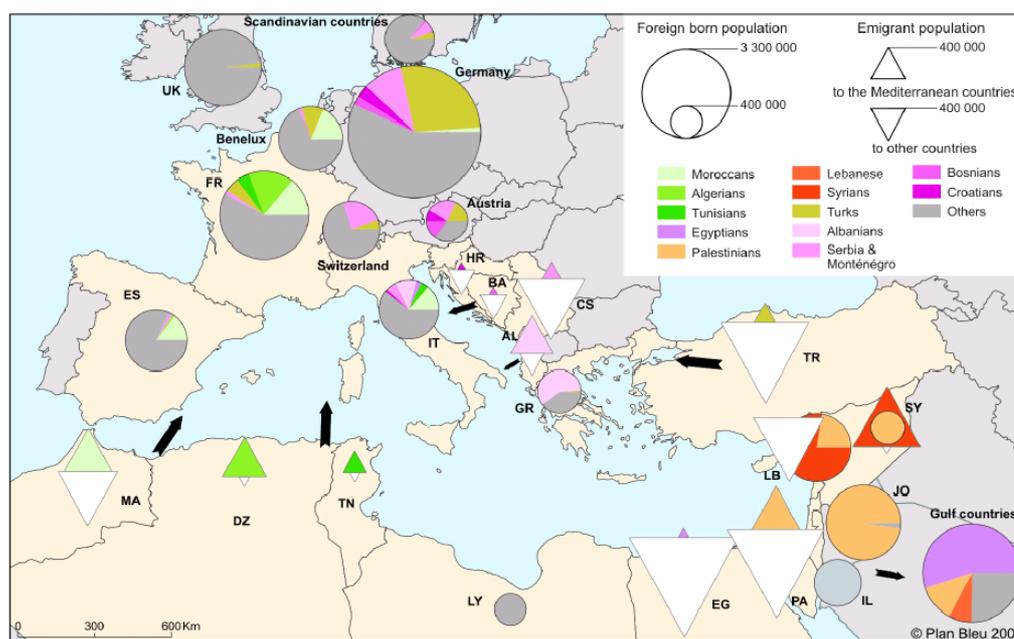


Figure 3.25: Foreign and Mediterranean emigrant people²⁴
 Migration flows are expected to effect the Basin's development as a whole. More specifically the EUMC will in future require a labour force in order to compensate its labour market deficit, while

²⁴ Note: In the four EU-Med countries, foreigners of Mediterranean origin are between 3 and 7% of the total population (7% in Greece). If the naturalized populations or descendants of migrants are taken into account, the proportions are higher: in France, there are 1.3 million foreigners from the Mediterranean (2.2% of the total population) but also 5.1 million descendants of Mediterranean migrants. Lebanon, a country of great diaspora, is home to 500,000 Syrians and 430,000 Palestinians. Libya has 410,000 foreigners, 7% of its total population. During the past decade, Israel has welcomed and naturalized 900,000 foreigners (15% of its total population) from the ex-Soviet Union and Ethiopia

migration flows are expected to release some pressure on local job markets in the SEMC and bring in foreign currency through remittances which is often in greater amount than official aid.

3.12 TERRITORIAL PARTNERSHIP

A key aspect of CBC Programmes like the Mediterranean Sea-Basin Programme is to enhance territorial partnerships and exchange best practices between regional and local authorities despite the strong differences in territorial development, decentralization and national policies between North and South Basin countries or EUPC and non-EUPC.

3.13 ENVIRONMENTAL GOVERNANCE

Past experience has showed that protecting the Mediterranean could not be accomplished by actions carried out on the sea and the coastal regions alone, but that it depended largely on national policies on development, the environment and regional planning. The sustainable development scenarios then need to not only strengthened regional cooperation but also to include a different approach to environmental problems at country level: by internalising the costs of protection, taking into account the environment in decision-making mechanisms, reducing centralization, implementing better coordination and associating the public with decision-making and management. In the Mediterranean, despite considerable efforts to strengthen environmental administrations and legislation, it has been extremely difficult to prevent environmental degradation by means of effective upstream action on the development process.

Over the last two decades, the Mediterranean countries, like many others, have strengthened their environmental policies and institutions as a sector in its own right, without really finding complementary intervention mechanisms upstream of consumption and production activities or other economic and social policies. While physical and land planning policies present a certain decline, unprecedented efforts have been devoted to structuring this new sector of state intervention, the protection of the environment. In old and the new four EU-Med countries, impetus from the EU has been decisive, as has that from major cooperation programmes (World Bank, MAP) in the other Mediterranean countries.

The institutional positioning of administrations in charge of the environment that have appeared in the Mediterranean countries is generally typified by certain instability. Such administrations have often been created within other older ministries and then experienced frequent changes of supervisory ministries. Despite this instability, central environmental administrations have been set up in all the riparian countries in the form of a ministry, a 'sub'-ministry or an independent agency. In recent years the linking between the Environment and Spatial Planning in several countries (Italy, Greece, Algeria and Morocco) has represented a significant development in the search for consistency. Institutional uncertainties contribute to a certain weakness in environment-related administrations, which is accompanied by a weakness of human and financial resources with budgets amounting in general to less than 0.1% of government budgets, and, above all, weak inter-ministerial power.

To inadequacies in financial and staffing levels can be added the critical weakness of authorities in administrative policing matters. More generally, in the Mediterranean as elsewhere, the critical factor is the low priority given to environmental issues by governments through their inter-ministerial coordinating body, since many environmental issues derive from more powerful sectoral policies such as public works, transport, agriculture and industry, on which environmental administrations have only limited influence.

Most efforts in this new environmental protection sector have focused on regulations. For the NMC, which mainly comprises from EU MS, some 200 legislative documents on the environment, including more than 140 directives, contribute to harmonizing environmental policies and legislation around three principles: the precautionary and preventive action principle, the principle of prioritizing corrective action at the source of damage to the environment, and the polluter-pays principle. Although the application of community law varies markedly from one country to another, this has

enabled enormous progress to be made, for example on water quality and waste treatment. At the beginning of 2004, before integrating into the EU the 10 accession countries, an average of about 90% of the Community acquis had already been transposed, and mainly the directives on air quality and waste management, and strengthened their administrative capabilities for implementation.

In the NMC the situation is quite different. Environmental legislation is often characterised by overlapping authority between different ministries and organizations. Also, environmental quality standards, economic measures, the role of the public in environmental decision-making are elements that are often lacking in the legislation.

In addition to these entirely legislative efforts, which are always under development, most Mediterranean countries have developed national plans for environmental protection: indicative, multi-annual planning aimed at facilitating the allocation of funds. However, in most cases implementing regulations and orders are still missing for many issues, creating obstacle to the successful implementation of the laws.

Efforts for implementing environmental policies have therefore been considerable, but implementation has experienced and continues to experience formidable problems: many international agreements, community directives, national laws and environmental action plans often remain unimplemented. In the EU countries, the growth of disputes about the environment bears witness to this difficulty of implementation.

The weakness of the administrations in charge of the environment (lack of human and financial resources devoted to implementation and monitoring, lack of power and credibility with other sectoral administrations) is often cited among the explanatory factors for difficulties encountered in all riparian countries. The complexity of environmental legislation and the difficulty in funding the high costs of implementation also contributes.

Therefore, the issue of effective governance of development that is respectful of the environment remains. Undeniable progress has been recorded in reducing pollution from point sources such as the big polluting industries of the northern shore. But the growing importance of non-localized pollution (agriculture, transport, energy, urban growth patterns), irreversible degradation, withdrawals of non-renewable or non-substitutable natural capital, and increased territorial imbalances because of coastal over-development and urban development, raise even more difficult problems that call for an examination of the lifestyles and consumption patterns of entire societies and much more significant efforts in policy integration and the accountability of all those involved.

In short, the EUPC have launched major and costly deep reforms for instilling the conditions of 'good governance'. Far from being completed, these reforms are inseparable from more general, deep-running changes in governance for sustainable development. The ongoing efforts may be compromised by a lack of political will but also by very restricted room for manoeuvre. Without outside support, faced with the magnitude of the efforts to be made, the ability of many EUPC to generate increased, long-term sustainability and at the same time absorb their social and environmental consequences is limited.

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4. ENVIRONMENTAL CHARACTERISTICS OF AREAS LIKELY TO BE SIGNIFICANTLY AFFECTED

4.1 Water

4.1.1 Resources and uses

Water resources are and will be affected by changes in land use in the catchment areas, mainly the sealing of soils, as a result of increasing urban development and transport infrastructures, which increases surface run-off (amplifying the irregularity of input) and make control of this problem even more necessary. Deforestation (fires and logging) and the drying of wetlands also change the water regime. Erosion due to some agricultural practices (abandoning terraced cultivation, overgrazing) amplify the phenomenon even more. In contrast, tree replanting, particularly that related to the abandonment of farmland in the northern rim Mediterranean countries, could control the temporal patterns of the flows, even if it contributes to reducing average run-off.

In absolute terms, the water poor Mediterranean population (NV), those with less than 1000m³ per capita per year, was 108 million in 2000 and could reach 165 million by 2025 in nine SEMC. Of these, 63 million people would be 'in shortage', that is, with less than 500m³ per capita per year (compared with 45 million in 2000). These already troubling figures mask local or temporary shortages in many catchment areas. Most of the renewable natural resources in the Mediterranean Basin are from surface run-off (about three-quarters of the water that runs off within the basin and 90% of the run-off that leaves the basin). Four major rivers have an average natural flow greater than 10km³ per year in the project area: the Nile in Egypt, the Rhone in France, the Po in Italy and the Ebre in Spain. The hydrographical structures are highly scattered since only 21 basins have areas of more than 10,000km² and cover only 42% of the entire Mediterranean catchment area. The total of underground flows in the Mediterranean Basin would be about 150km³ per year out of the 600km³ per year of total inflow. Underground waters have an essential function in regulating flows. In the northern countries, they contribute to most of the river-creating run-off and are the main factor in their permanence. In contrast in the south, they are fed by the often temporary flooding of rivers, and many flow into evaporation fields (if they are not already harnessed), particularly in enclosed low-lying areas. Where aquifer reservoirs are sufficiently developed, they improve resistance to drought.

In addition to this uneven spatial distribution of the water resources, there is a very great irregularity in time, both within and between years.

This irregularity considerably limits the exploitation of renewable surface water resources in the basin and justifies the construction of many projects designed to regulate intra- or inter-annual flows. In addition, freshwater resources in the Mediterranean Basin often have a natural quality (for example natural salinity or high hardness levels) that limits their use.

The resources are also particularly vulnerable to human activity. This is the case with many shallow alluvial water tables. Mediterranean river beds are often dry in summer and, unlike rivers in more temperate zones, are therefore unable to cleanse themselves. High summer temperatures diminish this ability even more in river beds and perennial waters. Coastal water tables are in fragile balance and can easily be contaminated by sea water intrusion when too much water is taken from them. Climate change may contribute to increasing this natural irregularity and vulnerability of water resources by increasing the frequency and magnitude of droughts and reducing precipitation in the southern region of the Mediterranean. Water shortages and frequent droughts have a particular effect on the SEMC, which are expected to experience the greatest water needs in coming years.

Water is 'used' by people for vital functions (drinking and hygiene), and many economic activities (irrigation, industry, energy, shipping and leisure). The main forces that drive Mediterranean water demand are irrigation, domestic requirements (which increase with urbanization) and rapidly expanding tourism. It is difficult to obtain reliable data about water demands that are comparable over time and between countries. The following data are therefore valid only to an order of

magnitude. Retrospective data sets over long periods are only available at the whole country level and show that during the second half of the 20th century, the total water demand of the Mediterranean countries doubled, and has now reached about 290km³ per year for all the Mediterranean countries (N1). The countries experiencing the greatest growth (more than 2% per year) are Turkey, Syria and France. Over the past decade only a few countries either stabilized (Israel) or even reduced their total water demand (Italy, Malta and Cyprus). On the smaller scale of the various Mediterranean catchment basins (NV), the available time series are less extensive. The total demand for water was 190km³ per year in 2000 (see Table 4.1 and Table 4.2) or about a third of the 600km³ per year of renewable natural resources.

Table 4.1: Water demand by country, baseline and alternative scenarios, 2000-2025¹

Countries and territories in the Mediterranean basin	Total demand		Sectors							
			Domestic water		Irrigation		Industries		Energy	
	2000	2025	2000	2025	2000	2025	2000	2025	2000	2025
Spain	18.2	21.9	2.07	2.90	11.86	13.00	0.85	1.00	3.39	5.00
France	16.7	12.6	1.71	1.50	1.78	2.00	1.09	1.10	12.10	8.00
Italy	42.0	37.0	8.00	7.00	20.00	21.00	8.00	4.00	6.00	5.00
Greece	8.7	8.3	0.87	1.00	7.60	6.90	0.11	0.20	0.12	0.20
Malta	0.0	0.0	0.04	0.04	0.01	0.01	0.00	0.00	0.00	0.00
Cyprus	0.3	0.3	0.10	0.10	0.24	0.19	0.00	0.00	0.00	0.00
Turkey	11.7	18.6	3.37	4.50	7.60	13.00	0.70	1.10	0.00	0.00
Syria	3.9	4.2	0.35	0.50	3.19	3.50	0.31	0.15	0.00	0.00
Lebanon	1.3	1.8	0.35	0.52	0.90	1.10	0.07	0.14	0.00	0.00
Israel	1.8	2.2	0.50	1.00	1.20	1.00	0.10	0.20	0.00	0.00
Pal. Territories	0.3	0.8	0.10	0.47	0.16	0.30	0.00	0.04	0.00	0.00
Egypt	72.8	85.0	4.54	6.00	60.73	65.00	7.53	14.00	0.00	0.00
Libya	2.2	3.7	0.51	1.00	1.63	2.50	0.10	0.20	0.00	0.00
Tunisia	2.3	2.2	0.34	0.47	1.88	1.60	0.06	0.17	0.00	0.00
Algeria	2.9	4.3	1.25	2.00	1.05	1.40	0.40	0.92	0.20	0.00
Morocco	1.9	2.7	0.20	0.40	1.70	2.30	0.00	0.00	0.00	0.00

¹ Source: Plan Bleu, Margat, 2004

Table 4.2: Water resources per country, 2000-2025²

Countries and territories in the Mediterranean basin	Average yearly flows (surface and ground water) in Km ³ /year			Average natural renewable resources (surface and ground water) in Km ³ /year		
	Internal inflow (effective precipitations) (1)	External inflow (from neighboring countries) (2)	Of which non – Med countries	Yearly average (1) + (2)	Regular resources (from surface and underground)	Annual inflow in decennial dry year ²
Spain	28	0.35	0.1	28.35	10	10
France	64	8.5	8.5	72.5	35	53
Italy	182.5	8.8	2	191.3	30	
Greece	58	16.25	10.2	74.25	10	
Malta	0.05			0.05		0.03
Cyprus	0.78			0.78	0.3	
Turkey	66	3.45	2.8	69.45	20	
Syria	5	0.96		5.96	2.5	
Lebanon	4.8			4.8	2.5	1.4
Israel	0.63	0.38		1.01	1	1
Palestinian Territories	0.616	0.01		0.626		
Egypt	0.8	55.5	55.5	56.3	23	65
Libya	0.7			0.7	0.6	
Tunisia	3.7	0.32		4.02	1.0	0.97
Algeria	11.97	0.03		12	2.3	5
Morocco	5			5	1.4	1.5

Analysis of demand by sectors shows that the main user in volume terms in most countries remains agriculture followed by drinking water supply and, in third place, use by industry and the energy sector. Agricultural development policies in most of the SEMC (Turkey, Syria, Egypt, Algeria and Morocco) are planning both to extend the areas under irrigation and to increase farming intensity. According to a FAO study, the irrigated area could increase by 38% in the south to reach 9.1 million ha and 58% in the east to reach 7.7 million ha by 2030. However, some hoped for efficiency gains in water-use for irrigation and a relatively larger increase in demand for drinking water could result in the share of agriculture in total demand in the eastern countries remaining more or less constant.

Under the combined effect of the rise in living standards and, most importantly, population changes, the baseline scenario³ projects a continuing large increase in drinking water demand in the SEMC and stabilization in the NMC. The drinking water demand includes the water required to supply the tourism sector, which can lead to large seasonal spikes, although it has, generally speaking, no significant effect on average annual water demands countrywide. Locally, tourist demand can lead (on coastlines and islands) to over-sizing of water works or serious supply difficulties, even if these are usually quite easy to overcome by the capacity of the sector. In the baseline scenario the share of drinking water in total demand will continue to increase at the expense of the shares of the energy and industrial sectors in the north and the agricultural sector in the south and east. By 2025 it will

² Source: Plan Bleu, Margat, 2004

³ The baseline scenario according to Blue Plan, 2005

reach an average of 15% of total demand in the Mediterranean Basin (NV). In certain water-poor countries, given its priority in allocations, it may constitute more than a third of total demand (Cyprus 34%, Israel and Algeria 45%, the Palestinian Territories 58% and Malta 87%). Water demand by the energy and industrial sectors (which consume small quantities but are often polluting) is expected to fall in absolute terms (efficiency gains and energy transition) in the NMC. In the SEMC, on the other hand, the industrial sector is expected to increase its water demand significantly in absolute terms, reaching up to 16% of total demand in the southern countries by 2025.

As the limits set for preserving natural ecosystems are approached, the need for an 'environmental water demand' is becoming increasingly accepted; this would include the water required for the operations of these ecosystems. Some countries have included in their legislative arsenal the respect of a minimum flow in their rivers, set for the survival of species (France), or have included, even more explicitly, an environmental demand (Spain); others are considering such measures (Italy), but this demand is usually not yet quantified in supply and demand balance sheets and is seen more as an attempt to limit resource exploitation.

4.1.2 Water Quality

Since 1940 the EU-Med countries have experienced considerable degradation of their water resources. Man-made activities degrade the quality of natural water resources adding stresses on them. Such degradation increased to a significant level during the 20th century as a result of demographic growth, major development projects and industrialization. Water quality is degraded by the many pollutants discharged into freshwater either locally (for example untreated industrial or domestic waste, uncontrolled discharges, drains used as conduits for household waste) or in a diffuse manner (fertilizers and pesticides for intensive agriculture, solid waste, sludge from treatment plants). The threat is hard to quantify, as there is little information on these pollutant flows (particularly for diffuse pollution), so one can only use rough estimates that have been made indirectly.

If pressure on the water resource increases, the resulting degradation in water quality is impossible to assess on the too-vast scale of the Mediterranean catchment area. One of the main problems is the variety of parameters that define quality and its variability in space and time. Added to this is the serious inadequacy of the monitoring networks in most Mediterranean countries, which makes it very hard to establish a summary overview of the situation. Data are noticeably incomplete (in time and space and in terms of the parameters covered). Nevertheless, attempts have been made to map rivers in terms of quality (identifying those whose 'poor quality' is attributable to pollution) in a few countries: Spain, France and Algeria. Figure 4.1 provides an incomplete summary, probably not standardized, and limited by the state of the available information, whereas the average nutrient concentrations in various Mediterranean rivers are shown in Table 4.3.

Despite inadequacies in monitoring, many signs of degradation are observed locally. Degradation of water quality is becoming a major concern in many countries. Surface waters very frequently have high biochemical dissolved-oxygen demand (BOD), high phosphate, nitrates and heavy metals content, and local bacteriological pollution. The wades that flow through many Mediterranean cities are often transformed into literal open-air sewers (for example Damascus and Beirut). Underground waters are the most vulnerable because the pollution takes much longer to reverse. Natural lakes and dam reservoirs are also under threat from climate-induced eutrophication.

More recently, with improvements in the level of treatment of domestic and industrial waste, they have registered some improvements in surface water quality (concentrations of BOD, phosphates and heavy metals in rivers have been falling for the past 10 years). On the other hand, non-localized agricultural pollution, particularly by nitrates, is continuing to inflict lasting degradation on resource quality. Data on the presence of dangerous substances such as pesticides in the environment are very scarce, even in the European countries, where the European Environment Agency has deplored the continuing inadequacies of the monitoring networks. Many compounds escape detection, despite most of them being very persistent in the environment and their possible effects on health and ecosystems being under study. In the few countries that are beginning to monitor them, traces of phytosanitary products are found in natural water, drinking water and food.

Table 4.3: Average nutrient concentrations in various Mediterranean rivers, (1985–1996)⁴

River	Country	N-NO ₃ mg/l	N-NH ₄ mg/l	P-PO ₄ mg/l	Total P mg/l
Adige	Italy	1.248	0.111	0.033	0.113
Acheloos	Greece	0.350	0.020		0.020
Aliakmon	Greece	2.350	0.110		0.140
Argens	France	0.740	0.090	0.110	0.220
Arno	Italy	3.620	1.347		0.406
Aude	France	1.420	0.090	0.090	0.490
Axios	Greece	2.590	0.150		0.880
Besos	Spain	1.900	31.000		12.700
Buyuk Menderes	Turkey	1.440		0.550	
Ceyhan	Turkey				8.680
Ebro	Spain	2.323	0.167	0.115	0.243
Evros/Meric	Greece/Turkey	1.900	0.050	0.280	
Gediz	Turkey	1.650	0.050	0.190	
Goksu	Turkey				8.870
Herault	France	0.610	0.060	0.045	0.220
Kishon	Israel				20.000
Krka	Croatia	0.526	0.093	0.046	
Liobregat	Spain	1.900	3.200	1.200	1.530
Neretva	Croatia	0.269	0.029		0.050
Nestos	Greece	0.780	0.040		0.120
Nile	Egypt	3.000			
Orb	France	0.670	0.440	0.140	0.450
Pinios	Greece	1.890	0.090		0.140
Po	Italy	2.192	0.261	0.084	0.239
Rhône	France	1.320	0.091	0.044	0.124
Seyhan	Turkey	0.590	0.310	0.010	
Strymon	Greece	1.100	0.030		0.110
Tet	France	1.800	1.500	0.470	0.800
Tiber	Italy	1.370	1.038	0.260	0.355
Var	France	0.180	0.031	0.006	0.130



Figure 4.1: Main rivers subjected to chronic pollution, NV^{5, 6}

⁴ Sampling periods not identified, Source: UNEP, MAP 2003a

⁵ Source: Blue Plan, Margat 2004

⁶ Note: Attempt at a summary based on a compilation of water-quality maps from various countries which do not always specify the quality-defining criteria

4.1.3 Marine coastal water quality

Data on the quality of marine coastal environment are produced in the different Mediterranean countries, through the MEDPOL Monitoring Programme (UNEP) and the national monitoring programmes, mainly focussing on the marine pollution in hot spot areas. Fewer data are available on the open sea or on coastal areas which are not at the vicinity of pollution sources. As a consequence, available data present geographical and time gaps and cannot be used yet to draw a detailed picture of the total Mediterranean marine environment quality. However useful information related to the major groups of contaminants/pollution sources are available for some coastal areas.

Sewage and Urban run-off (Urban effluents)

The quality of coastal waters are influenced by urban effluents discharged into the marine coastal environment, affecting directly or indirectly human health, the stability of the marine ecosystem and the economy of coastal zone (impact on tourism and fisheries). The rapid growth of the population in coastal cities and towns, especially in the southern Mediterranean coast where wastewater infrastructure is not adequate, leads to the discharge of increasing quantity of untreated effluents into the sea. The major pollutants related to municipal effluents are organic matter (measured as BOD₅ and COD), suspended solids, nutrients (nitrogen and phosphorus) and pathogenic micro-organisms, while other pollutants such as heavy metals, and petroleum and chlorinated hydrocarbons, are also present in the effluents. The permanent population in the Mediterranean coast is at the order of 150 million inhabitants, but it could be doubled during the summer period, as the area is one of the most frequented tourist destination of the world. Along the Mediterranean coast, are located 601 cities with population above 10 000 inhabitants having a resident population of 58.7 million (UNEP/MAP, 2004). From these cities, 69% operate a wastewater treatment plant (WWTP), 21% do not possess a WWTP, while 6% are actually constructing a plant and 4% have a plant out of operation for various reasons. Secondary treatment is mostly used (55%) in Mediterranean WWTPs, while 18% of the plants have only primary treatment. The distribution of treatment plants is not identical in the different Mediterranean areas, the Northern Mediterranean coast having greater part of its urban population served by WWTP than the Southern coast. Also, due to increasing population in cities and failures in the treatment plants' operation, some WWTPs cannot produce effluent of adequate quality as initially planned. Therefore, a large proportion of the population living on the Mediterranean coastal zone is not served by WWTPs and their effluents have a negative impact on the quality of the neighbouring marine coastal environment.

Urban wastewater discharge is also related to microbial pollution. The most important pollution hot spots in the Mediterranean often coincide with coliform bacterial hot spots, since untreated urban effluents are the main source of microbial pollution. Microbial pollution and its effects have been mitigated along the EU Mediterranean coast, following the installation of Wastewater Treatment Plants, according to the EU Legislation. However, the problem remains in many areas in the SEMC.

Nutrients and suspended solids

Nutrients are released from coastal cities (effluents), specialised industrial sectors (such as agro-food, tanneries, etc.) and agricultural land runoff (fertilisers). Furthermore, urban effluents are transporting suspended solids (degradable or inert), which settle to the bottom of the receiving marine water body. In sheltered areas, such suspended solids accumulate in high rates and may form deposits rich in organic matter, metals, and other pollutants. The problem is common in many Mediterranean harbours, which are often considered as secondary diffuse pollution sources for many pollutants. The increase of nutrients (nitrogen and phosphorus) supply to a marine ecosystem enhances primary production and may lead to eutrophication of the water body, a phenomenon having as side effects proliferation of planktonic biomass, discoloration of the water, reduction of water transparency, reduction of dissolved oxygen in deeper waters and, in extreme cases, occurrence of toxic algae species. Rivers are also important vectors of nutrients and suspended solids, since they drain basins with agricultural activities (fertilizers) and urban centres.

In greater water bodies, the Adriatic, the Gulf of Lion and the Northern Aegean area areas with relatively higher mean nutrient concentrations, higher primary and secondary production and sometimes local algal blooms related sometimes to hypoxic or anoxic conditions and rarely to toxic algal blooms.

Persistent Organic Compounds (POPs)

POPs include pesticides that have been prohibited to use in the Mediterranean region (DDT, Aldrin, Dieldrin, Endrin, Chlordane, Heptachlor, Mirex, Toxaphene and Hexachlorobenzene), industrial chemicals, which are prohibited to manufacture (Poly-Chlorinated Biphenyls - PCBs) and unwanted contaminants (hexachlorobenzene, dioxins and furans). For many Mediterranean countries, no detailed information is available on the releases of POPs from point sources (urban centres and industry). Limited studies have been carried out on the bioaccumulation of selected POPs on Mediterranean biota. In general, local or national authorities do not routinely monitor most of the POPs. The main source of POPs – since most POPs have been banned in the majority of the countries of the region - is believed to consist of stockpiles and inventories due to former production and/or import (i.e. PCBs in transformers), as well as secondary releases from environmental reservoirs (i.e. contaminated sediments) due to previous usage and accidental spills. The contribution from industrial production is only important for those cases where some restricted usage of POPs is allowed (i.e. DDT as precursor of Dicofol) and for the POPs that are generated as unwanted secondary products (i.e. Polycyclic Aromatic Hydrocarbons [PAHs] and dioxins from combustion).

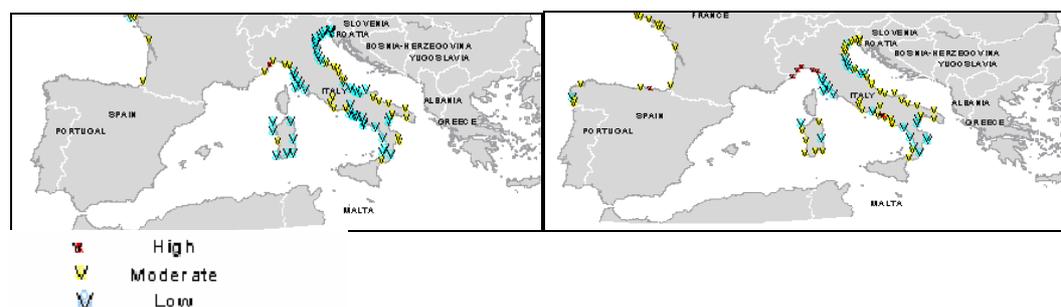
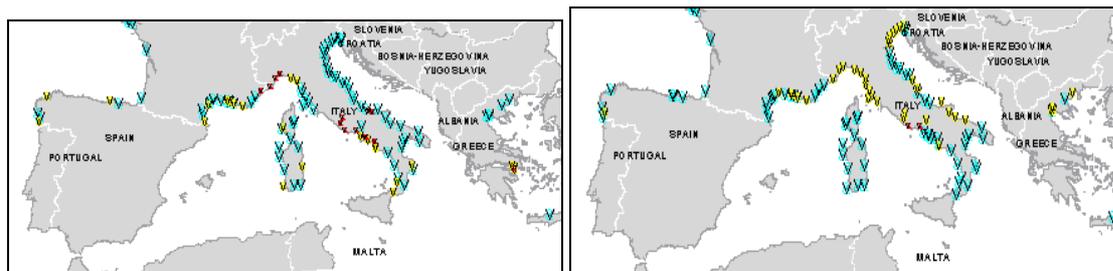


Figure 4.2: POPs in mussels (*Mytilus edulis*), median concentration 1996-2002 a: DDT , b: PCB⁷

Heavy metals

Urban and industrial effluents, as well as runoff from metal contaminated sites (i.e. mines), constitute major land-based sources for toxic metals, while metal enhancements in local mineralogy may also influence the sediment's metal contents (i.e. mercury enhancement because of the geochemical mercury anomaly of Mount Amiata). Regardless of the origin of the land-based metal source, contaminated coastal sediments constitute an important secondary non-point pollution source because they release metals to the overlying water, through benthic flux. Because metals tend to precipitate after their introduction in the coastal marine environment, they accumulate in sediments and biota, especially in sheltered areas such as harbours and semi-enclosed bays in the vicinity of land-based metal sources. Increased metal concentrations have been identified in many coastal areas along the Mediterranean Sea, such as the coast of Tuscany (Tyrrhenian Sea), Kastella Bay (Adriatic Sea), Haifa Bay and Alexandria coast (eastern Mediterranean), Izmir Bay and Elefsina Bay (Aegean Sea) (EEA, 1999). Secondary non-point pollution has been reported in the Gulf of Trieste, Northern Adriatic Sea off the mouth of the river Po, where a net flux of Cd and Cu from the contaminated sediments towards the overlying water has been recorded.

⁷ Source: EEA (WHS6) Hazardous substances in marine organisms



**Figure 4.3: Heavy metals in mussels (*Mytilus edulis*), median concentration 1996-2002
 a: Lead (Pb), b: Mercury (Hg)⁸**

Note:

■	High
■	Moderate
■	Low

Petroleum Hydrocarbons from shipping activities

Marine transport is one of the main sources of petroleum hydrocarbon (oil) and polycyclic aromatic hydrocarbon (PAH) pollution in the Mediterranean Sea. It is estimated that about 220,000 vessels of more than 100 tonnes each, cross the Mediterranean each year discharging 250,000 tonnes of oil due to shipping operations (such as deballasting, tank washing, dry-docking, fuel and discharge oil, etc.). The PAH input vary according to the type of oil discharged and its range is estimated to be between 0.3 and 1 000 tonnes annually (UNEP Chemicals 2002). Over the last 15 years, about 55,000 tonnes of oil have been spilled at the Mediterranean Sea because of shipping accidents; the three major of them being responsible for 75% of the quantity spilled. The picture of oil spills in Mediterranean according to UNEP-WCMC is shown in Figure 4.4 . According to REMPEC statistics, 82 accidents involving oil spills were recorded during the period January 1990 to January 1999, while the quantity of spilt oil was 22,150 tonnes (REMPEC, 2001). Incidents at oil terminals, together with routine discharges from land-based installations (estimated to be 120 000 tonnes/year (UNEP/MAP/WHO, 1999), contribute to elevated concentrations of oil in their vicinity.

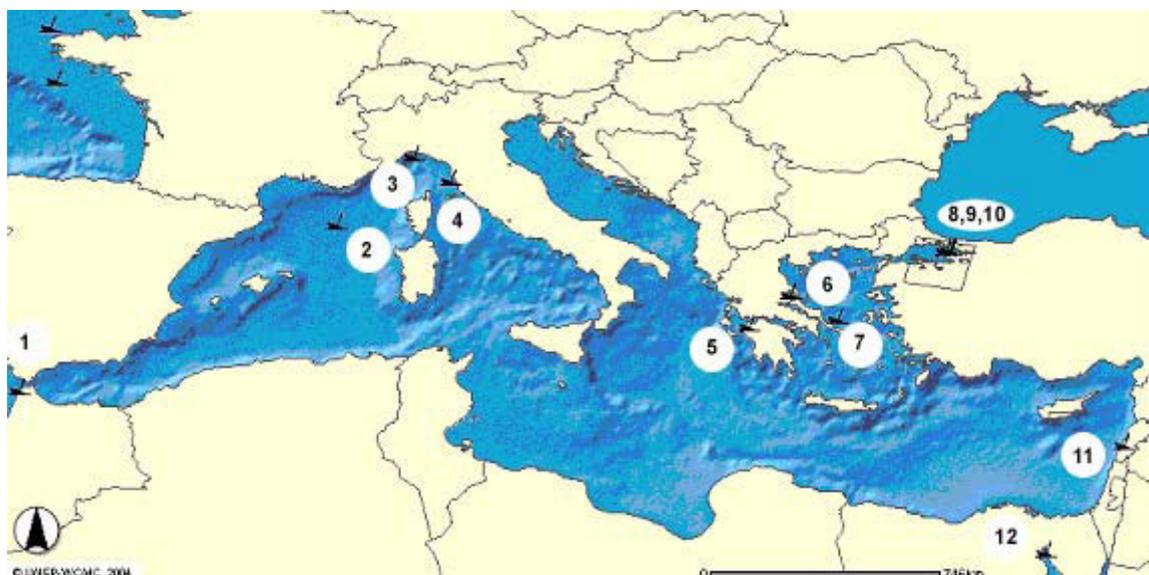


Figure 4.4: Major Tanker oil spills (> 700 tonnes) 1990-2003⁹

Radioactive substances

⁸ Source EEA, 2004

⁹ Source: adopted by UNEP –WCMC, 2004 (data from ITOPF)

Radioactivity is not a major pollution problem in the Mediterranean Sea. Atmospheric fallout (as result of nuclear weapon testing in the early 60's for the total Mediterranean area and the Chernobyl accident in 1986 for the northern and eastern basins) has been the major source of ^{137}Cs and $^{239,240}\text{Pu}$ to the Mediterranean marine environment. Other sources (input from rivers, nuclear industry, exchanges through the straits) amount to no more than 10% of the total delivery from fallout. Inputs deriving from nuclear industry and from accidents (other than Chernobyl) are negligible if considered in terms of contribution to the total budget, but might lead to local enhancement of radioactivity levels (EEA, 1999).

4.2 Soil

Along with water, coastlines and biodiversity, soils constitute one of the Mediterranean region's critical natural resources. Degradation in its various forms constitutes a significant threat to the future of the Mediterranean Basin.

There is natural erosion due to the specificities of relief and pluviometry that contributes to the enrichment of the land and ecosystems located downstream. But there is a serious increase in erosion at present in numerous regions of the Basin's south and east. One important cause is the widespread rural poverty that has deteriorated with recent and repetitive droughts.

The most fertile soils, often located downstream of plains, are threatened by large-scale urbanisation induced by demographic growth, country-to-town population migration and the evolution of lifestyles and production systems.

Fertile soil sealing by urbanisation (arable land, wetlands) represents nearly irreversible degradation, significant in its scope, and would imply serious, long-term consequences if the present trends were to be confirmed.

In suburban and coastal regions subjected to intense pressures, soil conservation is a significant issue to which however limited attention has been paid. In contrast to water, the sustainable management of soil has not yet become a subject of debate and concern as it deserves to be ¹⁰

4.2.1 Soil Degradation - Desertification

The term *desertification* refers to the *degradation of lands in arid, semi-arid and dry sub-humid areas following on various factors, including climatic variations and human activity*¹¹. It is thus a process of gradual loss of soil productivity and reduction of plant cover attributable mainly to *human* activities in dry areas. When less protected by plant cover, soil becomes more susceptible to *water and wind erosion*, which leads to its gradual degradation.

The main consequences are a loss of fertility and a degraded soil moisture condition, which in turn will have a negative effect on plant life and production. A spiral of degradation is created, which can lead, without intervention, to irreversible desertification.

Estimates of the magnitude of desertification and its degree of irreversibility are often contradictory and highly disputed. Nonetheless, the gravity of the phenomenon in the region is widely accepted¹¹.

According to estimates of the early 1990s, 80% of arid and semi-arid areas in the SEMC are affected. In these areas, pastureland (84%) and rain-fed arable land (74%) are the most affected, but also irrigated lands, especially through salinisation. Desertification also damages 63% of the Mediterranean Europe arid land in Spain, Greece and Italy.

Out of 245 million ha likely to be affected by desertification in the Mediterranean, more than 188 million ha (77%) were already more or less degraded by 1990.

¹⁰ Threats to Soil in Mediterranean Countries, Plan Bleu papers, May 2003

¹¹ Blue Plan, 2005

Table 4.4: Arid land affected by desertification¹²

	SEMC		NMC	
	Arid zones (million ha)	% affected by desertification	Arid zones (million ha)	% affected by desertification
<i>Pastureland</i>	150.5	84	25.6	72
Rain-fed crops	42.6	74	12.6	71
Irrigated lands	6.9	20	6.9	17
Total	200.0	80	45.1	63

According to WWF, about 30 million ha of land in the European coastal zone of the Mediterranean is undergoing desertification, affecting the livelihood of 16.5 million people. In Tunisia and Spain alone the costs of desertification have been evaluated at \$100 million and \$200 million a year respectively.

National data on the extent and nature of soil degradation are still very incomplete and relatively unreliable, but confirm the gravity and magnitude of the phenomenon; examples for various countries are provided ¹³:

Cyprus: 112,000ha of cultivated land was affected in 1995–1997 (56% of the total cultivated area); 42% of meadows and pastureland and 79% of arable land may be affected.

Algeria: 21% of cultivated land, or 8.4 million ha affected in 1985, 19% of meadows and pastureland (6 million ha) and 79% of forests and other woodlands (2.9 million ha).

Morocco: 89% of cultivated land, or 8.2 million ha and 13.4 million ha of meadows and pastureland affected (1995–1999).

Syria: 3.2 million ha in Syria are affected (1995–1997), including 1.1 million ha by water erosion, 1.6 million ha by wind erosion, 408,000ha by shifting dunes and 125,000ha by salinisation.

Tunisia: 3.5 million ha are affected, or 21% of the total land area (1995–1997). According to a recent study, 18 annual soil losses through various degradation processes are estimated at 37,000ha, of which 13,000ha would be irreversibly lost.

Turkey: Erosion is considered to be one of the most serious problems for the rural environment. Water erosion affects 57.1 million ha, wind erosion 466,000ha. In all, 73% of cultivated land would be affected, and 1000 million tonnes of soil would be lost each year. Countermeasure programmes began 25 years ago, they have so far treated only 2.2 million ha.

The main causes of degradation are deforestation, overgrazing, cultivation, overexploitation of biomass, industrial activities and public works. Available data and analyses do not indicate any reversal of trends. The baseline scenario of Blue Plan (2005) assumes that, with continued human pressure and inappropriate agricultural practices, desertification in arid areas in developing countries will continue to spread.

¹² Source: H.E. Dregne (1984) quoted in Plan Bleu 2003b

¹³ Source: National sources, Eurostat, Plan Bleu

The costs of degradation

Poor management of rural areas induces considerable costs, which remain largely under-evaluated. First there are direct costs to the rural population involved.

The drop in production capacity due to soil degradation (desertification) represents an average annual cost of about 3.000 million euros for the Mediterranean countries (

Table 4.5), based on an estimate that only takes part of the direct costs into account.

Table 4.5: Annual losses in agricultural production on degraded lands (million US\$)

	<i>Irrigated lands</i>	<i>Rain-fed cropland</i>	<i>Pasturelands</i>	<i>Total MED</i>
SEMC	356	1201	888	2445
NMC	293	338	129	759
<i>Total</i>	<i>649</i>	<i>1538</i>	<i>1017</i>	<i>3204</i>

Deforestation and degradation of pastureland and soils also lead to indirect costs that are much larger than the direct costs. One of the major consequences of desertification for the southern countries is the accelerated silting-up of reservoirs, considerably shortening their life-expectancy.

4.2.2 Artificialisation

Artificialisation designates the phenomenon of expanding built-up areas (i.e. urbanised areas, industrial or commercial zones, communication networks) to the detriment of natural or agricultural soils.

Artificialisation affects all Mediterranean areas, in particular formerly agricultural areas located on the outskirts of cities. The linear nature of coastal urbanization and the speed of the phenomenon are significant. Figure 4.5 below gives a good example for the coastline of Malaga region (Spanish Andalusia) and the significant change occurred in the urban fabric, agricultural land and forests that existed in the coastline (66km) between 1975 and 1990.

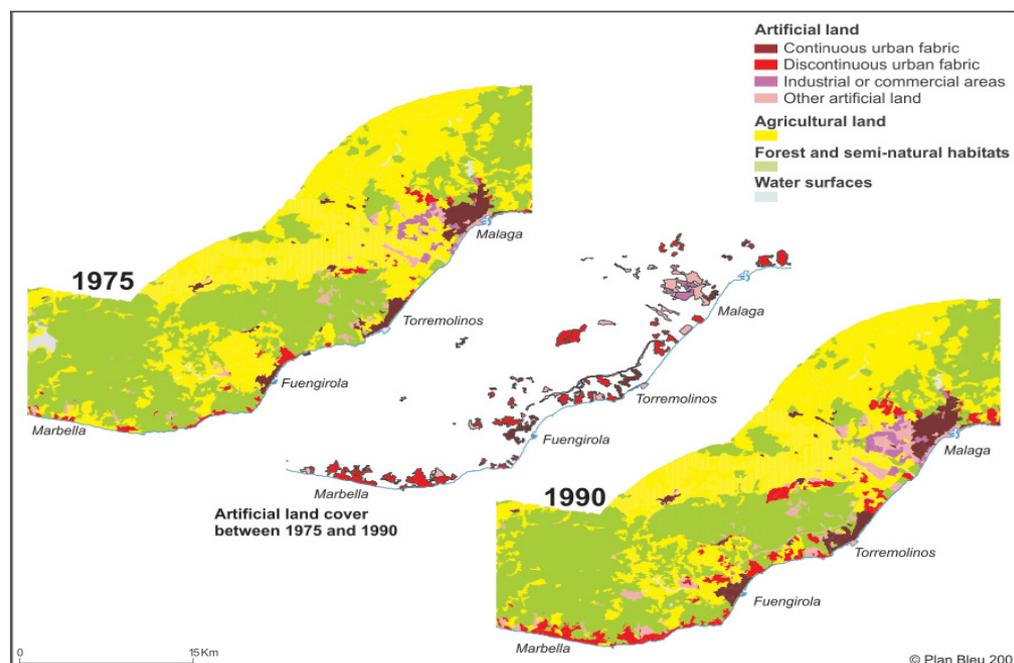


Figure 4.5: Artificial land cover between 1975 and 1990 in Malaga region (Andalusia)

On this 66km long strip that goes 10km inland, artificial land cover increased by 76km² (3.5% per year) at the expense of agricultural land (which lost 55km²) and forests and semi-natural environments (20km²). This increase in artificial land cover was especially high (50km²) on the coastal strip from 0 to 2km; the coast is now almost completely built-up along its entire length.

On the basis of the European LACOAST programme¹⁴, which supplies satellite images, changes in the Mediterranean coastal zones of Spain, France and Italy can be assessed (Figure 4.6). The spectacular growth of construction along the Andalusian coast (55% in 15 years on the 0–2km strip) brings it close to the average rate of artificial land cover in Mediterranean France and on the rest of the Spanish Mediterranean coast. The percentage of artificial land cover on the Italian coasts remains slightly lower but is increasing strongly (by 22% in 17 years in the 0–2km strip).

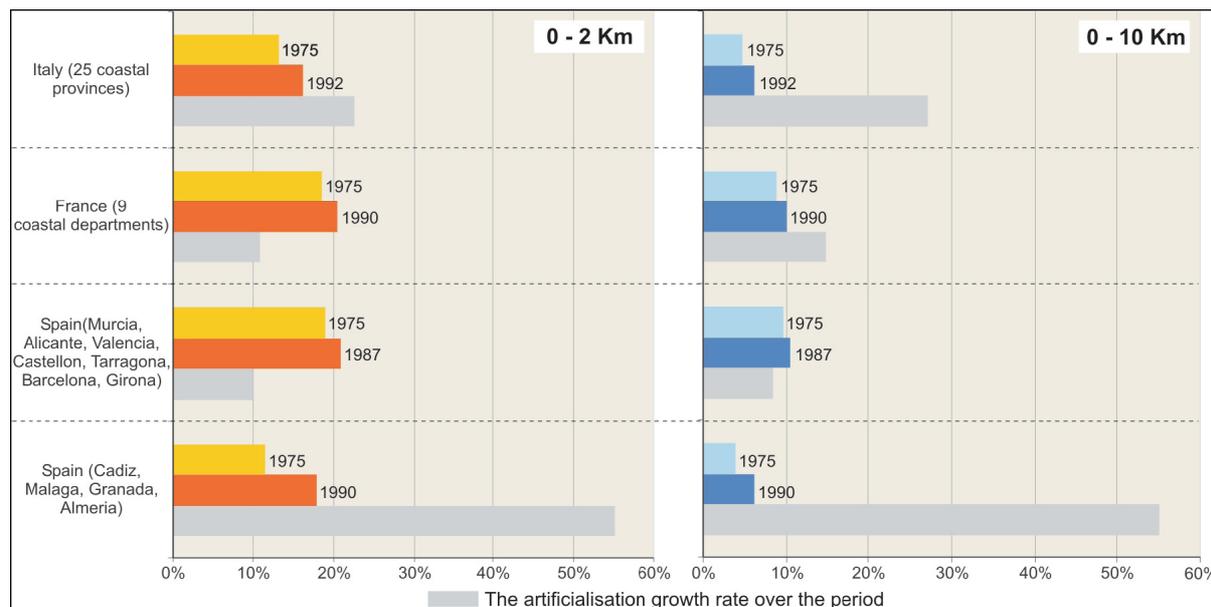


Figure 4.6: The increase in artificial land covering a few Mediterranean coastal regions (%)

Such comparisons are not available for the Balkans and the southern and eastern shores. Many studies and diverse information, however, *show the same trend in linear coastal urbanization*. Natural conditions sometimes impose this linearity, as in Alexandria, Egypt. When the land surface makes it possible and urbanization is not mainly the result of tourism, urbanization can develop in the form of a half moon, as in Sfax, Tunisia, where artificial land cover more than doubled between 1972 and 1994 at the expense of agricultural land.

The data show that the urbanized proportion of the 10km coastal strip was very high in 1995 in Spain and Lebanon (>50%, Table 4.6). According to Blue Plan projections, which assume that city-dwellers will in 2025 consume 1.2% more space than in 1995 (smaller households, increased incomes, increased infrastructures), the process would increase in Spain and Egypt (>70% by 2025) and even more in **Lebanon** (to saturation point).

¹⁴ Application of results- Results were used to report the State of Environment by the EEA (EU98 report) and for the report on Indicators by EUROSTAT. They were used as well to report by the ICZM Program and by their local demonstration projects.

Table 4.6: Urbanization of the coastal strip in 1995 and 2025 in a number of selected countries

Country	Mediterranean coastline (km)	Coastal fringe surface, 0–10km (km ²)	Total surface of coastal cities (km ²)		Ratio of total surface of coastal cities and coastal strip surface (%)	
			1995	2025	1995	2025
<i>Spain</i>	2580	25,800	14,182	18,886	55	73
<i>France</i>	1703	17,030	4042	5738	24	34
<i>Italy</i>	7375	73,750	28,320	33,366	38	45
<i>Greece</i>	15,021	150,210	3041	4072	2	3
<i>Lebanon</i>	225	2250	1287	2286	57	102
<i>Egypt</i>	955	9550	3116	7468	33	78

Data from night-time light radiation surveys show the part of luminous coasts, that is coasts with high density transport infrastructure or built-up areas: about 40% of the total coastal zone seems under some form of artificial land cover. There are large differences between countries; except for Greece and Cyprus, the percentages of build up areas are in general much higher on the northern and eastern shores (more than 60 or 70%) than on the southern shore (between 20 and 45%). These data must be handled with care, however, because the level of artificial land cover along roads and in villages is underestimated.

Based on these different methods, it is estimated that 40% of the coasts, or 18,000km, were already built up by 2000. This proportion is projected to increase between now and 2025 with population and tourism growth, and with the creation of approximately 500 new major facilities (including 43 yacht harbours, 200 energy plants and a large number of desalinization plants and industrial sites). The development will vary between regions. In coastal zones that are already urbanized and countries where the coastal land is now protected, urban overflow will take place mainly on a secondary line. Elsewhere, urbanization may increase the proportion of built-up coasts, especially in regions with a strongly developing tourism industry. Under the baseline scenario assumptions of the Blue Plan, an additional 200km of the coastline will, on average, eventually be under some form of artificial land cover each year, or about 5000 additional kilometres in 25 years. By 2025, 50% of the coast could thus be irreversibly built-on. In some countries, vast coastal conurbations or urban cordons may extend over tens if not hundreds of kilometres.

4.2.3 Coastal Erosion

Coastal erosion is affecting a significant proportion of the Mediterranean coastline. It is estimated that 20% of Europe's coasts are experiencing severe impacts from coastal erosion. Sandy coasts are most affected, including beaches and deltas.

In Mediterranean France 35% of the beach front has been affected by receding coast. In Italy, Spain and Greece 40%, 35% and 25% of recorded beaches, respectively, are affected. Between 1959 and 1997 the average annual coastal recession in Algeria varied between 0.3m and 10.4m. Similar situations are seen in other countries.

Coastal erosion has increased over the past few decades as a result of extraction and developments in the coastal zones and neighbouring catchment areas. Regulating nearly all the rivers beds in the entire Basin has, over the past 50 years, led to a 90% decrease in sediment reaching the sea.

Input from the Ebro in **Spain** has been reduced from 4Mt per year to 0.4Mt following the construction of dams. Before building the Aswan Dam in **Egypt**, the Nile deposited 57 million tonnes of sediment per year in Cairo. Today it is only 2 million tonnes per year, resulting in serious erosion of the coasts in the delta, all the way to the Sinai, the Gaza Strip and Israel. Sediment captured over the past 30 years (1962-1991) by the main dams in **Algeria** amounts to

about 264 million m³, and the dams in the wadis in **Morocco** that drain into the Mediterranean trap 93-96% of the sediment.

Moreover, extracting sand from beaches reduces the sediment load and increases the energy of rising water, which in turn accelerates erosion. In **Israel** it is estimated that more than 10 Mm³ of sand has disappeared because of sand extractions on beaches. And sediment deposited by coastal currents is far too little to fill this gap. Construction on the coastline itself (dikes, groins and water breakers) disturbs currents, leading to erosion or accumulation, locally amplified by degradation of sea grass. A loss of 25-35 m of beach has been observed in El Kantaoui in **Tunisia** since the end of the 1980s following the construction of the yacht harbour.

4.3 Air Quality

Air pollution is an important concern in many parts of the region. Its principal sources in most of the large cities include heavy motor traffic and large and small-scale industrial activity, often sited within poorer communities. Cement factories and other large scale facilities located close to urban centres may produce high local levels of particulates and other pollutants. In rural areas high local levels of particulates can arise from the production of construction materials, including quarrying, stone crushing and cement manufacture.

Topography, climate and the wind regime play a very important role in pollutant dispersion and concentration in the atmosphere. In the Mediterranean, where calm anti-cyclonic weather is frequent, town centres give rise to ascending warm air masses that are reflected back to the ground when they come into contact with colder air masses from above. During summer, such temperature inversions of atmospheric layers generate a quasi-permanent pollution 'dome' in many Mediterranean towns. This, for instance, is the case in Athens and its "nefos", Cairo, Genoa, Barcelona and Marseille-Berre. In addition, small particles are transported over long distances with the often short, erratic and unpredictable Mediterranean winds (land and sea winds). Air quality monitoring networks on the northern shore (essentially in Spain, France, Italy and Greece) assess air quality changes, pollutant by pollutant, in large cities every year. Regularly published statistics show decreasing concentrations of some pollutants over a decade, especially for SO₂ and NO₂.

More generally, over two decades European countries have gradually set up policies to reduce polluting emissions from different sources (heating, conventional power stations, some industrial processes, etc.), while motorized transport emerged as a major source of urban air pollution. Today, motorized traffic accounts for 27% of the fine particle emissions (PM10) and 52% of ozone precursor gases (in particular NO_x, VOC and CO). Despite a 30% reduction in PM10 emissions between 1990 and 1998, 40% of the European population is exposed to dangerous levels of this pollutant.

In the south and east, concentrations of pollutants are occasionally measured on a piecemeal basis. They have remained stable for 20 years, sometimes above the recommended norms. For instance, the SO₂ concentration in central Cairo has varied for 20 years between 100 and 300µg/m³ depending on the season and the measuring points. In Ben Arous (Tunisia) the average concentration was around 100µg/m³ in the 1998–2001 period (the limit-value recommended by WHO is 150µg/m³). Fine particle emissions are becoming a major concern. In Cairo, 2001 results from the air quality monitoring system showed PM10 concentrations in the central business area that, nearly every day, were 5–10 times higher than the standard threshold value. Although air quality monitoring networks are only slowly being put in place in southern cities, progress has been made in measurements and data analysis for the existing monitoring stations.

Controlled disposal of solid waste is largely lacking throughout the region, especially in rural areas and the poorer areas of major cities. Open-air incineration of municipal waste, currently practised in Egypt, Syria, the Lebanon, and Morocco, has been identified as a major factor in decreasing air quality, especially through dioxin emissions.

The increase in the daily mobility by urban expansion, as well as, the changing patterns of transport modes in the Mediterranean region has a major contribution to the increase of air pollution. Whereas

in the NMC the problem already exists, in the SEMC, the expansion goes along with the “automobile transition”.

Finally, energy produced from burning fossil fuels produces large quantities of atmospheric pollutants, in particular nitrogen oxides and sulphur dioxide, which are responsible locally for the degradation of air quality and globally for acid rain. Fossil fuels dominate Mediterranean energy provision. Burning of fossil fuels is responsible for degradation of air quality in large cities and around industrial areas. Such atmospheric pollution can be carried over smaller or larger distances and alter the chemical composition of the atmosphere.

It should be mentioned that both NMC and SEMC contribute to air pollution, however there is a clear difference in the responsibility share. The NMC, because of their economic activity, consumption patterns and lifestyles, contribute more to the degradation of air quality than the SEMC. However, economic development in the SEMC will also gradually increase their share.

4.4 Climate Change

The Mediterranean is a region that is very sensitive to, and potentially greatly influenced by global climate changes. A potential rise in global temperature may cause the rise of sea level with devastating effects, among others, on the coastal region and its islands.

One of the upheavals that could affect the Mediterranean area is climate change. An increasing body of observations is confirming the perception of a warming world and other climate changes linked to increased emissions of greenhouse gases (such as CO₂) from human activities (energy, transport, agriculture, etc.). The Intergovernmental Panel on Climate Change (IPCC) states that during the 20th century, average global surface temperature has increased by 0.6°C and average sea level by 1–2 mm per year, while CO₂ concentration increased by 31% between the pre-industrial period and 2000. The 1990s were undoubtedly the warmest decade of the last millennium in the northern hemisphere. The IPCC extreme global scenarios project global warming ranging from 1.4°C to 5.8°C, by 2100, an increase in average annual rainfall ranging from 5 to 20% and a rise in sea level of between 9cm and 88cm, with some regional differences. There is still uncertainty about the size and the speed of this warming and even more about its impacts on the planet during the 21st century. One major and additional uncertainty concerns the repercussions of global warming for regions such as the Mediterranean. The marine currents (horizontal and thermohaline circulation) might be altered at the global level and could in turn influence local climate towards a cooling trend. A recent study¹⁵ cautiously concluded that, according to some current models used by climate experts, a hypothetical average global warming of 1°C is projected to have the following effects in the Mediterranean:

- A warming ranging from 0.7 to 1.6°C, depending on the area. A warming has already been recorded in temperate Europe where annual temperatures have been increasing by 0.1 to 0.4°C per decade. Warming would be highest in the Mediterranean Basin with a rise in summer temperature twice that in northern Europe: harsh winters would disappear by 2080 and hot summers would be more and more frequent.

- Changes in rainfall: in winter and spring, an increase in rainfall in the north and a decrease in the south, all with a very wide uncertainty range, from -2% to +26%; in summer, a decrease in rainfall in the north and the south; in autumn, a reduction in rainfall in the west and an increase in the east and centre. A decrease in total rainfall has already been observed during the 20th century in some Mediterranean areas and in North Africa.

- An increase in the frequency, intensity and duration of extreme meteorological events (heat waves, summer drought, winter floods and mudslides in the north of the basin).

¹⁵ Medias, Plan Bleu, 2001

Climate change calls for preventive, curative and adaptive responses. With the United Nations Framework Convention on Climate Change and the Kyoto Protocol, the international community has tried, but not yet successfully, to achieve a global preventative response to reduce gas emissions.

Nevertheless, the mechanisms set up through this process (clean development mechanisms) to differentiate efforts between countries at various stages of development may well be applicable in the Mediterranean eco-region.

CO₂ emissions: Annual CO₂ emissions per capita in the Mediterranean were close to the world average in 1990 (4.8 tonnes per year compared with 4.3) but considerably greater by 2000 (5.4 tonnes compared with 4), which is a sign of development that is not husbanding natural resources. Libya, the EU Member States (including those that joined in 2004) and Israel are the largest emitters, while the Maghreb countries (excluding Libya) and Egypt emit relatively little (between 3.1 and 1.4 tonnes per capita). Average per capita emissions in the Mediterranean in 2000 were nearly half those in the EU-15 (5.4 tonnes per year compared with 9) and almost four times less than in the US (21 tonnes).

4.5 Flora - Fauna

The Mediterranean Basin is particularly rich in endemic flora and fauna. It is home to a number of plant communities, which vary with rainfall, elevation, latitude, and soils. The Basin has evolved over millions of years into a unique mixture of temperate and subtropical elements. The geological history of the area along with basin's location at the intersection of two major landmasses, Eurasia and Africa, has resulted in the current vast species variety and the variety of Mediterranean-specific biotopes. The Mediterranean is a major world area for migratory birds: about two thousand million birds, of 150 species, stop over in the Mediterranean wetlands or live there periodically. One of the reasons is the high compartmentalization of habitats because of the relief and the many islands.

The Mediterranean Basin's main flora characteristics are the following:

Scrublands: Scrublands occur in the driest areas, especially areas near the seacoast where wind and salt spray are frequent. Low, soft-leaved scrublands around the Mediterranean are known as *garrigue* in France, *phrygana* in Greece, *tomillares* in Spain, and *batha* in Israel.

Shrublands: Shrublands are dense thickets of evergreen sclerophyll shrubs and small trees, and are the commonest plant community around the Mediterranean. Mediterranean shrub lands are known as *matorral* in Spain, *macchia* in Italy, and *maquis* in France and elsewhere around the Mediterranean. In some places shrub lands are the mature vegetation type, and in other places the result of degradation of former forest or woodland by logging or overgrazing, or disturbance by major fires.

Savannas- grasslands: Savannas and grasslands occur around the Mediterranean, usually dominated by annual grasses.

Woodlands: Woodlands are usually dominated by oak and pine, mixed with other sclerophyll and coniferous trees.

Forests: Forests are distinct from woodlands in having a closed canopy, and occur in the areas of highest rainfall and in riparian zones along rivers and streams where they receive summer water. Mediterranean forests are generally composed of evergreen trees, predominantly oak and pine. At higher elevations Mediterranean forests transition to mixed broadleaf and tall conifer forests similar to temperate zone forests.

The general species richness in the Mediterranean Sea reflects on that of the primary production and chlorophyll a concentrations shown in the following Figure.

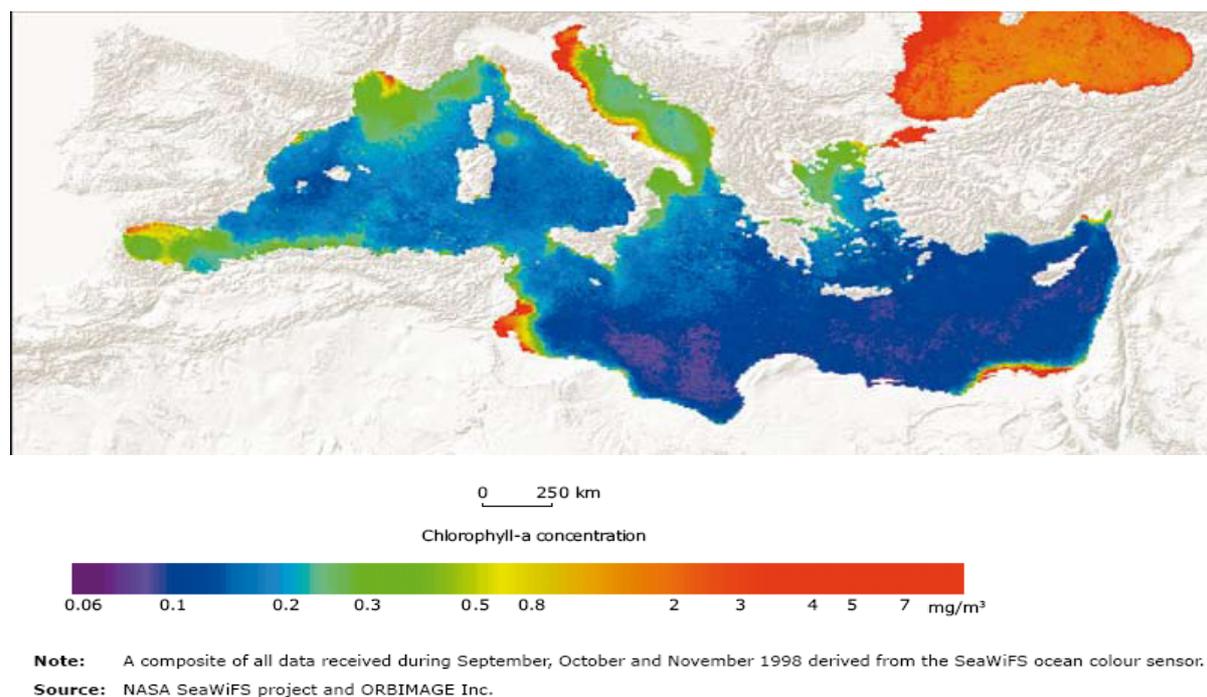


Figure 4.7: Mean surface chlorophyll-a concentrations in autumn 1998

Pastureland corresponds to the old saltus, and is still an important component of the Mediterranean eco-region, whereas it has almost completely vanished from the agricultural regions of northern Europe. Vast grazing lands (plateaux and steppes) are found mostly in Maghreb: Algeria with 31.5 million ha of 'permanent meadows and pastures', Morocco with 21 million, Libya with 13.3 million, Turkey with 12.4 million, Spain with 11.5 million and Syria with 8.4 million.

4.5.1 Woodland – Forest area

In the southern and eastern Mediterranean, data on woodland areas shows that, with the exception of Lebanon, the forested area is stabilizing in Morocco, Tunisia, Syria and Turkey (and even increasing in Algeria, by 1.3% per year) after a long period of decline. The following figure presents the wood cover in the Mediterranean region.

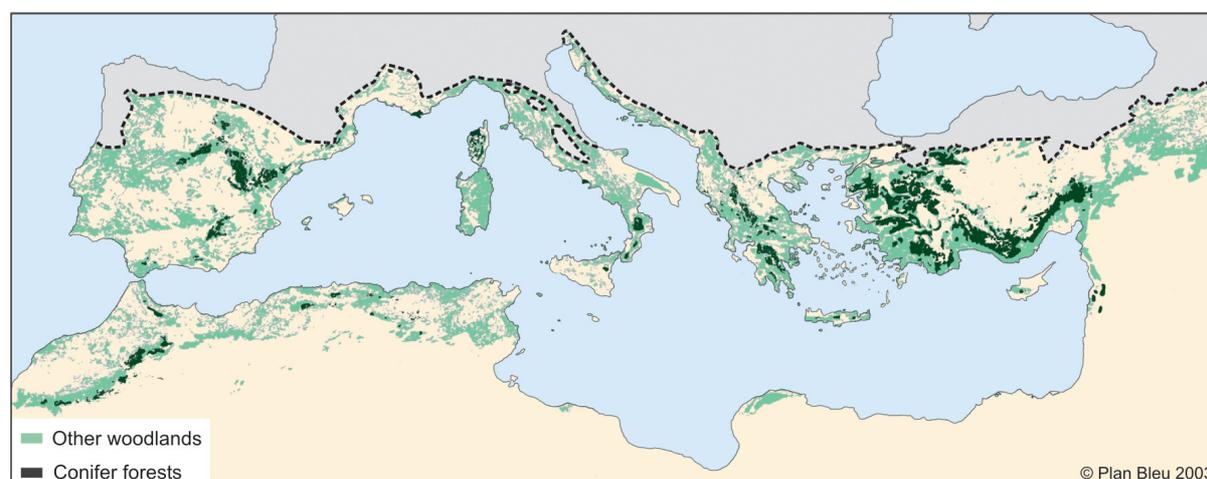


Figure 4.8: Wood cover in the Mediterranean region

Stabilization or increases in North Africa and the Near East result mostly from reforestation, as 'forest land' covers widely varying situations.

On the contrary, for natural forests, the picture is much less encouraging. In general, the naturally wooded area is declining, while the composition of the wooded land is degrading. Many forest areas with tall trees are changing into shrub lands such as macchia or garrigue, or habitats are being fragmented by increasingly large clearings, which nevertheless continue to be counted in the statistical category of 'forest land'.

There is thus a discrepancy between the impression (based on statistics) that the forest situation is generally improving in the SEMC, and the sometimes very alarming findings of many specialists who estimate that forest decline could reach 2–4% per year in a number of these countries.

According to the Blue Plan estimates, due to the 'land hunger', which is projected to continue in the south (and to a lesser degree in the east) until at least 2015, it is likely that the pressure on forest land will remain very strong and result in continuous and sometimes irreversible degradation, unless appropriate policies are developed.

In the NMC, recent changes have seen a large or very large increase in forest cover: 0.9% per year in Greece, 0.6% per year in Spain, more than 10% in 12 years in most of Mediterranean France (sometimes even 28%), and 3.7% per year in Cyprus between 1990 and 2000. This rapid increase in forest cover has partly been the result of continuous reforestation policies, very often carried out or subsidized by the state to re-occupy abandoned private land with marketable woody vegetation (mainly Austrian pine).

4.6 Biodiversity

The Mediterranean basin is an area of utmost bio-geographical originality, deriving from its variability of climate, land and the variable frontiers over time between tropical and temperate zones.

Its *terrestrial* biodiversity is of great value, constituting one of the main reservoirs of *plant* biodiversity in the world. The Mediterranean flora, comprises of about 25.000 species of higher plants, accounting for 10% of known species in the biosphere, found in an area smaller than 1.6% of the world area. Approximately 28% of these species are endemic species (Fredj et al., 1992). About 4.3% of the nearly 300.000 species of vascular plants known in the world are found in this region, as a result of the presence of these endemic species, the Mediterranean lags and the Sundaland. The plant biodiversity, includes 22,500 endemic vascular plant species.

Animal biodiversity is equally important, however, not much is known about the fauna. A large proportion of amphibian species in the area are endemic (35 out of the 62) and 111 of the 179 reptile species living in the area. The species richness of invertebrates, particularly insects, is significant since this ecosystem is outside the inter-tropical zone.

Marine biodiversity is especially rich, concentrated mainly in its shallow water areas. These areas contain 38% of the invertebrates, 75% of the fish and nearly all seaweeds. Almost 10.000 – 12.000 marine species have been recorded in this area (with 8.500 species of macroscopic fauna and more than 1.300 plant species). This equals to approximately 8 to 9% of the total number of species in the world's seas, presenting a remarkable density of biodiversity, as the area hosting them covers only 0.8% of the ocean surface. A total of 694 species of marine vertebrates have been recorded, including 580 fish, 21 marine mammals, 48 sharks, 36 rays and 5 turtles. It is useful to note that species are still being recorded, especially in unexplored water depths or areas. Some species such as the sea monk, *Monachus Monachus* and two species of marine turtles, *Caretta Caretta* have a symbolic value.

As far as marine plant life is concerned, 1289 taxa have been recorded.

Thanks to the agricultural biodiversity, the Mediterranean is one of the world's eight most important dispersion centres for cultivated plants. Agricultural biodiversity has been enriched over the ages

with many varieties of cereal, vegetables and fruit, plus horned cattle, sheep and goats. This rich genetic heritage is experiencing a remarkable change and is now facing a serious threat as a result of the abandonment of traditional practices.

Ecoregions

An ecoregion (ecological region), sometimes called a bioregion, is the next smallest ecologically and geographically defined area as "realm" or "ecozone". Ecoregions cover relatively large areas of land or water, and contain characteristic, geographically distinct assemblage of natural communities and species.

Mediterranean eco-regions are semi-arid, and often have poor soils, so they are vulnerable to degradation by human activities such as logging, overgrazing, and the introduction of exotic species. These regions are also some of the most endangered on the planet, and many eco-regions have suffered tremendous degradation and habitat loss through logging, overgrazing, conversion to agriculture, urbanization, and introduction of exotic species. The eco-regions around the Mediterranean basin have been particularly affected by degradation due to human activity, suffering extensive loss of forests and soil erosion, and many native plants and animals have become extinct or endangered. The Mediterranean ecoregions are the following:

- Aegean and Western Turkey sclerophyllous and mixed forests (Greece, FYROM, Turkey)
- Anatolian conifer and deciduous mixed forests (Turkey)
- Canary Islands dry woodlands and forests (Spain)
- Corsican montane broadleaf and mixed forests (France)
- Crete Mediterranean forests (Greece)
- Cyprus Mediterranean forests (Cyprus)
- Eastern Mediterranean conifer-sclerophyllous-broadleaf forests (Lebanon, Israel, the West Bank, the Gaza Strip, Jordan, Syria, Turkey)
- Iberian conifer forests (Portugal, Spain)
- Iberian sclerophyllous and semi-deciduous forests (Portugal, Spain)
- Italian sclerophyllous and semi-deciduous forests (France, Italy)
- Mediterranean acacia-argania dry woodlands and succulent thickets (Morocco, Canary Islands (Spain))
- Mediterranean dry woodlands and steppe (Algeria, Egypt, Libya, Morocco, Tunisia)
- Mediterranean woodlands and forests (Algeria, Morocco, Tunisia)
- North-eastern Spain and Southern France Mediterranean forests (France, Spain)
- Northwest Iberian montane forests (Portugal, Spain)
- Pindus Mountains mixed forests (Albania, Greece, FYROM)
- South Apennine mixed montane forests (Italy)
- South-eastern Iberian shrubs and woodlands (Spain)
- Southern Anatolian montane conifer and deciduous forests (Lebanon, Israel, Jordan, Syria, Turkey)
- Southwest Iberian Mediterranean sclerophyllous and mixed forests (France, Italy, Morocco, Portugal, Spain)
- Tyrrhenian-Adriatic sclerophyllous and mixed forests (France, Italy)

Protected areas

On order to protect coastal biodiversity, some areas have been classified as protected areas. Legal instruments have been mobilised over the last 30 years, for this purpose and formed several international treaties, protocols, regional agreements, and national laws. The total of coastal protected areas in the Mediterranean, including all IUCN categories, reached 1.15 million ha in 1995 (Figure 4.9). It increased six fold in 25 years. In 2003 there were 152 Specially Protected Areas (SPAs) under the corresponding Protocol, including 47 marine areas. Fourteen of the 152 SPAs are already included in the list of Specially Protected Areas of Mediterranean Importance (SPAMI) (Figure 4.10), including the 'Franco-Italian-Monegasque Sanctuary' for cetaceans, covering high-sea areas.

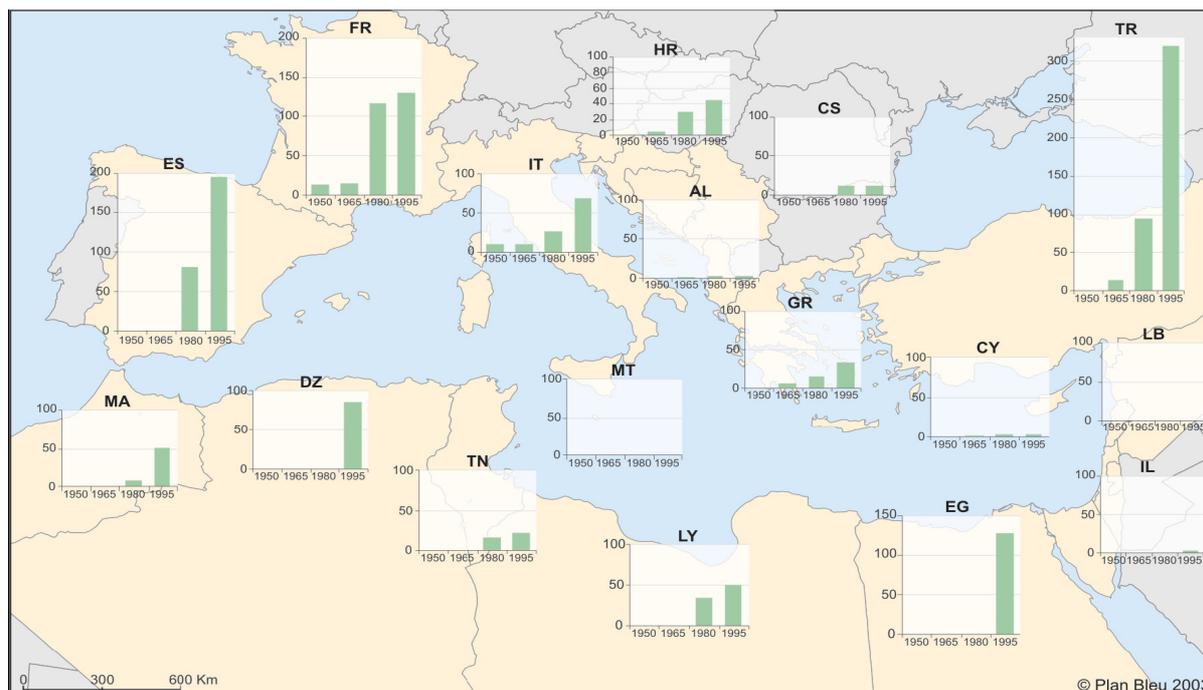


Figure 4.9: Protected coastal areas in the Mediterranean, 1950–1995 (thousand hectares)

Under the RAMSAR Convention on wetlands (RAMSAR 1971), (a treaty which provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources) 81 sites were classified as protected, in the Mediterranean basin. These sites structure the MEDWET network, encouraging specific regional action programmes.

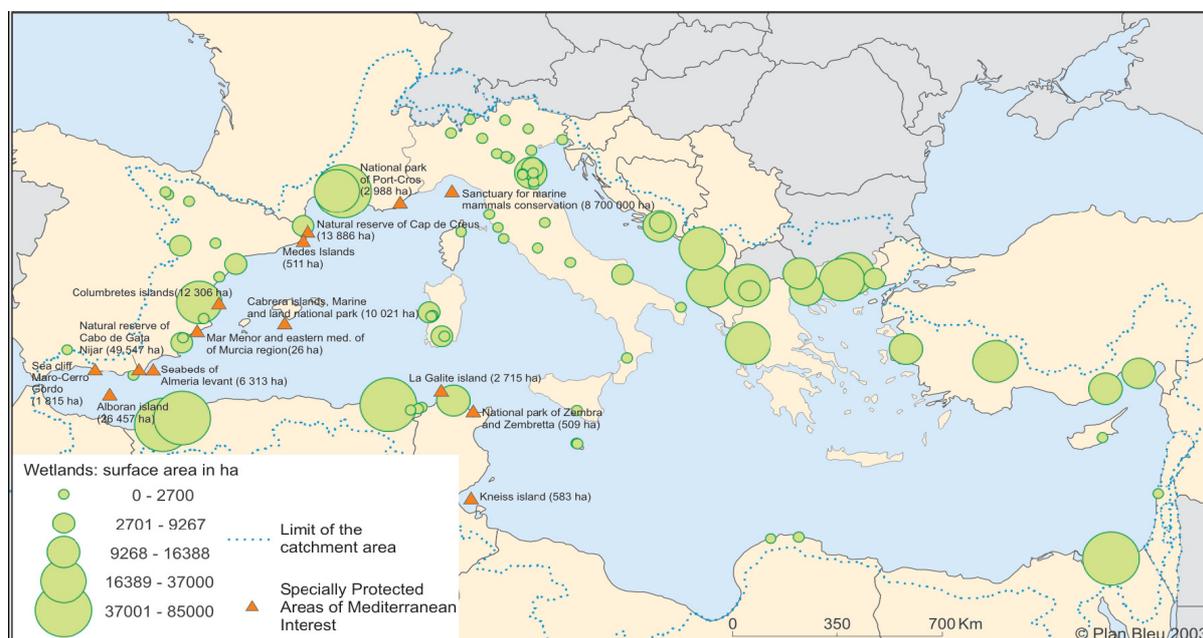


Figure 4.10: Specially Protected Areas of Mediterranean Interest (SPAMI) and wetlands classified through the RAMSAR Convention¹⁶

¹⁶ Source: Blue Plan from Medwet, 2003 and MAP Regional Activity Centre for Specially Protected Areas (RAC-SPA), Tunis (www.rac-spa.org)

It should however be noted, that the number of protected coastal areas (terrestrial and marine) is smaller than the one in the continental regions. This reflects the difficulty of classifying areas that suffer man made pressures, without directly controlling land property. Most protected areas are classified as protected, because of their ownership status, although it is believed that these areas should be more, given the high level of pressures imposed.

4.7 Cultural Heritage

The long history of the Mediterranean civilisations is reflected in the monuments of cultural heritage found in the Mediterranean. The Mediterranean countries have a valuable cultural, historical and landscape heritage, with the great majority of them being extremely old and rich in historical sites of exceptional architectural value. This exceptional heritage is found in coastal cities of all sizes. The shores also offer a great diversity of cultural and natural landscapes (islands and isles, lagoons and steep rocky landscapes). Quiet narrow streets and residential areas are common characteristics of Mediterranean residential areas, usually having big squares of crowd gatherings.

Landscapes are often mythical, having inspired many artists, having been presented in many films and idealized in paintings and literature. Its scenery offers inhabitants and visitors the beauty of the sea, the coastlines and the ancient towns, the vast horizons of the sea and the mountains, the wise mixture of culture and nature, variety of the relief, and vegetation that differs from that of temperate Europe.

The Mediterranean countries initiated a cooperative venture in 1987 between '100 historical coastal sites of Mediterranean-wide interest' (Figure 4.11), of which 48 are UNESCO world heritage sites.



Figure 4.11: The 100 Mediterranean historical coastal sites

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5. EXISTING ENVIRONMENTAL PROBLEMS RELEVANT TO THE PROGRAMME

5.1 Water Scarcity and Freshwater Demand

Water supply strategies to meet the water demands vary according to the different situations in the different Mediterranean countries. The forecasts of demand growth are highest in the generally water-poor SEMC. On the other hand, demand seems to have stabilized in most of the water-richer NMC, where efforts are directed more at reducing some disparities between regions or ensuring the quantity and quality of water supplies. Regarding the water quantity it is estimated that there would be across the whole region a continuation of large construction programmes for securing supply, the extraction of a larger share of renewable natural resources or, in countries with more limited natural resources, 'producing' water from so-called 'unconventional' sources such as sea-water desalination and the re-use of wastewater. The main problems encountered in the field are presented below.

5.1.1 Increasing withdrawals and waterworks

The level of pressures on resources can be gauged in a very approximate but indicative way by the *exploitation index* of renewable natural resources. This is defined as the ratio of 'withdrawals from renewable natural water resources to average renewable natural water resources', expressed as a percentage. Calculation of this index for the Mediterranean catchment basin (NV) for 2000 and 2025 highlights the variety of situations, as shown in the following Figure 5.1.

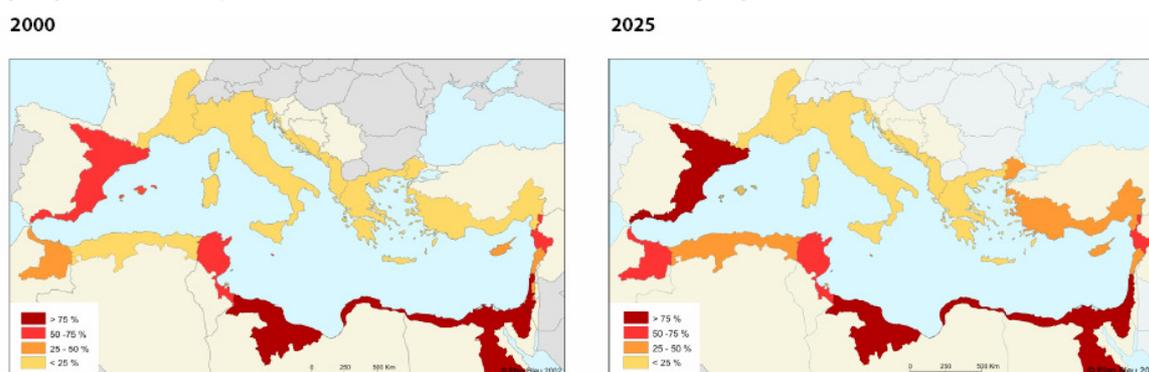


Figure 5.1: Variety states of withdrawals from natural water resources

From this figure it can be concluded that:

- A first group of countries, where water withdrawals are close to or exceed the average annual volume of renewable natural resources (exploitation index equal to or greater than 75%): Egypt, Israel and Libya, to be joined by 2025 by the Palestinian Territories and Spain's Mediterranean basins. The natural resources in all these countries are already very highly stressed and they will have to meet a growing part of their demand from other 'unconventional' sources.
- A second group of countries, where total demand represents a growing share of the average annual volume of renewable natural resources, but where the exploitation index will stay between 50 and 75% until 2025: Malta, Syria and Tunisia.
- A third group of countries, where the exploitation index lies between 25 and 50%, may nevertheless experience local or exceptional stress: Lebanon, Cyprus and Morocco, joined by Turkey and Algeria by 2025.
- A fourth group of countries, where the exploitation index is less than 25%: among them Greece and, France and Italy, where total demand is dropping.

The countries in the first group are drastically limited by the availability of their renewable natural freshwater resources and they must either re-use it several times or consider other sources. For the

other countries, the limitations on water supply are due less to the resource's availability than to the capacity to exploit it that is to carry out and manage the exploitation and the transport infrastructures for the water from its source to its end use. The exploitation index is increasing in all the SEMC and in Spain's Mediterranean basins, indicating a growing pressure on the already scarce resources, whereas it is decreasing in the northern-rim countries, essentially for demographic reasons. The overall index can mask stronger pressures locally or in dry years. Withdrawal is mostly from surface waters (80% of total withdrawals of average renewable natural resources in the Mediterranean, 87% in the southern-rim countries) and only 20% from underground waters.

This stress on resources appears even greater when it is realized that not all renewable natural resources are necessarily 'exploitable' by mankind. According to the assessments available in the various countries, only about 60% of the renewable natural water resource of the entire Mediterranean catchment area (NV, 360km³ per year) would be 'exploitable' – 56% in the north, 60% in the east and 79% in the south. Thus, only a little over half of the Mediterranean's natural resources (between 50% in Algeria and 93% in Libya) were considered 'exploitable' in 2000.

Three-quarters of these 'exploitable' renewable natural resources are irregular and require the construction of control structures to enable a year's water to be stored, either for use in the summer (for irrigation and tourism) or from one year to the next. Water demand in the Mediterranean catchment basins of very many countries is already more than twice the regular natural renewable resource and could not be met without such structures. This is the case for Spain, France, Syria, Israel, Egypt, Libya, Tunisia, Algeria and Morocco. More than 500 large-scale dams were built during the last century in the Mediterranean catchment basin providing a total of more than 230km³ of storage.

National strategies are still largely dominated by efforts to increase water supply through the building of large infrastructures intended to exploit a growing proportion of renewable resources, and no value is given to the large potential for saving water. The policy of building new dams will probably slow in the north, given the exhaustion of possible construction sites, but will be pursued in the SEMC to take greater advantage of surface waters. Underground waters will increasingly have to be extracted, including water from massive overuse for irrigation (Egypt) or even water from non-renewed aquifers (fossil water). Such reinforcing of water infrastructures will be linked to the development of water transfers between basins of the same country (e.g. Spain, Greece, Egypt) or between countries (e.g. France–Spain).

5.1.2 Unsustainable exploitation of an increasing proportion of water resources

With the more intensive use of renewable water resources, a growing proportion of water supply in some countries is being met in an unsustainable way. With increasing water demand, the underground water tables are sometimes overexploited, which lowers their levels excessively. Such 'overexploitation' has been diagnosed and inventoried in most Mediterranean countries, even if it has not always been defined according to standardized criteria.

An indicator of unsustainable water production (calculated on the catchment basin level of Mediterranean) shows that more than 10% of water supply is probably already being taken from unsustainable sources in Libya, Israel, the Palestinian Authority, Cyprus and Malta, and also in some regions of Spain. The situation at the country level (all Mediterranean countries) is even less 'sustainable', as some water-poor countries (group 1) are exploiting fossil water stocks. Overexploitation is added to fossil-water withdrawals to bring the unsustainable production indices in Libya, Tunisia and Algeria to 84, 22 and 35% respectively. In some ways, irregular resources created by dams could also be considered as unsustainable. Indeed, the silting-up of retained water in many dams gives them a limited life span while simultaneously reducing the number of possible sites for building new dams, so that future generations will need to develop other sources (it should be remembered that 70% of the renewable natural resources in the Mediterranean catchment basin are irregular).

The intensive exploitation of underground water can also affect aquatic ecosystems, especially local 'wetlands' associated with emerging sites, the conservation of which is desirable for many reasons.

This is particularly the case for the brackish water of coastal wetlands, the quality of which is very sensitive to the balance established between emerging underground water and sea water.

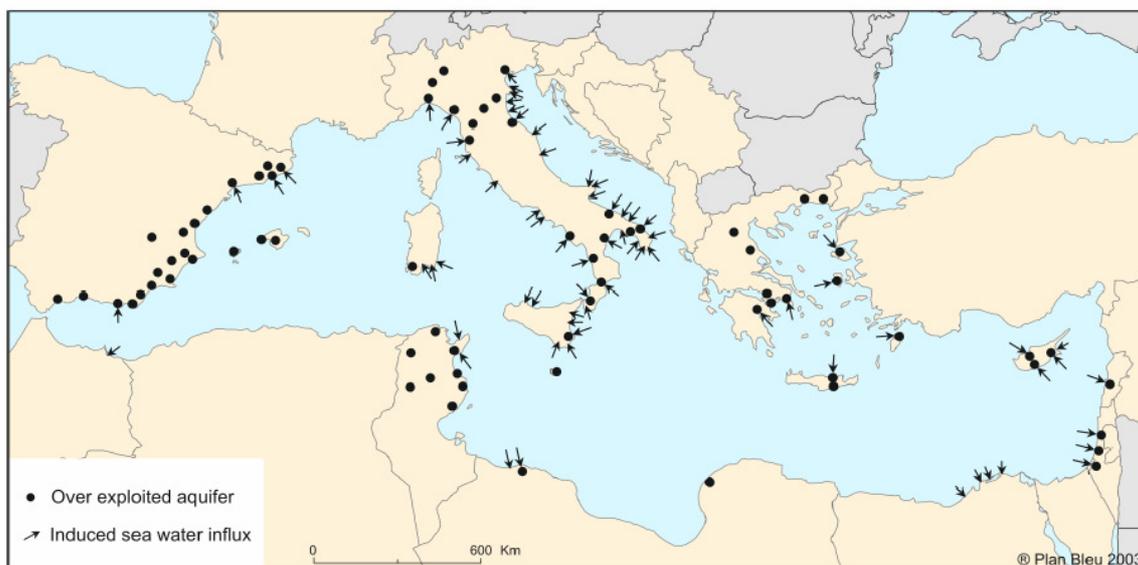


Figure 5.2: Sites with groundwater overexploitation and saline intrusion¹

5.1.3 Changes to water regime

Increasing withdrawals and the infrastructures that go with it have impacts on the natural water regime. The increase in water withdrawals has inevitably reduced the flow of many Mediterranean rivers, especially during low-water periods. Generally speaking, about 80 thousand million m³ per year are currently being taken from Mediterranean Basin rivers, which cannot fail to have an impact on the regimes and the functionalities of many rivers, especially in the south. When these rivers feed aquifers, the reduced flow can in turn have harmful effects on underground water resources.

Water projects also disturb water regimes. Reservoirs may well be useful for regulating water, but these installations and their operations also have negative effects on downstream regimes: reducing average and low water flows; interrupting the continuity of and degrading aquatic ecosystems; impacts of water release and decennial emptying (for example impacts in the Rhone Valley on local wells and boreholes from plugging caused by reservoir emptying); attenuating the positive effects of flooding, disrupting and blocking the movement of sediments (reservoirs are silted-up but deltas are depleted and made even more vulnerable to erosion by the sea); and loss of the retained water through evaporation.

River-bed water developments can also cause considerable lowering of alluvial surface-water levels; this is the case with the 'run-off canals' downstream of hydroelectric plants. Poor irrigation practices (especially in alluvial plains where drainage is difficult) can be the cause of an increase in salinity and be responsible for the irreversible loss of millions of hectares of soil. These regime changes are aggravated by other factors such as changes in land use in the catchment areas or the exploitation of gravel in active river beds, which leads to considerable drops in river levels.

Summarising the above it can be concluded that the projections of water demands and resources thus show a highly contrasting situation depending on the country. The situation is particularly worrying for most of the SEMC, expected to experience the largest growth in water demand. Some of them are already in water shortage situations and exploit their resources in an unsustainable way. The predictable increase in tensions over water resources is expected to result in geopolitical, environmental, social and economic risks that could limit the prospects for future generations by

¹ Source: RIVM RIZA, 1991; national sources compiled by J.Margat for the *Blue Plan*

altering some resources in an irreversible way. The NMC have less stressful 'supply and demand' balance sheets. On the other hand, they are more and more concerned about degradation of water quality, which boosts supply prices and the effects of which on health and ecosystems are still poorly known.

5.2 Pollution of Coastal Waters From Land Based Sources

Land based sources is one of the major pollution sources on the Mediterranean coast. Its influence on the marine coastal environment directly or indirectly affects human health, the stability of the marine ecosystem and the economy of the coastal zone (impact on tourism and fisheries). The problem is exacerbated due to the rapid growth of many coastal cities and towns, especially on the southern Mediterranean coast due to urbanisation and tourism. Stress on water resources and the increase in pollution thus have considerable environmental impacts, which, in turn, limit the quantities of water physically available to meet any additional increases in demand. But they also increase the vulnerability of water supplies by increasing costs, health risks and conflicts between users.

The major environmental problems in the coastal zone of the Mediterranean countries can be summarised in the following

Table 5.1 as follows:

Table 5.1: Major environmental problems in the coastal zone of the Mediterranean countries

	Urban effluents	Urban solid wastes	Industrial effluents	Oily effluents	Stockpiles of toxic chemicals	Coastal eutrophication	Coastal urbanisation
Algeria	+	+	-	-	+	+/-	+/-
Cyprus	+/-	-	+	-	-	-	+/-
Egypt	+	+	+	+/-	-	+	+
Greece	+	+	+	-	-	+/-	+/-
France	+	-	+	-	-	+/-	+
Italy	+	-	+	+	-	+	+
Israel	+	-	+	+/-	-	+	+
Lebanon	+	+	+/-	-	-	-	+
Libya	+	+	+	+/-	-	-	-
Malta	+	+/-	+/-	-	-	+	
Morocco	+	+	+	+	+/-	+/-	+
Palestinian Authority	+	+	+	-	-	+/-	+
Spain	+	-	+	-	-	+/-	+
Syria	+	+	+	+	-	+/-	+/-
Turkey	+	+	+	+/-	-	+	+
Tunisia	+	+	+	-	-	+/-	+

Note: +important, +/- medium, -small problem²

² Source: EEA Report No4/2006

It can be summarised that the degradation of water quality due to land-based sources arises from urban activities (sewage and urban run-off, unsustainable waste practices,) industrial activities (toxic substances such as persistent organic pollutants (POPs), heavy metals, hazardous waste), and agricultural discharges.

Impacts from sewage and urban run-off: Sewage generation from coastal cities is one of the major pollution problems on the Mediterranean coast. The sewage collection system is often only connected to parts of the urban population, which leads to direct discharge of untreated wastewater into the sea through other outfalls. The major pollutants of municipal wastewater are: organic matter (measured as BOD₅ and COD), suspended solids, nutrients (nitrogen and phosphorus) and pathogenic micro-organisms. Other pollutants such as heavy metals, petroleum and chlorinated hydrocarbons are also present in the wastewater.

Regarding the *particulate organic pollutants* discharged into coastal waters around outlets of insufficiently treated wastewater lead to an excess of dissolved oxygen consumption, resulting in high environmental degradation of coastal waters. *Microbiological pollution* of coastal waters and substances produced by pathogenic micro-organisms in the sea can cause diseases in humans and marine animals. Although considered an important problem in the Mediterranean, this type of contamination remains little known. Monitoring the pathogenic agents is limited to measuring faecal, coliform and streptococcal contaminants, usually by measuring the BOD. The main impact on human health concerns gastric-intestinal infections from seafood, including salmonella, gastro-enteritis and hepatitis. Some marine animal diseases have been reported, related to infection by a morbillivirus (fish and sponge diseases, the deaths of dolphins in the 1990s). Using biomarkers should make it possible to improve the very incomplete monitoring and assessment systems. The primary cause of contamination is the discharge of untreated domestic and industrial wastewater.

As a result, all coastal areas in the vicinity of large towns or cities which do not efficiently operate a wastewater treatment plant are receiving high loads of nutrients and may suffer the consequences. The coastal cities are also sources of nutrients. Rivers are also important transporters of nutrients and suspended solids since they drain basins with agricultural activities (fertilisers) and urban centres. It has been estimated that 605,000 tonnes of N-NO₃ and 14,000 tonnes of P-PO₄ are entering annually (1995) into the Mediterranean Sea from the rivers Po, Rhone and Ebro (UNEP/MAP, 2003a).

The resulting BOD load in the Mediterranean coastal pollution hot spots was estimated at 805,000 tonnes per year in 1999. Discharges from coastal cities participate in the trophic imbalances of coastal waters it was estimated that five cities (Alexandria, Naples, Izmir, Barcelona and Beirut) produced a quarter of the total BOD load in the Mediterranean. Total industrial discharge for the coastal hot spots was estimated in 2000 at 410,400 tonnes of BOD load per year. With growing urban and tourist populations, estimated at 2.2% per year in the south and 2.8% in the east, domestic and industrial discharges may see a large increase. In the north they may fall by 0.4% per year because of the decreasing population. With tourism developing, especially yachting, discharges may increase considerably if regulations are not kept up to date. Recent survey conducted in the frame of the Strategic Action Programme (SAP) of UNEP identified 131 hot spots along the Mediterranean coastline (Figure 5.3. -UNEP/WHO, 2003). From these hot spots, 26% are urban, 18% industrial and 56% mixed (urban and industrial) (UNEP/MAP, 2003).



Figure 5.3: Priority pollution hotspots in the Mediterranean coastline³

This form of pollution directly affects the quality of bathing water, creating a public health problem. Following Directive 76/160/EEC, the quality of coastal bathing waters in the EU has improved steadily. In the Mediterranean countries of the EU, compliance with standards (7/160/EEC) reached nearly 100% in Greece, more than 98% in Spain, 96% in Italy, and just 88% in France where 9% of the bathing areas are insufficiently tested. In the other countries there has been an increase in the number of sampling stations (e.g. in Tunisia).

Impacts from unsustainable solid waste practices. Coastal cities' population grows continuously during the last decades in all Mediterranean countries for economic and social reasons.

Although waste collection may be satisfactory in some countries of the northern Mediterranean coast, inefficient collection is been recorded in almost all other areas. In SEMC countries, uncollected solid waste may represent more than 30% of all generated waste in some cities, leading to continuous littering of streets and countryside and to potential health hazards for the population. In these areas, a special problem is related to the littering with plastic bags, which due to their resistance to degradation and light weight may be scattered to large areas around the cities. It is generally recognized that there is little environmental conscience for the protection of public space from littering and the solution lays in the improvement of the collection efficiency, as well as the raising of the environmental awareness of the population.

In the region, deposition of collected solid waste is done on sanitary landfills, official dumping sites without any sanitary measures, or on unofficial wild dumps. In most SEMC countries, no real sanitary measures are taken during solid waste deposition leading to serious environmental stress. In most cases, solid waste dumps are generating bad smells, as well as toxic fumes due to self ignition. Since no soil cover or compaction is practiced in most cases and no fences are erected, lighter wastes (such as plastic bags and paper) fly away because of the wind littering great areas around the dumps. A special problem in relation to the marine environment is encountered in the southern and eastern Mediterranean coasts, where dumps are located on the coastline (Al Hoceima [Morocco], Al Bassa [Syria], Tripoli [Lebanon], Saida [Lebanon], Ganfuda [Libya]). In most of those cases, solid wastes enter into the sea littering the marine environment, while leachates contaminate coastal seawater.

³ Source: MAP/MEDPOL; Margat, 2004.

Unofficial scavenging for the recuperation of valuable materials from solid wastes is been traditionally performed in many countries of the southern and eastern Mediterranean coasts, usually without any protection of the workers. On the other hand many countries have established compost plants to produce organic fertilizer from municipal solid wastes. Although this investment seems very promising because it combines waste minimization and production of organic fertilizer valuable to the increasing farming activity, it is not always very successful. The plants in some cases did not operate at their nominal capacity, but the main drawback was the bad quality of the product which contained glass fragments and other sharp pieces, as well as pieces of plastic, because of poor segregation of waste to be composted. As a result, farmers, which were initially interested in using the organic fertilizer, they gradually became disinterested in using it on their fields.

Summarising the above it can be concluded that accumulated waste is a source of environmental pollution: marine animal deaths, chemical contaminants, aesthetic impact and repercussions on fisheries. Waste dumps have very large impact on environmental health (through soil, air and groundwater contamination). Run off drains toxic matter from household waste (leach ate), which then flows into surface and groundwater systems. Open dumpsites often generate emissions of nitrogen oxides and methane from pockets of anaerobic fermentation. Pockets of methane trapped in the subsoil can prove dangerous when coming into contact with inflammable sources. This is why waste dumps are frequently places where fires break out in the Mediterranean, for example the big fire around Marseille in 1997 and in Portugal in the summer of 2003.

Poor management of household wastes finally results in negative human health impacts. For instance, open air incineration of municipal waste, currently practised in Egypt, Syria, Lebanon and Morocco has been identified as a major factor in decreasing the air quality, especially through dioxins emissions.

Impacts from industrial discharges (release of toxic substances such as persistent organic pollutants (POPs), heavy metals, hazardous wastes).

Industrial discharges are the largest source of chemical pollutants, entering coastal waters either directly or via rivers. Pollution risks are expected to increase, given industrial development in the SEMC, with major discharges into the sea and rivers and a low level of pollution clean-up. In the northern countries, there is already clear evidence of contamination by PCBs, PAH and solvents reaching the Mediterranean via the Po, Ebro, Rhone and other rivers.

Of the chemical substances discarded into coastal waters, persistent toxic substances (PTSs) are especially worrying because of their persistence and their toxic effect on animal and plant life if concentrations exceed certain thresholds. The flows of industrial heavy metals, although low compared with those generated by natural processes, mercury increased by 300% between 1950 and 1990, and this trend has only recently been reversed. Most of the input comes from run-off and the atmosphere, the major contributors being Spain, France, Italy and Greece, with 70% of the lead input and 60% of cadmium. Organo-chlorides are the largest group of persistent organic pollutants (POPs). They have a high resistance to degradation and accumulate in the fatty tissues of marine organisms. Available information does not make it possible to highlight overall trends, but local levels of PTS can reach toxic thresholds for plants and animals near industrial areas and estuaries. Hydro-carbons, particularly polycyclic aromatic hydrocarbons (PAHs) are persistent and originate from land-based sources (incomplete combustion processes and industrial effluents). They can be much larger in volume than the operational and accidental discharges of maritime origin.

Studies measuring the impact of PTS on *human health* in the Mediterranean are rare, especially for the southern and eastern shores. Food, especially contaminated sea food, is the source of 70–95% of infections. PTS are difficult to detect in food, but their effects can be very serious in the long run. One-off studies report levels of PTS ingestion that can go well beyond the standards set by the WHO. In Italy, for example, daily intake of PAHs through food has been estimated locally at 3 micrograms per day per capita (1.4 micrograms of carcinogenic PAH per day), or 100 times more than the tolerated daily intake. The effects of accumulating persistent substances in the food chain and fish oils are particularly important for human health, but also have serious and long-term *economic consequences*.

Impacts from agricultural discharges: Between 1965 and 1995 nitrate concentrations in the western Mediterranean increased by 0.5% per year while phosphate concentrations were reduced by 1%, so changing the N/P ratio and thus promoting eutrophication of the water body. Eutrophication has as side effects: proliferation of planktonic biomass, discolouration of the water, reduction of water transparency, reduction of dissolved oxygen in deeper waters and, in extreme cases, occurrence of toxic algal species. Three-quarters of this problem, which many experts consider to be of great importance for the Mediterranean coastal waters, is caused by various diffuse agricultural discharges. Farming discards more than 1.6 million tonnes of nitrogen (N) per year and nearly 1 million tonnes of phosphorus.

The northern shore appears to be more affected, with repercussions for biodiversity and tourism, but it is also the most closely monitored shore. The input of nitrates by the 80 main rivers flowing into the Mediterranean doubled between 1975 and 1995. Phosphorus has stabilized after its use in washing detergents was restricted.

Eutrophication could spread to the southern and eastern shores with agricultural intensification and urban growth. Agricultural projections indicate that the use of fertilizers could increase between 2000 and 2025 by as much as 70% in the east (mainly in Turkey), 50% in the south and 5% in the north. Rational agriculture, making more efficient use of fertilizers, could limit the risks of excessive soil additives, and thus the diffuse discharges of agricultural origin. Rivers that drain major catchment areas with intensive agriculture (the Arno, Po, Ebro, Pinios and Nile) are the main vectors for transmitting these pollutants to the sea. The input of nitrates by the 80 main rivers flowing into the Mediterranean doubled between 1975 and 1995. Phosphorus has stabilized after its use in washing detergents was restricted (Table 5.2).

Table 5.2: The flow of nutrients carried by river water into the Mediterranean Sea⁴

	N-NO ₃ flow (Kt N / year)	P-PO ₄ flow (Kt N / year)	TP flow Kt P / yr	N-NO ₃ /P-PO ₄ ratio
< 1975	333	14	36	23.4
1985 - 1990	469	38	94	12.5
> 1995	605	14	36	42.2

5.3 The Adverse Impact From Tourism

The adverse impact from tourism is a major issue as the Mediterranean attracts one-third of global tourism. The rich culture and coastal assets are main tourism attractions in many Mediterranean countries. Tourism is important for the economies of Mediterranean countries but the development of the sector also requires near-shore land and places considerable pressure on coastal areas and natural resources.

In many Mediterranean countries, beaches for international tourism and local recreation have been degraded by sand mining, construction, and sewage discharge.

The tourist consumption patterns and the seasonal aspect result in an overextension of facilities and services that are costly in terms of space, investment and operations. The construction of holiday homes, many of which eventually tend to become permanent residences, is one of the important causes of land consumption. The most important impact however, comes from the construction of tourist facilities (hotels, yacht harbours) on the coastline itself contributing to coastal erosion and the degradation of coastal ecosystems.

In addition, the international tourist consumes on average more water and energy and produces more waste than the average domestic tourist and resident.

Further to that, because tourists use various modes of transport to go to their destinations and to move in destinations (plane, train, boat and road) contribute to CO₂ emissions.

⁴ Source Blue Plan from MAP/MEDPOL data

Another factor that needs to be mentioned is also that tourists require having good quality services at their destination. This increases the requirements for their comfort during their stay and the provision of services against weather conditions (swimming pools, air conditioning), which all of them contribute to artificialisation of spaces and the consumption of natural resources. On the other hand, as tourists require having a 'good environmental quality' at their destinations, this promotes good cleanness and hygiene (elimination of medical problems and waste and wastewater discharges) and good bathing conditions (elimination of oil spots, bacteriological contamination and eutrophication).

5.4 Uncontrolled Urban Sprawl And Construction in Near Coastal Areas

This linear urban sprawl results in many impacts along the coasts, including pollution, traffic congestion, degraded landscapes and coastal ecosystems, and increased coastal erosion.

One of the consequences of coastal urbanization is an increased vulnerability to flooding, which can be extremely serious along some coastlines.

Impacts on ecosystems and landscapes are virtually irreversible. Although they will probably increase considerably between now and 2025, the degree of seriousness will depend on the capacity to implement appropriate responses⁵.

5.4.1 Loss of good quality agricultural land

One of the most serious consequences of urbanisation is the irreversible destruction of land in areas with strong farming potential or strong ecological value. Such is the case in countries *like Syria, Egypt and Algeria* where the loss of farming potential makes them more and more dependent on food imports. In city outskirts the development of man-made surface area (industrial and business zones, transport networks and other infrastructures, legal or illegal landfills), extends the destruction of soils well beyond effectively built-up areas.

Indicative examples of agricultural land of good quality being lost as a result of urbanisation are provided ⁶:

- Between 1960 and 1990 **Egypt** lost 315,000 ha of high quality land (10,000ha per year), especially in the Cairo region, losses that have continued since 1990 at about 12,500ha per year. In 42 years these losses represent nearly 14% of agricultural lands (recorded in 1994).
- In **Malta** the percentage is 37% in 90 years.
- In **Lebanon**, 7% of cultivated land and 15% of irrigated land has been lost over the past two decades.
- In **Turkey**, 150,000 ha of high quality land were lost between 1978 and 1998 (or 0.54% of the land).
- In **Algeria**, 140,000ha have been lost around greater Algiers.
- In **Cyprus**, 3,200 ha around Nicosia in 16 years (between 1985 and 2001).
- In **Tunisia** the growth of Sfax since 1992 has taken 9,000ha of vegetable gardens.
- In **France** half of market gardening and horticulture is located in 'urban centres' (urban units of 5,000 jobs or more). These centres have lost 200,000 ha of suburban agricultural land in 12 years (between 1988 and 2000), or a 12% UAA loss (six times more than losses in intermediate or isolated rural areas).

⁵ Blue Plan, 2005.

⁶ Plan Bleu and from various national sources

- In rural areas in **Israel**, due to their scarcity, construction activities drastically increased in the 1990s following town dweller demands for country houses, the demand of farm workers who had to abandon farming due to increased labour productivity, and, above all, the demand created by the large number of immigrants from the former USSR (nearly 600,000 arrivals between 1989 and 1995).

The loss of cultivated land is especially rapid in coastal areas. On the Marbella–Malaga Andalusian coast, for instance, the percentage fell from 26 to 9% (a loss of 64%) in 15 years (1975–1990). On France's Côte d'Azur (a 2-km strip), it fell from 12 to 8% of total cultivated land in the same period (a loss of one-third). In contrast, forest areas, being more efficiently protected, have resisted better.

Such losses are projected to continue, especially on coastal plains, resulting in a nearly irreversible loss of about 1.7 million hectares of high-quality agricultural land between 2000 and 2025 (a N1 country-level figure, to be compared with 20.5 million irrigated ha), as well as highly valuable natural areas. Apart from the loss of agricultural potential (and job possibilities in the long term), this trend has considerable consequences for ecosystems, landscapes and the living environment. By gradually destroying rural areas that surround cities, both separating and linking them, it reduces the infiltration capacity of soils (reduced permeability), thus contributing to increased risks of flooding. It also fragments ecosystems and reduces the area still covered by natural habitats, with heavy consequences for biodiversity.

5.4.2 Increase of flooding risk as impact from artificialisation

Land artificialisation implies more or less extensive sealing of the soil, which restricts the infiltration of water into the ground and the replenishment of the water tables, the whole increasing the quantity of water to be evacuated by run-off. In Israel, for example, nearly 0.4% of the country's surface area is already sealed.

The rainfall regime in the Mediterranean shows wide variations that directly influence the water regime and turns many river beds into torrents at the end of the summer. Maximum rainfall is recorded in the winter and autumn in the north-west of the basin. The irregularity of rainfall is also the cause of violent downpours in the whole basin (except in Egypt and Libya) and floods that are often sudden and catastrophic.

Management deficits for watersheds, sealing of soils by urban sprawl and infrastructures, channelling and other water works in rivers and a reduction of natural areas for water spreading, all explain the growth in hydro-meteorological risks (floods and landslides), which are particularly serious in the region.

In Italy, for example, it has been estimated that floods and landslides in the past 20 years have impacted on more than 70,000 people and caused damage estimated at a minimum of 11,000 million euros.

Unless adequate provisions are made for evacuating run-off water in cities and their surrounding areas, manmade modification of the land and especially construction on floodable areas increases the frequency and intensity of flooding and consequently the magnitude of the damage done by it.

Recent examples of disastrous floods are given below ⁷:

- At the southern French town of Nimes on 3 October, 1988 when over 420 mm of rain fell in six hours on the hills that surround the town, causing 11 deaths and 610 million euros worth of destruction (E. Roose, 1991).
- In Italy rains of a lesser magnitude caused considerable damage and a few deaths in Genoa in the winters of 1993-94 and 1994-95 (A. Conacher, 1998).

⁷ Threats to Soils in Mediterranean Countries, Plan Bleu, 2003

- In 2001 in Algiers “diluvian rains fell on the capital on Saturday, 10 November and submerged numerous districts of the city, in particular the Bab-El-Oued quarter. Torrents of mud raced down the hills above Bab- El-Oued, sweeping away hundreds of cars and trucks using a steep motorway that leads to this western Algiers suburb.” The human toll: on 28 November the Ministry of the Interior announced 757 deaths, 706 of which were in Algiers, and 150 missing persons.

5.5 Coastal Erosion

Coastal Erosion is a common problem in several countries during the last decades, while climate change is expected to worsen the situation. In Algeria and Tunisia entire beaches have disappeared and recovery requires serious interventions and investments.

Erosion can have considerable economic consequences. It is estimated that in Europe some 3.200 million € were spent in 2001 to deal with the impacts of erosion in an ad-hoc manner rather than support a pro-active and preventative approach⁸.

The near disappearance of the beach in Tangiers in Morocco in the 1990s after the construction of the fishing harbour and commercial port, resulted in the reduction of tourism. The destination lost 53% of its international tourist night-stays, causing a substantial loss of income from tourism (US\$20 million per year), tourist transport (40%) and loss of income for craftsmen (25%). In Italy, 1.9 million m³ of sand was artificially deposited between 1983 and 1993 on 13.8km of beaches in Emilia-Romana.

According to the Blue Plan (projection for the year 2025), an increase in coastal erosion can be expected, providing a good reason to think about the shape of the coastline in 100 years. The main contributors will be the projected growth in coastal infrastructures, construction and extraction of materials along the coast, the construction of new dams on rivers, and the degradation of marine sea grass beds.

Failure to come to grips with erosion implies adverse impacts on biodiversity (squeeze of coastal habitats), weakening of natural – as well as artificial – defenses and hence an increase of coastal flooding risk, as well as reduced economic opportunities especially in tourism. Although erosion and accretion are natural phenomena, ill-planned human activities aggravate the occurrence and consequences of coastal erosion.

5.6 Forest Fires

Given the projected fall in the number of farmers in the future and the change in farming practices, the rapid growth of forests and shrub lands is expected to continue at a similar rate.

This ‘repossession’ of rural areas by a wooded biomass with positive economic and ecological effects is contrasted by negative effects such as the formation of ‘closed’ landscapes or under-forest layers with low differentiation.

But above all, the resulting increased risks of major forest fires have and will continue to have the most important ecological, economic and human impacts at both social and political levels⁹.

Recent assessments of the total economic value of Italian forests have shown that the production of timber accounts for only 9% of the total value of forest use, compared with 58% for the water cycle, 11% for ‘hobbies, mushrooms and hunting’, 10% for firewood, 3% for grazing, 3% for sequestering carbon and 5% for other positive functions. In Morocco this value is broken down as

⁸ In 2001 the European Parliament requested attention for the problem of coastal erosion by establishing a 5 million € pilot project budget line dedicated to coastal erosion management. DG Environment implemented the budget resource through a pan-European study, with the acronym “EUrosion”.

⁹ A Sustainable Future for the Mediterranean, Plan Bleu, 2005

follows: 30% for firewood, 23% for grazing and 18% for protecting the water cycle. On the other hand it is negatively influenced by erosion (-11%) and by deforestation (-7%).

The gravity of fire risks is confirmed by recent data showing a rise in the number of forest fires. Between 1990 and 2000, 40,000 fires were recorded per year on average (including over 17,500 fires in Spain and 11,000 in Italy) compared with 31,000 between 1981 and 1988, or 30% more in ten years.

On the other hand, although the number of fires has increased, the burned surface (about 400,000ha per year), which had continued to rise for several decades, is on the decline. This could be attributed to improved fire-fighting efficiency.

Forest and scrub fires create considerable costs for society: material destruction, fatalities and fire-fighting costs. In countries that have developed modern fire-fighting systems (land-based engines and powerful airplanes), the costs have been estimated at about 150 euros per hectare of forest per year, or total annual costs of about 1000 million euros for the whole region.

In the SEMC the risks of fires and related costs are fortunately lower, because of a larger human presence, maintenance of grazing land in forests and the regular collection of firewood by local people, but even here the risks are not negligible.

The future projection (Blue Plan, 2005) gives a growing risk of forest fires, including major, very hard-to-contain fires, resulting from decrease in cultivation and grazing, and also global warming. The disastrous fires in the summer of 2003 in France (in the Var) and Portugal are mentioned as a kind of proof of the likelihood of such scenario.

5.7 Loss of Marine and Coastal Biodiversity

Although the Mediterranean basin has a rich biodiversity, it is designated as one of the world's most critical biodiversity hotspots due to its threatened status. Its total area is 2,085,292 km², out of which only 98,009 km² remains undisturbed. Due to continuous changes in landscapes and primary vegetation, a number of animal and vegetable species have disappeared or are under threat, such as some Felidae, certain antilopes, a number of birds such as birds of prey and limicolous birds. Endangered mammals of the Mediterranean Basin include the Mediterranean Monk Seal, the Barbary Macaque, and the Iberian Lynx, which are among the region's imperilled species.

Habitat destruction

As already mentioned, Mediterranean coastal zones contain some of the area's richest and most fragile natural habitats. These areas, often of particular ecological interest include areas in which coastal habitats are under threat. Pressures such as population increase and economic growth of coastal areas have led to changes in the sea floor, beaches and shorelines. Urban expansion has led to the destruction of some important habitats and wetlands. The effect of habitat loss is clearly important, as rebuilding a coastal habitat once it is destroyed is impossible, and even when restoration is possible, it is always an extremely complex and expensive procedure.

Habitat loss can have a negative impact on water resource availability and on coastal erosion. Habitat loss can also damage the economies of coastal zones. In areas that still have a strong fishing industry, for example, habitat destruction can damage fish stocks. The loss of areas of natural beauty also prevents coastal regions from developing businesses like eco-tourism and many outdoor leisure activities.

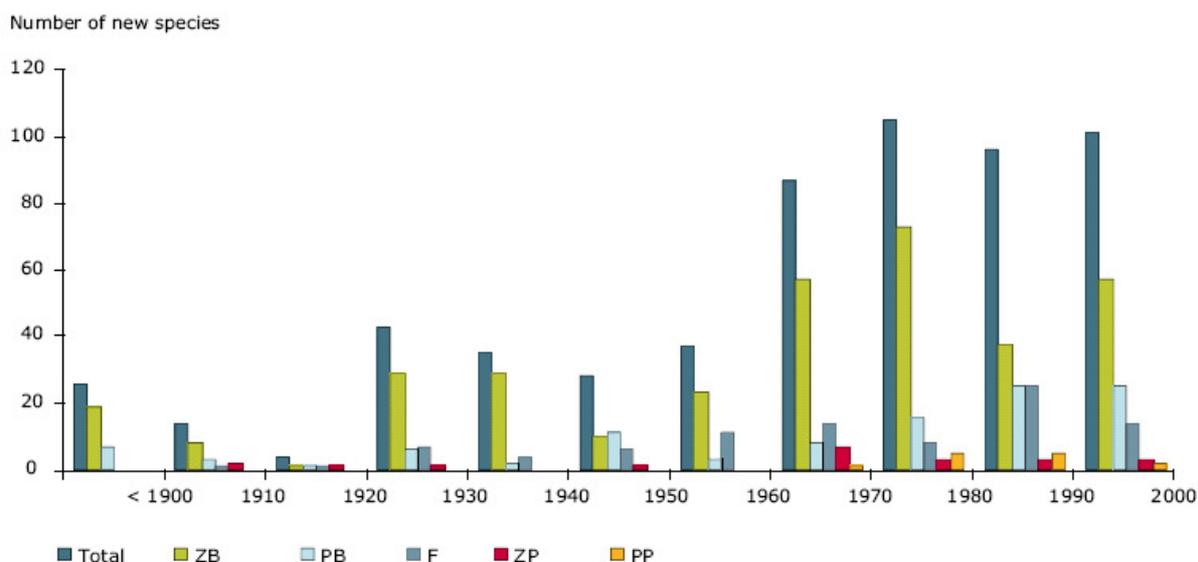
Habitat destruction is often caused by wetland and marshland alteration. Land reclamation and improper management of coastal development for agricultural purposes have reduced the size of the Mediterranean wetlands leading to a loss of biodiversity.

Coastal erosion

Coastal erosion, being a common problem in many Mediterranean countries, it may be the reason for the reduction of biological biodiversity in degraded dune systems. It is caused by badly designed constructions on the water fronts, trapping of sediments at drainage-basin level or sand extraction from beaches for construction.

Invasion of exotic species

The invasion of exotic species is a very important issue for biodiversity loss as it alters all aspects of marine ecosystems. It is a growing problem, due to the unexpected and harmful impacts that it has on the environment, economy and human health. Migration and shipping via the Suez Canal constitute major pathways for the introduction of new species to the Mediterranean, as well as the development of aquaculture. Approximately 64 new species have been reported to have been introduced in the Mediterranean in the 21st century. Changes in biodiversity occur due to the dominance of some species at the expense of others, by the introduction of exotic species. Typical examples are the rapid decrease of populations of the sea star *Asterina gibbosa*, the prawn *Melicertus kerathurus* and the jelly fish *Rhizostoma pulmo*, in Israel. Exotic species such as *Asterina burtoni*, *Marsupenaeus* (= *Penaeus*) *japonicus* and *Rhopilema pulmo* have increased in numbers. Fish populations of red mullet (*Mullus barbatus*) and hake (*Merluccius merluccius*) have been forced to migrate to deeper waters by the exotic species *Upeneus moluccensis* and *Saurida undosquamis*, respectively (Galil and Zenetos, 2002).



Source: UNEP/MAP, 2004b.

Note: ZB = zoobenthos, PB = phytobenthos, F = fish, ZP = zooplankton, PP = phytoplankton.

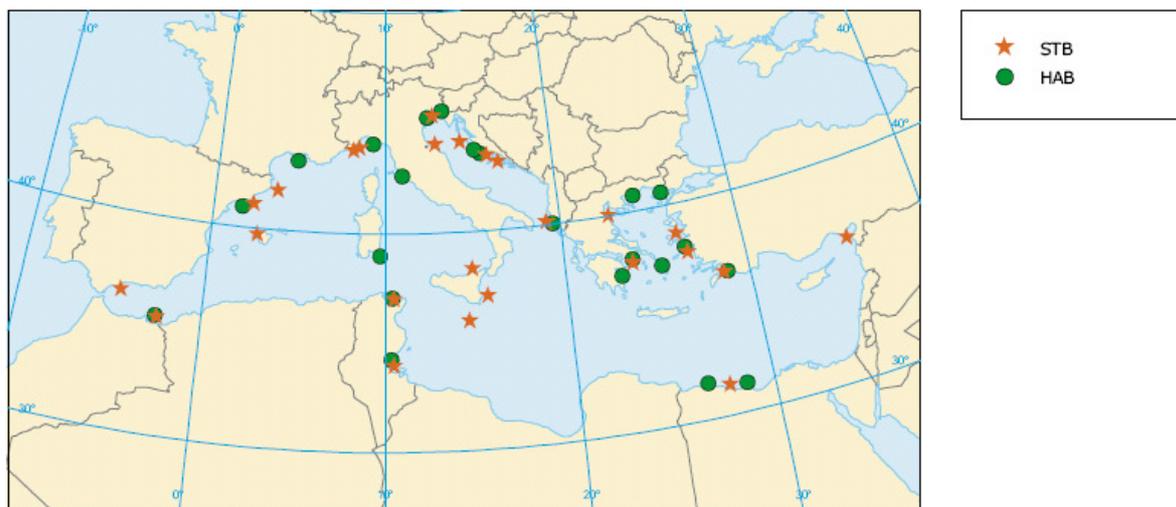
Figure 5.4: Rate of detection of exotic species in the Mediterranean

Pollution

Sewage generation from coastal cities is one of the major pollution problems in the Mediterranean. Its influence on the marine coastal environment affects the marine ecosystems and biodiversity. In places, untreated wastewater is discharged into the sea, adding to the pressure of the marine environment. Organic substances sourcing from industrial activities, heavy metals from urban and industrial wastewater also contribute to the increase of toxic environment for the marine organisms. Biodiversity is threatened by marine pollution, especially in coastal areas near big cities.

Harmful Algal Blooms (HABs)

Microscopic algae (phytoplankton) are normal components of all aquatic environments. Sudden population explosion of certain species, also called algal blooms occur naturally. However, many blooms are caused by eutrophication from land based sources of pollution (agricultural run off, urban and industrial sewage, etc). Marine algal blooms producing bio toxins are called HABs. This is a global phenomenon, affecting the Mediterranean Sea over the last 10-20 years. Fish are killed and seafood is contaminated from algae blooms, having a high level of toxicity. Accumulation of toxins in filter-feeding marine biota, threatens humans, birds and marine mammals feeding on them.



Source: Compiled by the HCMR based on STRATEGY, FATE, Country report of the EU-Commission and Koray, 2002.

Note: STB = Seafood Toxin Blooms

Figure 5.5: Appearance of Harmful Algal Blooms and Seafood Toxin Blooms in the Mediterranean coastal waters

Unsustainable fishing

As fishing in the Mediterranean has increased by 40% since 1970, by a high exploitation of both bottom-living (demersal) and pelagic stocks (tuna, swordfish etc) over-exploitation has been reported for most demersal and shellfish populations. Over exploitation, has led to a serious decline in fish stocks. Effects on biodiversity of non-target species and habitats caused by trawling are a key issue for biodiversity loss. Additionally, it has been noted that demersal stocks in the Mediterranean are dominated by juveniles, an indication of high fishing pressure.

Aquaculture

The most common effect of aquaculture and fish farming is the increase of organic content of the sediment beneath the fish cages. The habitat environment near the cages is degraded, leading to impacts on the biodiversity of the area. It should be noted, that the extent of the impacts is case and site specific as well.

5.8 Operational and accidental pollution from maritime traffic

5.8.1 Operational pollution

Operational pollution from ships by hydrocarbons includes emissions of several kinds of hydrocarbon and hydrocarbon mixtures generated on ships, including oil tankers, during routine operations. The expression encompasses ballast waters (slop), tank washing residues, sludge and bilge waters.

In the Mediterranean, in contrast to what happens in most of the world's oceans, the international waters are regulated. The **MARPOL 73/78** convention states that the Mediterranean is a 'special area'. Within Special Areas, the discharge of the following pollutants from ships or artificial offshore installations is prohibited:

- oil from cargo or ballast tanks except for segregated ballast. Discharge of treated water from the bilge water holding tanks of the machinery spaces is allowed, provided that the oil content at the effluent without dilution is less than 15 mg/lit.
- garbage except for food wastes that may be disposed at a distance of at least 12 nautical miles from the closest shoreline.

However, due to the lack of adequate reception facilities in some ports and terminals, sludge and residues are still being emptied into the Mediterranean.

The quantities of residues from de-sludging have been falling steadily since the mid-1970s, to an estimated 100,000–150,000 tonnes of hydrocarbons, although WWF reports that every year 600,000 tons of crude oil are deliberately released into the Mediterranean Sea from shipping activities.

For *other polluting products* carried or used by ships (chemical tankers in particular), the Mediterranean is not a special area, and, apart from the ban on dumping less than 12 nautical miles from shore, there are no rules.

One of the immediate answers to the problems of operational pollution remains equipping Mediterranean ports with recovery and liquid and solid waste-treatment systems. EU Directive 2000/59/EC of 27 November, 2000 makes it mandatory for Member States to include the costs of using these systems in port charges.

5.8.2 Accidental pollution

Since 1977, under the Mediterranean Action Plan, the Regional Marine Pollution Emergency Response Centre (REMPEC) has methodically recorded *accidental* pollution by compiling reports on accidents that have or could have caused marine pollution by hydrocarbons.

Between August 1977 and December 2000, 311 accidents of this type were recorded, 156 of which were followed by an escape of hydrocarbons.

Only two accidents recorded in the Mediterranean between 1981 and 2000 led to emissions of more than 10,000 tonnes: 18,000 tonnes from the Cavo Cambaos in 1981 and an unspecified amount from the Haven in 1991.

The number of accidental emissions recorded per year increased from 2 in 1982 to 11 in 1991, 1992 and 1993, while the quantity emitted fell from 36,500 tonnes in the 1980s to 21,700 tonnes in the 1990s.

But behind this improvement, the nature of the spilled products is of increasing concern. Between 1996 and 1999, the proportion of persistent hydrocarbons (heavy diesel and crude oil) was 75%, compared with 65% between 1981 and 1995.

Moreover, given the sensitivity of the region for tourism, the costs of a disaster of the Prestige or Erika type in the Mediterranean are certain to be far greater than anything that has occurred in the oceans.

For pollutants other than hydrocarbons, REMPEC has recorded at least 79 accidents between 1988 and 1997 involving ships carrying noxious substances (minerals, sulphur, chemical products, LPG, ether, glycol, etc.). The total discharge of such pollutants is difficult to assess, but REMPEC's accident files record four 'incidents' in 1996 that resulted in the spilling of 1,500 tonnes of phosphate, 2,703 tonnes of chromium ore and 7,600 tonnes of phosphoric acid.

The expected increase in traffic and the size of ships (the development of container-carriers), and the Mediterranean's geophysical and geographic characteristics, ecological disasters are increasingly likely.

5.8.3 Improving the safety of maritime transport

This continuing concern for safety is beginning to be expressed in domestic legislation and the inspection levels of ships using ports. Since 1983, the costs of ship inspection measures and intervention units in cases of pollution in Israel have been met by an eco-tax on oil imports (0.01 cent per imported litre) and a one-off duty on all ships entering an Israeli port. The money collected contributes to a national fund directly managed by the marine environment sector of the Ministry of the Environment. Similarly, in Europe, it is the Mediterranean nations that show the highest ship inspection rates in ports (27% on average in Europe in 2001, 43% in Italy, 28% in Greece and 30% in Spain, but 10% in France).

Following the Prestige and Erika accidents, the EU introduced a certain number of measures and is seeking to harmonize the legislation of the Mediterranean countries with those in force within the EU through the Euro-Mediterranean Transport Forum.

International regulations and structures do not appear sufficiently opposable to operating companies and states, according to RECOM. So, even if the International Maritime Organization decides to give the Mediterranean a 'sensitive area' status, the application of its recommendations and standards remains within the jurisdiction of each state.

There is also effort in getting Mediterranean countries interested in the European satellite navigating system (GALILEO), through MEDA funded training programmes of appropriate administrations in the SEMC. Galileo is the first satellite positioning and navigation system specifically designed for civil purposes, which will offer state-of-the-art services with outstanding performance in accuracy, continuity and availability¹⁰. Galileo can contribute to ocean mapping, including the determination of the extent of polluted areas (and tracking offending tankers to their origins), thus, providing valuable assistance in combating marine pollution.

Some countries have agreed to limit traffic and preserve their biological richness (the Franco-Italian agreement for the Bouches de Bonifacio) or to implement specific procedures in case of accidents (the *Ramogepol* agreement between France, Monaco and Italy for the Ligurian Gulf).

5.9 The maritime fishing industry

The fishing industry is presently undergoing worrying changes. Fishing is directly dependant on fish stocks and fish stocks are threatened by a variety of factors. Over fishing, illegal fishing methods, land-based pollution and operation discharges from ships resulting in marine pollution are some of the factors threatening fish stocks, having both environmental and socio-economical implications.

The state of several fish stocks and spawning of commercially valuable species confirms the degradation in fish resources. According to recent global assessments (FAO) a number of Mediterranean stocks were identified as overexploited, including blue fin tuna, Atlantic bonito, hake, swordfish, whiting, striped mullet and sea bream. The sea bream in the Alboran Sea, hake in the Gulf of Lion and Atlantic red tuna for which catches in the Mediterranean (all flags included) amounted to

¹⁰ http://ec.europa.eu/dgs/energy_transport/galileo/documents/doc/2005_02_23_galileo_en.pdf

10,000 tonnes in 1980, peaked at 39,000 tonnes in 1994 (a 10% increase per year), and then fall to 23,700 tonnes in 2001. Shrimp catches increased from 10,000 to 25,000 tonnes between 1980 and 1990 (a 9.1% increase per year) to fall back to 14,000 tonnes by 2001 (a 5% annual drop). Approximately 83% of all blue fin tune and swordfish caught in the Mediterranean are undersized.

In several countries, the total catch has fallen, particularly in Italy, the leading producer in the Mediterranean. Catches have effectively dropped from 358,000 tonnes in 1980 to 294,000 tonnes in 2001 (0.9% per year).

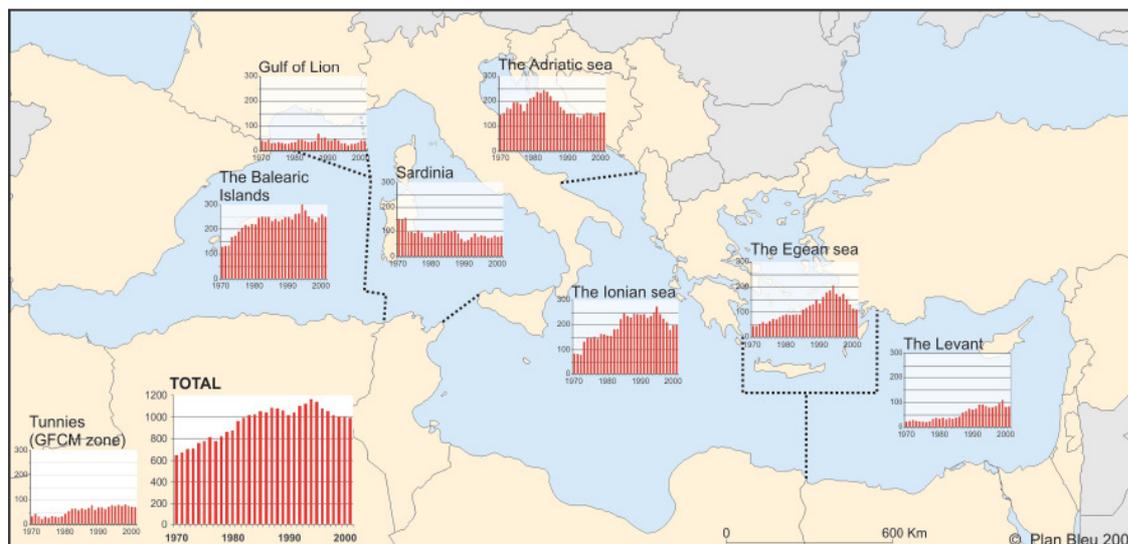


Figure 5.6: Fishing: Catches (thousand tonnes)¹¹

Without extensive changes in fisheries management and strengthening of coastal protection, current trends imply a risk of increasing loss of fish resources and corresponding employment (several tens of thousands). In 2000, 8000 Italian fishermen lost their jobs, 16% of the total number of jobs in the sector.

Over-fishing

Fishing in the Mediterranean has increased significantly since 1970, with high exploitation of both bottom-living (demersal) and big-pelagic stock (tune, swordfish, etc.). As, over-fishing reduces the populations of more valuable larger fish that are at higher trophic levels, such as piscivores (fish that feed on other fish), the landings of fish lower down the food web, such as zooplanktivores (fish, which feed on zooplankton), make up a larger proportion of the overall catch. As a measure of the status of the fish community, is the ratio of pelagic/demersal catches (P/D ratio).

Presently, over-fishing has led to the catching and keeping of ever-smaller fish, often in spite of size restrictions. The protection of juvenile fish in populations that have not even had a chance to breed is critical to the sustainable management of these fisheries. The situation is made even more difficult by unregulated fisheries - like that of the swordfish - often with immature fish as the bulk of their catch.

¹¹ Source: FAO, Fishtat, GFCM capture production 1970–2001

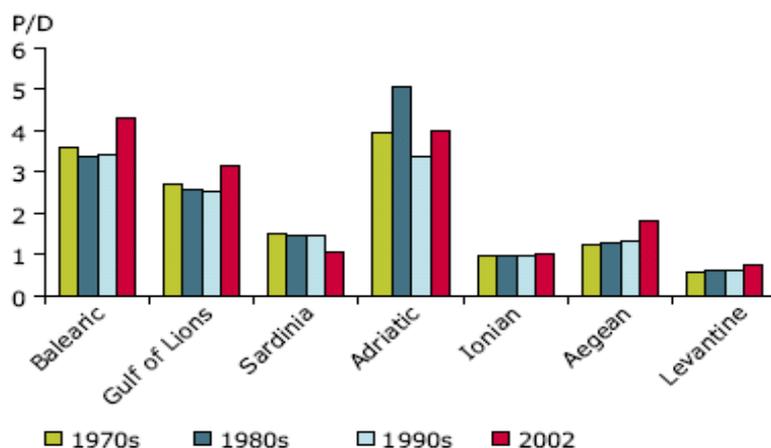


Figure 5.7: Trends in (average) ratio of Pelagic/Demersal fish catches in 1970–2002 across the Mediterranean^{12, 13}

Destructive - Illegal fishing methods

Fish stocks are threatened by a number of fishing practices and methods that are often destructive or illegal. Bottom trawlers, dynamite, long lines and drift nets are some of them.

The lack of effective management systems and increased commercial pressure on fishery resources has led the growth of an illegal, unregulated and unreported (IUU) fishing industry. A good example is the extensive use of driftnets in the sea, which continues despite their prohibition in the Mediterranean. Drift nets are often responsible for the accidental deaths and incidental catches of whales, dolphins and marine turtles.

Adding to the pressures on wild stocks, a new fishing practice is used for blue fin tuna fishing. Also known as tuna-fattening, Captured-Based Aquaculture, (CBA) is a practice in which tuna are caught in the wild and then penned and fattened using aquaculture techniques prior to harvesting.

According to FAO, the practice poses some serious concerns, as it puts increased pressure on already fragile stocks. FAO estimates that production of blue fin tuna using this method currently runs around 25 000 tons a year, up from 10 000 tonnes just five years ago. It is a highly unsustainable new industry aiming at the Japanese market. CBA of blue-fin tuna is currently concentrated in Malta, Spain and Turkey. At the same time, captures of "seed stock" may be going unreported, handicapping efforts to assess the stocks' status.

Pollution

Marine pollution is a threat to fisheries. Heavy metals and persistent organic pollutants (POPs) found in coastal areas receiving high levels of industrial effluents, solid waste and domestic sewage can travel thousands of kilometres across national boundaries, far from their source causing a risk to fish stock and fish quality.

Moreover, the Mediterranean, hosts about one third of the world's total merchant shipping concentrating some of the world's busiest shipping routes. The discharge of chemical tank washings, oily wastes and crude oil released or spilled, and represent a significant source of marine pollution and consequently a significant pressure for fishing.

¹² Source: HCMR based on FAO FISHSTAT Plus, 2004a and De Leiva Moreno et al., 2000

¹³ Note: 70s, 80s and 90s = average values of catches for each decade. 2002 = catches value in 2002. Catches: Fish that are caught and landed

Biodiversity loss

A major impact of fishing on the marine ecosystems of the Mediterranean, derive from the fact that fishing practices lead to discards. Discard rates depend on the fishing depth, the equipment used and targeted species. The species composition of discards in the Mediterranean and the number of discarded fish are different between eastern and western part. Effects on the biodiversity of non-target species and habitats caused by trawling are key issues because loss of biodiversity has been documented in many cases.

5.10 Energy Efficiency and Renewable Energy Sources– Potential and Challenge

The projected strong growth in energy demand in the Mediterranean region will increase the level of environmental risks, such as air pollution and climate change, identified in the previous chapter. Such environmental effects are likely to be considerable, some may be irreversible, and will affect the worldwide and regional heritage. These risks and effects will differ between countries but will be most serious in the SEMC. These countries will urgently need to find answers to the spectacular increase in demand to meet the basic needs of the population today and in the future. The Mediterranean Basin Programme addresses these risks by placing priority to the promotion of energy efficiency and renewable energy sources. In this section, the potential and the challenge of a more efficient use of energy, as well as the promotion of 'cleaner' energy sources, in the Mediterranean basin will be examined.

Energy efficiency and renewables, result in considerable reductions in gaseous emissions thus reducing local and *global* air pollution and impacts on climate change. The challenge varies between countries.

The SEMC still need to build their essential industries and infrastructures. They have not yet reached the dematerialization phase of their economic development. If they manage to achieve their share of globalization by technological 'leap-frogging' while remaining in control of their development, they will shorten their learning time and may well be able to choose paths that are more energy-saving. They have before them an exceptional opportunity to manage their energy needs for the coming 25 years through judicious choices of infrastructures. Depending on whether the enormous investments planned for transport, housing, industry and energy supply do or do not include energy-efficiency objectives, the structure of energy demand by future generations may be completely different and this may indirectly affect their ability to develop their economies. The challenge of *anticipation* remains considerable and is also one for the energy producing countries which may be able to increase the amounts available for export.

For the NMC the question is less one of anticipating what infrastructures to build than one of reducing their contributions to the growth of global environmental risks. It is also a question of fulfilling their international commitments through better performance of their energy systems.

The potential for energy efficiency in the Mediterranean

The objective of energy efficiency is to optimize energy systems through a broad range of actions. First it means improving the efficiency of the energy chain (energy production, distribution and consumption) through actions such as improving the management of energy infrastructures, house insulation, reducing the electricity consumption of household appliances and light bulbs, and reducing wasteful consumption.

It is also an opportunity to generally rethink energy supply systems so as to reduce energy consumption without affecting the energy service to the user, through co-generation, decentralized energy production, peak shaving of electricity consumption and rebalancing daily and seasonal demands to avoid or defer the construction of the infrastructures required for a safe and high-quality electricity service.

Upstream actions on factors that determine energy demand are also concerned, even including the questioning of some travel modes and the siting of housing, for example by rethinking the spatial distribution of functions in cities that result in unnecessary travel.

The magnitude of the potential savings from energy efficiency in the various Mediterranean countries depends, therefore, on the level of their present 'wastage' and their determination to reduce it by adopting new behaviour. Potential savings of the order of 20–25% of total energy demand by 2025 are certainly feasible through using technology that is already available. This figure is at the lower end of the range and could be higher in the SEMC (50% of total energy demand by 2025), and even higher in very voluntary or proactive scenarios (for example through control of urban sprawl, development of public transport). Many energy audits in Mediterranean countries have confirmed these orders of magnitude. Some studies show impressive savings, varying from 10 to 60% in the construction sector. In Morocco, for example, such audits estimate potential savings of 10–25% of energy demand in the industrial sector, or 1Mtoe per year, and scope for saving 15–20% in public administration buildings, or potential savings of about 9.5 million euros per year, corresponding to 20,000 toe per year 24 (which, however, have not been implemented because of a lack of start-up funds and inter-institutional coordination). On the French electricity market, the ADEME agency estimates 30TWh per year of possible savings in less than ten years through demand-control measures. There is a very large potential for saving traditional energies in the mostly rural SEMC, through improved household technologies or substitution by more efficient energy sources (such as gas).

The electricity production and distribution sector also has a significant potential for savings, with distribution network losses often approaching 30%. These losses, when added to low production efficiencies, can result in very low overall efficiency. Given the magnitude of the projected growth in electricity infrastructures in the SEMC, this sector seems particularly strategic in questions of energy efficiency; the current restructuring of these sectors (opening up, modernization, FDI, role separation) should promote improvements in network performance and efficiency. There is also a need to fight the very common practices of theft of electricity and non-payment of electricity bills by many users. Such behaviour discourages investors, cancels the effects of incentives in pricing policies and prevents rational energy management.

The industrial sector, representing more than a third of final commercial energy consumption in the Mediterranean countries, is where gains in efficiency are the easiest to obtain because of the small number of organizations concerned and the more immediate benefits that industrialists can derive from them. It is also the only one of the three uses (domestic, transport and industry) for which the technological and substitution effects can exceed the negative consequences of growth and the rise in living standards.

However, in the Mediterranean, the priority sectors are the rapidly growing residential and tertiary sectors (nearly 40% of final commercial energy consumption in the SEMC) where considerable potential for savings can be exploited.

In the construction sector, savings in lighting, heating, air-conditioning and clean hot-water production are among the easiest to justify economically given the present conditions of the energy market. For example, the European Directive on energy efficiency in buildings (2002) seeks to save up to 22% of energy demand from now to 2010 in the EU by simple measures, such as standards for new (residential and tertiary) buildings and renovation of buildings of more than 1000m² (insulation, heating, ventilation, lighting, the use of renewable energies, and the location and orientation of the building). An energy certification system for all buildings and regular control of heating and cooling systems are also required. By 2025, 7 million additional households are projected in the NMC and 33 million in the SEMC, which will result in a large increase in housing demand. The issue of energy saving building technologies is crucial. In France, implementing building heating regulations has resulted in that a new dwelling, built today, consumes 50% less energy than one built in the 1970s.

The Mediterranean region has traditionally developed exceptional expertise in architecture and urban design, showing great ingenuity in adapting to the climate (mild, sunny winters, very high temperature peaks in summer). The choice of layouts, openings, materials, patios and fountains, and narrow, shady streets have produced an urban development and architectural heritage perfectly adapted to the climate. But, more recently, urban expansion and changes in lifestyles have been contributing to the emergence of urban developments and architectures that, by their very design, are too disconnected from the climate, leading to an over-consumption of energy for ventilation, air-conditioning and heating. Glass-encased skyscrapers are increasing in Mediterranean cities despite their being totally unsuited to summer heat. Yet a few simple building rules, satisfying new demands

for comfort and adapted to the climate, would enable substantial cumulative savings for the whole life cycle of the buildings.

After heating (for which the saving potential in the EU is an estimated 10–60%, depending on the country), hot-water production is the second biggest energy consumer in the residential sector in the EU, with savings potential estimated at between 5 and 50%.²⁵ But along with the growth in the number of households, the number of household appliances has also increased (which explains the steady growth in electricity demand), the energy potential saving of which is estimated at 20–50%. Among the main consuming items are cooling devices (refrigerators, accounting for one-third of the electricity consumption with a savings potential of 30–50%) and lighting. In the Mediterranean countries of the EU, energy labelling of household appliances has been mandatory since 1995. Standards for minimum performance levels were set in September 1999, to complete a set of measures for domestic cooling devices, which has resulted in a major change in the market for cooling devices in terms of better energy performance. Thus, between 1992 and 2000 the average electricity consumption of refrigerators and freezers in Europe fell by 30%. Given the energy performances of their household appliances, many SEMC are looking closely at the implementation of similar labelling and standardization programmes. The risk is that poorly performing equipment will increasingly appear on the markets of countries that have not yet adopted comparable legislation.

In the lighting sector the potential for savings simply by changing behaviour and by using compact fluorescent lamps is enormous (savings of up to 70% with a pay-back period of less than two years). A recent evaluation of the potential for specific electricity uses in 400 dwellings in the EU (including half in Italy and Greece) identified a potential saving from approximately 20% (Greece) to 40% (Italy) based on simple measures (the replacement of cooling equipment by models with better performance, the replacement of incandescent lamps by compact fluorescent lamps and the suppression of stand-by settings).

The very large expansion of air-conditioning, which particularly concerns the Mediterranean countries, and is expected to continue with the expected growth in urbanization and possibly global warming, also requires consideration of the savings potential through adapting construction technologies (natural ventilation, insulation, exposure), and using high-performance devices and control equipment.

The transport sector (between 24 and 33% of final commercial energy consumption) also offers considerable energy-saving potential, but this is a sector where the trends are the most unfavourable and the inertia is the greatest. The present system based on road and private car transport is extremely costly. This question is inseparable from that of urbanization. Indeed, purely technical solutions (more efficient diesel engines, hybrid or electric engines, fuel cells, substitute fuels) cannot compensate the effects of growth in transport demand. Transport energy consumption can also be reduced by better urban planning and management. Increased urban densities, bringing daily services (schools, shops) nearer to residences, the redevelopment of activity areas to minimize the transport of merchandise, and public transport are some of the vital actions for meeting the challenges of urban transport in a region that will have 100 million additional urban inhabitants between 2000 and 2025.

The potential for renewable energy

The considerable potential for renewable energy in the Mediterranean is mostly underexploited, whether for electricity production or domestic purposes. The potential in the SEMC is very high: it is one of the world's sunniest places (about 5kWh per m² per day) and the needs, both for thermal and electric applications, are many. There are many sites suitable for wind farms, considerable geothermal resources, for example in Turkey and Italy, significant possibilities for developing small hydroelectricity plants, and the use of biomass is an important energy option in many areas. A recent OME study has shown that the potential electricity production from renewable energies (excluding hydropower) in the SEMC could be about 105TWh per year, or between 10 and 15% of total electricity production in 2020 (**Table 5.3**)

Table 5.3: Electricity production potential from renewable energies in the SEMC in 2020¹⁴

	<i>Potential (MW)</i>	<i>Electricity produced/yr (TWh/yr)</i>
Wind energy	10,000	20
Photovoltaic	2,500	5
Solar thermal	6,000	15
Biomass	8,000	48
Geothermal	2,900	17
Total	29,400	105

Biomass is an important resource. In the SEMC (for example Maghreb and Turkey) firewood often constitutes a vital part of non-commercial supply, particularly for the most deprived. The challenge of improving efficiency of use is crucial, especially since the increase in energy demand risks aggravating an already visible over-exploitation of woodlands. In the NMC a massive switch to biomass (especially the sustainable exploitation of woodland products) could enable a significant increase in the share of renewables in the primary energy balance.

Micro-hydroelectricity, a proven and now mature technology, is ideal for electrifying remote sites. It also provides a back-up for national electricity production, which is especially attractive at times of peak demand. Italy and France remain the leaders in terms of installed power with, respectively, 2230MW and 2020MW. Spain has made the greatest efforts recently. The Balkans, Greece and Turkey still have a large potential. Morocco has a potential of 3630MW of micro-hydroelectricity stations at 200 sites that could be exploited within its borders.

Wind power is being called on to play a significant role in the development of renewable energies in the region, as in the rest of the world. In recent years, technological progress in wind generators has been considerable and they have now become a genuine industrial sector. The most significant example in the Mediterranean is the Spanish market, with a total capacity of 3660MW in 2002. In the other NMC, launching the wind sector seems ongoing with an annual growth rate of more than 20% in 2001. This includes Italy, with an additional 308MW (79%) in 2001. In the SEMC there are wind sites with high potential in Morocco, Egypt and Tunisia, and all these countries have seen strong growth in wind powered electricity generation. Most of the other countries have begun to set up detailed wind power atlases, and projects are being studied for new sites. The question of environmental impact must be carefully monitored by the project designers, especially on the coasts. The question of the price for buying back the electricity produced is crucial; it should be the first to be decided for all national development plans.

Solar photovoltaic (PV) energy has a very large potential in the SEMC, especially in the countries where the electricity network covers only part of the country. This is the case in Morocco where the rate of electrification is low and where nearly 10,000 villages still have to be electrified, or over 300,000 households in rural areas. A project for electrifying 16,000 rural households was begun in 2002. The total potential in Morocco is estimated to be 200,000 PV systems, and in Tunisia 14,000 systems. Turkey is also interested in developing PV, particularly for applications related to water pumping, electric signals and telecommunications. The PV sector has grown enormously (23% of additional capacity installed in the NMC in 2000). But the market remains small and its development is dependent on the implementation of more ambitious national programmes and the creation of a specific industry to manufacture 'solar silicon', which would enable the sector to enter another dimension. The installations still show some vulnerability to meteorological hazards (sand storms, saline deposits), which increase maintenance needs.

There has been large-scale growth in **solar thermal energy** use in the NMC. A total surface area of about 4.5 million m² of solar panels has been installed in the four EU-Med.

Solar energy in the SEMC is used mainly for producing clean hot water. Turkey is one of the world's leaders in this field with a total installed capacity of 3.5 million m² of solar panels. At present solar energy contributes 290 kilotonnes of oil equivalent (ktoe) of the country's total energy production, and by 2010 this should reach 600ktoe. The importance of the national energy context is particularly

¹⁴ Source: OME, 2002

relevant to the development of the solar thermal sector. For example, the Palestinian Territories, very dependent on energy imports, had over 1 million installed m² in 2001.

Tunisia, with about 90,000 m², saw a 37% growth in 2001. In contrast, energy exporting countries, such as Algeria and Egypt, have a relatively small number of collectors installed (less than 1000m² in Algeria and 2000m² in Egypt).

Italy and Turkey are the leaders in **geothermal** energy in the Mediterranean. Italy and Greece aim to increase their installed capacity for producing electricity, to 912 electric megawatts (MWe) in Italy and 210MWe in Greece by 2010. As far as low-temperature geothermal energy is concerned, there are only limited data on the number of installations. The main producers are France (326 thermal megawatts (MWth) and Italy (325MWth). In Turkey the geothermal potential is 31,500MWth, only 3% of which is currently being exploited, and the target for 2020 has been set at 2000 installed MWth.

Renewable energies therefore have enormous potential that is just beginning to be exploited, especially in Morocco, Israel, Spain and Italy. We are seeing a build-up of increasingly structured industries and the emergence of mature technologies. The best examples are wind energy, photovoltaic energy and solar thermal energy. Spain has developed a first-class wind power industry. France is a leader in bio-fuels, and Italy and Turkey in geothermal energy. The diversity of situations and the complementarity of experiences makes the Mediterranean one of the world's regions with very significant potential (natural and technical) for renewable energy. In many cases, the renewables are the most economical option for decentralized rural electrification (for areas beyond the reach of electricity networks).

However, it must be stressed that industrial sectors and the market are much more developed in the north than in the south, while the potential, especially for solar, is found mostly in the south. Apart from wind and solar energy, and excluding a few isolated cases, the development of renewable energies remains dependent on many factors: the local energy context, technological progress and a reduction in equipment costs, the implementation of appropriate regulatory institutional frameworks and the establishment of well-adapted and innovative financial systems.

But, even more important, it is vital to undertake far reaching information and dissemination programmes so as to raise the awareness of both decision-makers and users.

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6. INTEGRATION OF ENVIRONMENTAL PROTECTION OBJECTIVES IN THE PROGRAMME

The Mediterranean countries have a long history of co-operation in the field of the environment, at a multilateral level for more than 25 years in spite of cultural, political, economic or technical differences. The Mediterranean environment is recognised by specialists as one of the richest and most vulnerable in the world, in particular regarding its biodiversity.

6.1 The Barcelona Convention

The **Barcelona Convention** on the Protection of the Mediterranean Sea against Pollution, which was established in 1976 and entered into force on 12 February 1978, is the most important regional policy instrument related to the protection of the Mediterranean Sea and its coasts. Since 1994, several components of the Barcelona system have undergone important changes and an ambitious revision of the Convention was concluded in 2002. The objective of the revision was to modernise the Convention to bring it into line with the principles of the Rio Declaration and the philosophy of the new UN Convention on the Law of the Sea (UNCLOS) and to mirror the progress achieved in international environmental law.

The Barcelona Convention and its Protocols provide the legal basis for the multilateral co-operation aiming at protecting the environment and fostering sustainable development in the Mediterranean Basin through the work of the **Mediterranean Action Plan (MAP)**. MAP was created in 1975 and is the spearhead of the United Nations Environment Programme (UNEP) Regional Seas Programme. It is an effort involving 21 countries bordering the Mediterranean Sea as well as the European Community. Through the MAP, they are determined to meet challenges of environmental degradation in the sea, coastal areas and inland and to link sustainable resource management with development, in order to protect the Mediterranean region and contribute to an improved quality of life. Through the Barcelona Convention and a number of landmark Protocols, the contracting parties prepared a comprehensive technical and legal system targeted at protecting the Mediterranean environment from all sorts of pollution.

The **Programme for the Assessment and Control of Marine Pollution (MED POL)** is the scientific and technical component of the MAP. It assists the countries to implement programmes and measures to assess and eliminate pollution. The MED POL Programme is in charge of the following-up of the implementation of the Land Based sources Protocol, the Dumping Protocol and the Hazardous Wastes Protocol.

The structure of the present Barcelona legal system includes the following instruments:

- The **Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean** (in force since 2004);
- The **Dumping Protocol** for the Prevention and Elimination of Pollution of the Mediterranean Sea by Dumping from Ships and Aircraft or Incineration at Sea, amended in Barcelona in 1995 (the amendments are not yet in force);
- The **Emergency Protocol** concerning Cooperation in Preventing Pollution from Ships and, in Cases of Emergency, Combating Pollution of the Mediterranean Sea, signed in Valletta on 25 January 2002 (entered into force on 17 March 2004). The Emergency Protocol acknowledges in the preamble the role of the International Maritime Organization, as well as 'the contribution of the European Community to the implementation of international standards as regards maritime safety and the prevention of pollution from ships. In fact, the Community has enacted a number of legal instruments.
- The **LBS Protocol**. Protocol related to the protection of the Mediterranean Sea from Land-Based Sources of Pollution adopted in 1980, entered into force in 1983 and amended in 1996. To

implement the LBS Protocol, a **Strategic Action Programme** (SAP) has been adopted by the Contracting parties in order to identify priority target categories of substances and activities to be eliminated or controlled by the Mediterranean countries through a timetabled schedule for the implementation of specific control measures and interventions. The operational long-term output of the SAP is the implementation by the countries of **National Action Plans** (NAPs) to combat pollution from land-based activities.

- **The SPA and Biodiversity Protocol** concerning Specially Protected Areas and Biological Diversity in the Mediterranean (in force since December 1999);
- **The Offshore Protocol** concerning Pollution resulting from Exploration and Exploitation of the Continental Shelf, the Seabed and its Subsoil, signed in Madrid on 14 October 1994 and
- **The Hazardous Wastes Protocol** on the Prevention of Pollution of the Mediterranean Sea by Transboundary Movements of Hazardous Wastes and their Disposal.

6.2 The Mediterranean Strategy for Sustainable Development (MSSD)

The 21 Mediterranean countries and the European Community decided, at the 12th Conference of the Contracting Parties to the Barcelona Convention (Monaco, November 2001), in line with the decisions of the World Summit on Sustainable Development (WSSD), to prepare a “Mediterranean Strategy for Sustainable Development” (MSSD). They requested the Mediterranean Commission on Sustainable Development (MCSD), an Advisory Forum consisting of representatives of the contracting parties to the Barcelona Convention, local/regional organisations, private enterprises and NGOs, to develop a draft of the Strategy. The 2nd Euro-Mediterranean Ministerial Conference on the Environment (Athens, July 2002) endorsed this initiative. In November 2005 the Contracting Parties to the Barcelona Convention approved the Mediterranean Strategy for Sustainable Development. The Strategy is structured around four objectives and seven interlinked priority fields of action. Thirty-four indicators are annexed to enable the follow-up of the Strategy.

The four main objectives are: i) contribute to economic development by enhancing Mediterranean assets ii) reduce social disparities by implementing the UN Millennium Development Goals and improve cultural integration iii) change unsustainable production and consumption patterns and ensure the sustainable management of natural resources iv) improve governance at the local, national, and regional levels. The seven priority fields of action are water resources; energy management and addressing impacts of climate change; transport; tourism; urban development; agriculture and management of the sea; coastal areas and marine resources.

6.3 The EU Environmental Strategy for the Mediterranean (Marine Strategy)

The European Commission has proposed a strategy to protect more effectively the marine environment across Europe, setting objectives which should ensure sustainable and healthy seas and oceans and ecosystems as well as sustainable exploitation of their resources. The draft Directive of the European Parliament and the Council of the EU, which establishes a Community framework in the field of the marine environment, with the title "Strategy for the marine environment" or "European marine strategy" aims at maintaining or restoring the marine environment in good state at the latest by 2021. The Marine Strategy will constitute the environmental pillar of the future maritime policy the European Commission designed to achieve the full economic potential of oceans and seas in harmony with the marine environment. The strategy's key aims are to:

- Reduce pollution levels across the region
- Promote sustainable use of the sea and its coastline
- Encourage neighbouring countries to cooperate on environmental issues
- Assist partner countries in developing effective institutions and policies to protect the environment
- Involve NGOs and the public in environmental decisions affecting them.

These aims will be achieved through four means: financial assistance from existing and already planned EU aid programmes; strengthened dialogue with the region's representatives; improved coordination with other organisations and partners;

Also the European Union added ambitious objectives to its legal apparatus with directives for water protection, including directives on wastewater, IPPC, nitrate and maritime security, and the EU Strategy on waste, and the Framework Directive on Water that aims to reach a good state of continental and coastal waters by 2015. These documents, compatible with multilateral agreements on the environment, are gradually framing the environmental regulation of EU Mediterranean member countries and 'accession' countries.

6.4 The European Neighbourhood Policy (ENP)

In 2004 the European Union launched the **European Neighbourhood Policy (ENP)**, whose aim is to strengthen relations between the EU and its neighbours. This policy reinforces the Euro-Mediterranean Partnership, while using all its institutions and mechanisms. The key element of the European Neighbourhood Policy is the bilateral ENP Action Plans mutually agreed between the EU and each partner country. These set out an agenda of political and economic reforms with short and medium-term priorities. The ENP Action Plans include the environment component under sustainable development. The priorities identified in the Action Plans, agreed with the authorities of the country, are also useful in guiding the programming of assistance programs – including other donors and International Funding Institutions (IFIs).

In the environment area, the action plans foresee cooperation in three key areas: environmental governance and strengthening of environmental administrative structures, improving environmental legislation and its implementation, and promoting global and regional environmental cooperation. Implementation of the national action plans will be discussed and monitored with each country inside the ENP environment subcommittees.

6.5 The Euro Mediterranean Partnership

The Euro-Mediterranean Conference which was held in Barcelona in November 1995 marked the starting point of the Euro-Mediterranean Partnership (known also as Barcelona Process), a wide framework of political, economic and social relations between the Member States of the European Union and Partners of the Southern Mediterranean.

In addition to the European Union Member States, Turkey, Algeria, Morocco, Tunisia, Egypt, Syria, Israel, Jordan, Lebanon and the Palestinian Authority take part in the Barcelona Process as Mediterranean Partners. Libya has observer status since 1999.

The Euro-Med comprises two complementary dimensions, the **bilateral dimension** for activities carried out bilaterally with each Mediterranean partner and the **regional dimension** for cooperation encompassing the whole region. Each of these dimensions have recognised environment as one of the fields for increased cooperation and an important dimension for the achievement of sustainable development in the region and include an environmental component.

The **Short and Medium Term Environmental Action Programme (SMAP)** constitutes the environmental component of the EMP. adopted by the Euro-Mediterranean Ministerial Conference on the Environment, held in Helsinki on 28 November 1997. The fields of action were:

1. Integrated water management
2. Waste management
3. Hot Spots
4. Integrated coastal zone management
5. Combating desertification

In 2002, Euro-Med Environment Ministers reaffirmed their commitment to the SMAP through the adoption of the Athens Declaration. This declaration emphasised the importance of ensuring synergies between SMAP and other regional initiatives, including activities under the UN Barcelona Convention.

6.6 The HORIZON 2020 Initiative

A key pillar of the Mediterranean strategy is '**Horizon 2020**', an initiative to tackle the top sources of Mediterranean pollution by the year 2020 that was endorsed by leaders of Euro-Mediterranean (Euro-Med) countries at the 10th Anniversary Euro-Med Summit in Barcelona last year. The Commission is building a coalition of partners to implement the initiative. The Mediterranean strategy fleshes out the detail of Horizon 2020, grouping planned activities under four headings:

- Projects to reduce the most significant sources of pollution. The initial focus will be on industrial emissions, municipal waste and urban waste water, which are responsible for up to 80% of Mediterranean Sea pollution.
- Capacity-building measures to help neighbouring countries create national environmental administrations that are able to develop and police environmental laws.
- Using the Commission's research budget to develop greater knowledge of environmental issues relevant to the Mediterranean and ensure this is shared.
- Developing indicators to monitor the success of Horizon 2020.

At the 3rd Euro-Mediterranean Ministerial Conference on environment held in Cairo on 20 November 2006, an agreement was reached on the timetable of actions called for in Barcelona. This timetable will be used to measure progress with Horizon 2020.

6.7 Mediterranean Environmental Technical Assistance Programme (METAP)

Mediterranean Environmental Technical Assistance Programme (METAP) was founded in 1990, as a partnership between countries of the Mediterranean region and six multilateral donors: the World Bank (WB), the European Commission (EC), the European Investment Bank (EIB), the United Nations Development Programme (UNDP), the Finnish Ministry for Foreign Affairs and the Swiss Agency for Development and Cooperation (SDC).

METAP also collaborates extensively with the Mediterranean Action Plan (MAP) on a number of activities. It is a programme that addresses individual, country-level issues, from a regional perspective. METAP is divided into two main components which are Capacity Building and Project Preparation. METAP projects and activities focus on: Water quality, Solid waste, Cost of environmental degradation, Trade and environment, Banking and environment, Environmental impact assessment and Knowledge management.

6.8 Thematic regional and international legislations and agreements

6.8.1 Water management

The goal is the integrated management of water resources, a process which promotes the coordinated development of water, land and related resources to maximize the resultant economic and social welfare in an equitable manner, without compromising the durability of vital ecosystems. This concept is increasingly being used in water policies, even if effective implementation is slow. It is at the heart of the recent **European Framework Directive on Water 2000/60**.

The **Euro-Mediterranean** partnership is also a special arena for cooperation in the water sector. In founding the partnership, the 1995 Barcelona Declaration recognizes the rational management of water resources as a priority and recommends the strengthening of regional cooperation. Several European sub-programmes include water among their priorities as a result. The integrated management of water is one of the five priorities of the Euro-Mediterranean Regional Programme for the Environment. A specific Euro-Mediterranean regional programme for strengthening local water management capacities was adopted in Turin in 1999. With 40 million euros (for five years), it reinforces the **EMWIS**, a regional information programme on know-how in the integrated water-management sector. A

Another important regional programme is the **Euro-Mediterranean Regional Programme for Local Water Management (MEDA WATER)**, started in 2001 with 5 years duration. However, although it may open up interesting possibilities, its range is nevertheless limited by its modest budget when faced with the magnitude of its ambitions, but also when faced with the very great diversity of the subjects covered and the relative complexity of its procedures. Bilateral programmes (about 85% of the MEDA budgets) might provide an occasion for stronger stimulation for implementing national integrated water management strategies in the most willing of the partner countries.

In the context of the **EU Water Initiative** launched in the Johannesburg Summit, the European Commission has pursued in partnership with Greece (lead country) the Mediterranean component of the EU Water Initiative (MED EUWI). With the objective of enhancing regional cooperation in the water sector in the Mediterranean, emphasis is put on Mediterranean and south-eastern European priorities.

The **Global Water Partnership – Mediterranean (GWP-Med)** is a Regional Water Partnership of the Global Water Partnership (GWP). GWP-Med, in its present form, was created in 2002 and it is the successor partnership to the Mediterranean Technical Advisory Committee of GWP (MEDTAC). GWP-Med is a platform bringing together competent organisations working regularly on water issues in the Mediterranean region. Its members may come from all over the Mediterranean and beyond.

GWP-Med represents the Global Water Partnership in the Mediterranean, and as such has the responsibility of implementing its principles and initiatives in the region. GWP-Med's goal is to promote and exchange knowledge on IWRM for the sustainable use of the region's water resources.

The issue of unequal access to water in cities is linked to the objective of 'reducing by half, by 2015, the proportion of people without access to safe drinking water or not having the means to obtain it', adopted in the **Millennium Declaration** of the United Nations General Assembly (2000), and reaffirmed in the **Johannesburg Action Plan in 2002**.

The **Petersberg Process** is a German initiative stemming from the "Petersberg Round Tables on Transboundary Waters," which was launched in March 1998 as a joint effort of the German Government and the World Bank. Recognizing that water is a key natural resource for future prosperity and stability, the efforts were focused on review of mechanisms and instruments to support the use of water as a catalyst for regional cooperation rather than a source of potential conflict. It was recognized that the availability of water and access to its utilization are crucial to the economic well being not only of individuals, but also of entire regions.

6.8.2 Combat land-based pollution and hazardous wastes

- The **Strategic Action Programme** in the Mediterranean for the implementation of the LBS Protocol to the Barcelona Convention (SAP/MED) was adopted in 1997 and is an action oriented MAP/MEDPOL initiative identifying priority target categories of substances and activities to be eliminated or controlled by the Mediterranean countries. The schedule for the implementation of specific control measures and interventions extends over 25 years. The key land-based activities addressed in the SAP/MED are linked to the urban environment, (particularly municipal wastewater treatment and disposal, urban solid waste disposal and activities contributing to air pollution from mobile sources) and to industrial activities. These activities target those responsible for the release of toxic persistent and bio accumulative (TPB) substances into the marine environment. They give special attention to persistent organic pollutants (POPs). Also addressed are the release of harmful concentrations of nutrients into the marine environment, the storage, transportation and disposal of radioactive and hazardous wastes and activities that contribute to the destruction of the coastline and coastal habitats.
- The **HORIZON 2020 Initiative**. In view of the Extraordinary 10th anniversary Conference of the EMP held in Barcelona in November 2005, this partnership is being reoriented for the future. Initial indications point to an increased focus on environment, including a high-visibility initiative to 'de-pollute the Mediterranean by 2020'.
- The **EU Water Framework Directive** (WFD) establishes a framework for water policy based on the principle of integrated river basin management (Directive (2000/60/EC). The WFD introduces a regime for management of river basins and adjoining coastal areas based on their drainage basins rather than administrative barriers. It introduces the principle of the combined approach whereby emission controls and quality objectives are both applied. The objective of the directive is the attainment or preservation of good ecological and good chemical status.
- The EU Policy on Industrial pollution control (**IPPC Directive**)
- The **Stockholm Convention** on Persistent Organic Pollutants (POPs) was adopted in 2001 in response to the urgent need for global action to protect human health and the environment from "POPs". These are chemicals that are highly toxic, persistent, bio accumulate and move long distances in the environment. The Convention seeks the elimination or restriction of production and use of all intentionally produced POPs.
- The **Basel Convention** strictly regulates the transboundary movements of hazardous wastes and provides obligations to its parties to ensure that such wastes and their disposal are managed of in an environmentally sound manner when moved across national boundaries.
- The **Rotterdam Convention** on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade.

- The International Code of Conduct on the Distribution and Use of Pesticides.

6.8.3 Conservation of biodiversity

- **The Specially Protected Areas and Biodiversity Protocol to the Convention of Barcelona (SPA)** provides for the establishment of a list of specially protected areas of Mediterranean interest (the SPAMI List). The SPAMI list may include sites that 'are of importance for conserving the components of biological diversity in the Mediterranean; contain ecosystems specific to the Mediterranean area or the habitats of endangered species; are of special interest at scientific, aesthetic, cultural or educational levels'. The procedures for the establishment and listing of SPAMIs are specified in detail in the Protocol.
- **The Strategic Action Programme for Biodiversity in the Mediterranean Region (SAP/BIO)**, which was adopted in 2003, establishes a measurable framework of actions for the implementation of the 1995 SPA Protocol. The SAP/BIO assesses the status of marine and coastal biodiversity, evaluates the main problems affecting biodiversity and identifies concrete remedial actions at national and regional levels. The basic objective of this Strategic Action Programme is to be used within the context of the SPA Protocol to (i) improve the management of existing and favour the creation of new Marine and Coastal Protected Areas; (ii) favour the implementation of SAP BIO National Action Plans (NAPs) and Priority Actions; (iii) enhance the protection of endangered species and habitats; (iv) contribute to the reinforcement of relevant national legislation and national and international capacity building; (v) foster the improvement of knowledge of marine and coastal biodiversity; and (vi) contribute to fundraising efforts.
- The EU legislation on biodiversity. The legislation on specially protected areas of the Mediterranean States, which members of the European Union must conform to, is the EC Council Directive 92/43 on the conservation of natural habitats and wild fauna and flora. Its geographical scope includes the internal waters and the territorial sea along the coasts of the four EU Mediterranean countries. The Directive sets up a coherent ecological network of special areas of conservation under the title 'Natura 2000'. This network is composed of sites hosting the natural habitat types of Community interest listed in Annex I and habitats of the species listed in Annex II (species of wild fauna and flora of Community interest) whose conservation requires the designation of special areas of conservation.
- The Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and contiguous Atlantic area (ACCOBAMS) was made in 1996 under the Bonn Convention.
- The Berne Convention (on the Conservation of European Wildlife and Natural Habitats) is being implemented in all the European countries.
- The action plan for the conservation of cetaceans in the Mediterranean Sea.
- The action plan for the management of the Mediterranean monk seal (*Monachus monachus*).
- The action plan for the conservation of Mediterranean marine turtles
- The action plan for the conservation of marine vegetation in the Mediterranean Sea.
- The HAB related actions. EU has established a Community Reference Library (CRL) which handles the problems associated with HAB toxins in seafood and coordinates meetings with representatives from National Reference Laboratories (NRL) within the EU and associated countries (ICES). In 2002, the EU Commission adopted the Decision (2002/225/EC) concerning maximum levels of certain bio toxins in marine gastropods, tunicates, bivalve molluscs and echinoderms.
- The Global Convention on the Protection of Biological Diversity (CBD).
- The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention, 1979).
- The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

- The RAMSAR Convention on Wetlands of International Importance especially as Waterfowl Habitat (1971).

6.8.4 Fisheries — aquaculture

- The FAO General Fisheries Commission for the Mediterranean (GFCM) aims at establishing management measures for fishery resources at regional level. More specifically it aims to promote the development, conservation and management of living marine resources occurring in the Mediterranean, the Black Sea and connecting waters, both in areas under national jurisdiction and on the high seas. In order to achieve its goal, the GFCM can, by a two-thirds majority, adopt recommendations on the measures for the conservation and rational management of living marine resources. Other FAO projects on a sub regional level in the Mediterranean include ADRIAMED, fostering scientific cooperation to promote responsible fisheries in the Adriatic. FAO COPEMED, another Mediterranean Project, focuses on advice, technical support and establishment of cooperation networks to facilitate coordination to support fisheries management in the Mediterranean. COPEMED area covers the western and central sub-regions of the Mediterranean.
- The EU Common Fisheries Policy (CFP) is the European Union's instrument for the management of fisheries and aquaculture. The CFP, which has been in operation since 1983, recently (2002) underwent extensive changes. Among others, a plan to ensure the sustainability of fisheries in the Mediterranean was adopted in October 2002. The measures foreseen in the Action Plan include:
 - a concerted approach to declaring fisheries protection zones;
 - the use of fishing effort as the main instrument in fisheries management;
 - improving fishing techniques so as to reduce the adverse impact on stocks and the marine ecosystem;
 - promoting international cooperation.

The EU has exclusive expertise in international relations concerning fisheries. It is empowered to undertake international commitments towards third countries or international organisations in matters relating to fisheries and aquaculture. The European Commission, on behalf of the EU, negotiates fisheries agreements with third countries and participates in various regional fisheries organisations (RFOs).

International conventions include:

- ICCAT (International Convention for the Conservation of Atlantic Tunas), in force since 1969, is designed to ensure the sustainable exploitation of Atlantic tuna and tuna-like species not only in the Atlantic Ocean but in adjacent seas, such as the Mediterranean.
- The Contracting Parties to the International Convention for the Conservation of Atlantic Tunas include Morocco, Libya, Turkey, Tunisia and the EC. On the basis of scientific research ICCAT can through its International Commission make recommendations aimed at ensuring the maximum sustainable catch. These recommendations, if not objected to by a majority of Parties, are binding on all Parties, except those that register formal objections.
- The FAO Code of Conduct for Responsible Fisheries, which was adopted in 1995, sets out principles and international standards of behaviour for responsible practices with a view to ensuring the effective conservation, management and development of living aquatic resources with due respect for the ecosystem and biodiversity.

6.8.5 Combat desertification and drought

The adoption in 1996 of the United Nations Convention to Combat Desertification and Drought (UNCCD) is intended to be an initial response on an international scale, but the mid- and long-term effects remain uncertain. An estimate of the technical costs of prevention, improvement and restoration of lands degraded by desertification (pasturelands, cultivated land, irrigated land) in North Africa and Mediterranean Europe has been assessed by Plan Bleu at about US\$1.2 thousand million per year. This only indicative figure is rarely compared with the losses of production induced by degradation and the indirect costs.

The fundamental issue remains the need to combat poverty through sustainable rural development, so as to have an impact on desertification. This battle cannot be fought through technical measures to prevent soil degradation and restore degraded land alone; it has to be part of an integrated and holistic process.

During the World Summit in Johannesburg in 2002, the Global Environment Facility (GEF) agreed to contribute to financing the implementation of the Convention. Its implementation at the national level will not be without problems. The recently developed national action plans reveal a certain dispersion of content and methods and insufficient diagnoses and evaluation.

6.8.6 Climate Change

The Kyoto Protocol is an agreement made under the United Nations Framework Convention on Climate Change (UNFCCC). Countries that ratify this protocol commit to reduce their emissions of carbon dioxide and five other greenhouse gases, or engage in emissions trading if they maintain or increase emissions of these gases.

The Kyoto Protocol now covers more than 160 countries globally and over 55% of global greenhouse gas (GHG) emissions. The objective is the "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system."

The treaty was negotiated in Kyoto, Japan in December 1997, opened for signature on March 16, 1998, and closed on March 15, 1999. The agreement came into force on February 16, 2005 following ratification by Russia on November 18, 2004. As of December 2006, a total of 169 countries and other governmental entities have ratified the agreement (representing over 61.6% of emissions from Annex I countries). Notable exceptions include the United States and Australia. Other countries, like India and China, which have ratified the protocol, are not required to reduce carbon emissions under the present agreement.

However, questions have been raised about the Kyoto deal to question its continuation in its present form after the first implementation period 2008-2012

The Kyoto Protocol binds participating industrialised countries, listed in Annex I of the agreement, to cut emissions on the principle that industrialised countries produce the largest amounts of emissions through industry and transportation, and therefore bear prime responsibility to reverse the problem.

But the largest pollutant, the United States has remained on the sidelines of the Kyoto Protocol. And the agreement does not cover rapidly industrialising countries like China, India, Brazil and Mexico.

A new three-year dialogue has been launched by COM+: The Alliance of Communicators for Sustainable Development and the Global Legislators Organisation for a Balanced Environment (GLOBE), a network of lawmakers from around the world.

The COM+ Alliance is a partnership of international organisations and communications professionals from diverse sectors committed to using communications to promote sustainable development. COM+ members include the BBC World Service Trust, the World Bank, IUCN (World Conservation Union), the Reuters Foundation and Inter Press Service (IPS).

The dialogue will bring together legislators from the G8 countries as well as from India, China, Brazil, Mexico, South Africa, Spain and Australia and international business leaders and civil society "to generate an understanding of the beyond-Kyoto scenarios and to discuss a 2012 climate change agreement."

6.8.7 Maritime transport and environment

1) *Barcelona Convention Protocols*

Protocol for the prevention of pollution of the Mediterranean Sea by dumping from ships and aircraft

The Protocol covers only pollution of the region of the Mediterranean Sea caused by ships and aircraft. Dumping of certain types of waste and matter (toxic organohalogen and organosilicon compounds, mercury, cadmium, plastics, crude oil, etc.) is prohibited.

Dumping of other matter or types of waste (arsenic, lead, copper, zinc, chrome, nickel, containers, scrap metal, certain types of pesticides, etc.) is subject to the prior issue of a special or general permit by the competent national authorities.

Such permits may be issued only after careful consideration of a number of factors (characteristics and composition of the matter, characteristics of dumping site and method of deposit, general considerations and conditions).

Ships and aircraft used for other than governmental and non-commercial purposes are excluded from the scope of the Protocol.

Protocol concerning cooperation in combating pollution of the Mediterranean Sea by oil and other harmful substances in cases of emergency.

This Protocol stipulates that the Parties will cooperate when a huge quantity of oil and/or other harmful substances in the Mediterranean Sea, whether accidental or cumulative, presents a serious and imminent danger to the marine environment, the coast or the economic, health or ecological interests of one or more Parties.

This cooperation focuses on drawing up emergency plans, promoting measures for combating oil pollution in the sea, monitoring and exchanging information regarding the state of the Mediterranean Sea, disseminating information on the organisation of resources and on new methods to prevent and combat pollution, and developing research programmes on the subject.

The Protocol requires all Parties facing a critical situation to carry out the necessary, precise evaluations concerning the nature and the size of the accident, take all measures likely to reduce or eliminate the effects of this pollution, and inform other Parties, either directly or through the Regional Centre for the Mediterranean Sea created by the Barcelona Convention, of these evaluations and actions undertaken.

Protocol concerning cooperation in preventing pollution from ships and, in cases of emergency, combating pollution of the Mediterranean Sea

This Protocol updates the legal mechanisms in the Barcelona Convention by incorporating in it measures concerning cooperation between Parties regarding prevention and, in cases of emergency, combating pollution in the Mediterranean caused by ships. It also endeavours to promote the development and implementation of international regulations adopted in the framework of the International Maritime Organization.

Cooperation focuses on maintaining and promoting emergency plans and other means for preventing and combating pollution from ships, adequate monitoring of the Mediterranean Sea, efforts to recover harmful and potentially dangerous substances, as well as disseminating and exchanging information.

The Protocol also stipulates operational measures which the Parties must take in the event of pollution caused by ships (evaluation, elimination/reduction, information measures), as well as

emergency measures which must be taken on board ships, in offshore installations and in ports (in particular the availability of and compliance with emergency plans).

2) EU Marine Thematic Strategy and Green Paper

A **Marine Thematic Strategy** has recently been put forward by the EC including a proposal for legislative action. This Strategy is one of the pillars upon which any maritime policy for the Union must rest and this principle has been made clear in the Green Paper on an EU Maritime Policy. Green paper seeks to examine the economic activities of Europeans operators which are linked to, or impact on, the oceans and seas, and the policies dealing with them, with a view to finding better ways of enabling Europeans to derive more – and sustainable – benefit from the oceans.

Furthermore, the recently adopted Third Maritime Safety Package is expected to make a substantial contribution to maritime safety, thus securing the marine environment from pollutant activities of vessels. Proposals for a number of Directives have been prepared regarding: compliance with flag State requirements, common rules and standards for ship inspection and survey organizations and for the relevant activities of maritime administrations, Port State Control, amendment of Directive 2002/59/EC establishing a Community vessel traffic monitoring and information system, establishment of the fundamental principles governing the investigation of accidents in the maritime transport sector and amending Directives 1999/35/EC and 2002/59/EC, Civil liability and financial guarantees of ship – owners.

European policies on the marine environment need a general framework within which to operate, and at the same time implementation of such policies will need to take account of the realities of Europe's geographical situation.

The Thematic Strategy for the Marine Environment proposes an ecosystem-based regional planning. It encourages Member States to cooperate within the framework of Marine Regional Conventions which, in the Mediterranean basin, is that laid down by the Barcelona Convention.

In addition, the Green Paper underlines that, where appropriate, Member States should use existing regional organisations whose activities impact on maritime activities, such as the Barcelona Process for the Mediterranean. Moreover, it points out the need for joint cooperation between Member States and non-EU countries for developing and implementing strategies at regional level.

As concerns cooperation in the field of response to marine pollution, the Council Decision of 23 October 2001 (2001/792/EC, EURATOM) has established a Community Mechanism to facilitate reinforced cooperation in civil protection assistance interventions, covering both civil protection and marine pollution. The general purpose of the Mechanism is to provide, on request, support in the event of major emergencies and to facilitate improved coordination of assistance intervention provided by the Member States and the Community. The recent updating of the Barcelona legal framework shows that the Parties consider it to be a dynamic system capable of being subject to re-examination and improvement, if appropriate.

3) The SAFEMED Project

The SAFEMED Project aims to develop Euro-Mediterranean cooperation in the field of maritime safety and security and prevention of pollution from ships, by providing technical advice and support to the non-EU Mediterranean countries included in the group of "Mediterranean Partners" as defined in the Euro-Mediterranean Partnership established in the 1995 Barcelona Conference. The ten Mediterranean Partners are: Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, the Palestinian Authority, Syria, Tunisia and Turkey.

The project is implemented by REMPEC since January 2006 it is planned to run till the end of 2008, under the overall coordination of the EC. The primary objective of the SAFEMED Project is to mitigate the existing imbalance in the application of maritime legislation in the region between the EU Member States and the Mediterranean partners that are not members of the EU, through promoting a coherent, effective and uniform implementation of the relevant international conventions

and rules aimed at better protection of the marine environment in the Mediterranean region by having safer shipping and preventing pollution from ships.

To that effect, the Project will focus on the following activities:

- Effective flag State implementation and monitoring of classification societies
- - Safety of navigation through the development of traffic monitoring systems
- - Protection of the marine environment
- Human element
- Security of ships and Port facilities in the Mediterranean region

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7. LIKELY EFFECTS ON THE ENVIRONMENT

Having presented the current state of environment (in Chapters 3 and 4) and the existing environmental problems of the Mediterranean Basin (Chapter 5), this chapter focuses on the assessment of the effects of the Programme.

The likely effects on the *environment* focus on the following *issues (or fields)*:

- **Biodiversity**
- **Population**, in terms of “quality of life”
- **Human Health**, mainly in relation with water and air quality
- **Flora/Fauna**
- **Soil**, in relation with soil degradation (desertification and pollution) and coastal erosion
- **Water**, in terms of quantity and quality
- **Air**
- **Landscape**
- **Noise**, mainly in relation with transport related noise in urban centers
- **Climatic Factors**, in relation with GHG emission, as indicator of impact on climate change
- **Material Assets**, mainly in relation with property
- **Cultural Heritage**
- **Economic sectors**, in the broader term of effect on the economy of the eligible territories (covering all sectors)

Effects are assessed in terms of their:

- **Kind** : positive, neutral or negative
- **Magnitude**: small, medium, strong
- **Duration**: short-, medium-, long term
- **Reversibility**: temporary, permanent, (cumulative)
- **Origin**: primary, secondary
- **Immediacy or readiness**: direct, indirect

A Strategic Environmental Assessment requires likely *significant* effects on the environment to be assessed. However, the nature of the actions foreseen to materialize through the Mediterranean Sea Basin Programme, being mainly of a strategic or pilot project level, without “hard” actions such as development of new infrastructure, is not expected to cause significant effects on the environment, negative or positive. Moreover, the whole Programme is based on the Sustainable Development principles. Thus, each one of the ten measures takes into consideration the environmental dimension, being one of the main dimensions of the sustainable development.

The assessment in this chapter examines all possible types of effects to the aforementioned issues, for each measure of the Programme separately, resembling of a screening procedure of effects identification. The magnitude of the effects is assessed on a comparative basis, taking into account the measures of the Programme. Thus, “strong” effect reflects that the measure has on the corresponding “issue” stronger effect when compared to other measures of the Programme or that the corresponding “issue” is the one mainly affected when compared with others within the same measure.

“Strong” effect could be inter-subjective provided that actions implemented in the framework of the Programme have high cohesion and synergistic effect with other on going initiatives in the Mediterranean region.

Another issue that needs to be pointed out in the assessment is that the level of specialisation of the actions of the Programme does not allow for detailed assessment to be made. Examples of possible actions are Annexed to the Programme are only “indicative” and are not detailed enough to allow for precise assessment of the affects. Furthermore, some actions could be implemented only in some countries and therefore the impact on Mediterranean Basin level cannot be assessed in adequate precision. Thus, identification of “likely” effects is indeed what this SEA report tries to enlighten.

The following Table (matrix) presents the effects of all the measures of the Programme.

Table 7.1: Effects Matrix – synoptic presentation of the likely environmental effects of the Programme

Priority	Measure	Bio diversity	Population	Human Health	Flora/Fauna	Soil	Water	Air	Landscape	Noise	Climatic Factors	Material Assets	Cultural Heritage	Economic sectors
1	1.1 Support to innovation and research in the process of development of Mediterranean territories	positive, small, indirect	positive, small, indirect	positive, small, indirect	neutral	positive, small, indirect	positive, medium, cumulative, indirect	positive, medium, cumulative, indirect	neutral	neutral	positive, medium, cumulative, indirect	neutral	positive, medium, indirect	positive, strong, cumulative, direct
	1.2 Strengthening trans-Mediterranean economic clusters synergies among potential of territories	negative, small, indirect	positive, strong	neutral	neutral	negative, medium, long-term, cumulative, direct	negative, medium, long-term, cumulative, direct	negative, medium, long-term, cumulative, direct	neutral	neutral	negative, small, cumulative, indirect	neutral	neutral	positive, strong, long-term
	1.3 Supporting to the development of Mediterranean strategies of territorial development integrating different levels: local, metropolitan urban rural and basin	neutral	positive, medium	positive, medium	neutral	positive, small	positive, medium	positive, medium	positive, strong	positive, small	positive, small	positive, strong	positive, medium	positive, strong
2	2.1 Prevention and reduction of risk factors for the environment and enhancement of natural common heritage	positive, medium, indirect	positive, strong, direct and/or indirect	positive, medium, indirect, long-term	positive, strong, direct	positive, strong, direct, long-term	positive, strong, direct, long-term	positive, medium, direct	positive, strong, direct	neutral	positive, small	positive, strong, direct	positive, medium, indirect	positive, medium, direct and indirect
	2.2 Diffusion of renewable energies and improvement in energy effectiveness	neutral	neutral	positive, small, secondary	neutral	neutral	neutral	positive, strong, secondary	neutral	neutral	positive, strong, primary	neutral	neutral	positive, strong, primary
3	3.1 Support to people flows among territories as a means of cultural, social and economic enrichment	neutral	positive, medium	neutral	neutral	neutral	negative, medium, indirect	negative, medium, indirect	negative, medium, indirect	neutral	negative, small	positive, medium	positive, strong	positive, strong
	3.2 Improvement of conditions and modalities of circulation of goods and capitals among the territories	neutral	positive, small, indirect	positive, small, indirect	neutral	neutral	neutral	neutral	neutral	neutral	neutral	neutral	neutral	positive, strong, direct
4	4.1 Support to mobility, exchanges, training and professionalism of young people	positive, small, secondary	positive, medium, primary	neutral	positive, small, secondary	positive, small, secondary	positive, small, secondary	positive, small, secondary	positive, small, secondary	neutral	positive, small, secondary	neutral	positive, small, secondary	positive, small, secondary
	4.2 Support to the artistic creativity in all forms to encourage dialogue among communities	neutral	positive, medium, secondary	neutral	neutral	neutral	neutral	neutral	positive, medium, secondary	neutral	neutral	neutral	positive, strong, primary	positive, medium, primary
	4.3 Improvement of the governance process at local level	positive, medium, secondary	positive, medium, secondary	positive, medium, secondary	positive, medium, secondary	positive, medium, secondary	positive, medium, secondary	positive, medium, secondary	positive, medium, secondary	positive, medium, secondary	positive, medium, secondary	positive, medium, secondary	positive, strong, secondary	positive, medium, secondary

7.1 Priority 1: “Economic promotion and enhancement of territories”

7.1.1 “Measure 1.1: Support to innovation and research in the process of development of Mediterranean territories”

Priority 1:Economic promotion and enhancement of territories	
Measure 1.1: “Support to innovation and research in the process of development of Mediterranean territories”	
Environmental Field	Likely effects
Biodiversity	positive, small, indirect
Population	positive, small, indirect
Human Health	positive, small, indirect
Soil	positive, small, indirect
Water	positive, medium, cumulative, indirect
Air	positive, medium, cumulative, indirect
Climatic Factors	positive, medium, cumulative, indirect
Cultural Heritage	positive, medium, indirect
Economic sectors	positive, strong, cumulative, direct

This measure, being linked to the economic promotion of the area through the support to research and promotion of innovation activities, is expected to have the biggest of its effects on the area’s economy. This effect is expected to be strongly, positive for the economic sectors, given that through this measure a boost to the competitive development of these territories is planned, by the diffusion of innovation technologies and research activities in globally competitive productive sectors. This is going to be a primary (direct) effect, of a cumulative nature, as its benefit to the economic sectors would be gradually growing, by more and more new technologies being introduced to the market.

The environmental effects of this measure are secondary (indirect), being considered as a result of this economic development. The research and innovation activities are going to be focused primarily on marine sciences (marine and coastal ecosystems), therefore the effects on the water are expected to be positive of medium magnitude and of a cumulative nature. The same applies for the air and climatic factors, as the measure will mainly focus on the development of alternative energy sources (solar, photovoltaic, wind, etc.) and the promotion of energy efficiency in production activities and the public affairs, resulting to the promotion of green energy, the production of less air pollution and less greenhouse gases.

As technologies for the protection of cultural, historical and archaeological resources will be promoted through this measure, this would bring a positive (medium) effect on the cultural heritage of the area.

The remaining environmental fields (biodiversity, population, soil) are expected to be mildly effected by this measure, however, positively, as its realisation is not going to be significantly connected to them.

7.1.2 “Measure 1.2: Strengthening trans-Mediterranean economic clusters synergies among potential of territories”

Priority 1: Economic promotion and enhancement of territories	
Measure 1.2: “Strengthening trans-Mediterranean economic clusters synergies among potential of territories”	
Environmental Field	Likely effects
Biodiversity	negative, small, indirect
Population	positive, strong
Water	negative, medium, long-term, cumulative, direct
Air	negative, medium, long-term, cumulative, direct
Soil	negative, medium, long-term, cumulative, direct
Climatic Factors	negative, small, cumulative, indirect
Economic sectors	positive, strong, long-term

Given the strong economic context of this measure, its implementation is expected to mainly benefit the economic sectors of the area. The anticipated effect of this measure is considered as strongly positive, as it would be based on the fact that the cooperation actions under this measure, concerning agriculture, agro-food, fisheries, aquaculture, handicrafts, textile, clothing and tourism, will aim towards the transnational partnership of economic clusters on these sectors.

The promotion of aquaculture or unsustainable fishing could however, have negative effects, of a medium or smaller magnitude for the biodiversity of the area of their operation. These effects are usually linked to the degradation of water quality in the area of the aquaculture units and as for the case of fishing, unsustainable fishing is usually reflected on marine biodiversity. However, these effects on biodiversity are not considered as the direct effects of this measure, but as indirect effects related to the long-term growth of the fishing industry through this measure.

Small and medium negative effects are expected for the case of air and climatic factors respectively, as the result of the anticipated development of some productive sectors which could be eventually the source of air emissions and more specifically, greenhouse gas emissions. It should be noted that the negative effects on water and soil are also linked to the development of these productive/industrial sectors, including agriculture, which is expected to have a significant share of the effects.

Pollution of this kind could be persistent and for this reason, some effects were considered to be long-term and cumulative.

7.1.3 “Measure 1.3: Supporting to the development of Mediterranean strategies of territorial development integrating different levels: local, metropolitan urban rural and basin”

Priority 1: Economic promotion and enhancement of territories	
Measure 1.3 “Supporting to the development of Mediterranean strategies of territorial development integrating different levels: local, metropolitan urban rural and basin”	
Environmental Field	Likely effects
Population	positive, medium
Human Health	positive, medium
Soil	positive, small
Water	positive, medium
Air	positive, medium
Landscape	positive, strong
Noise	positive, small
Climatic Factors	positive, small
Material Assets	positive, strong
Cultural Heritage	positive, medium
Economic sectors	positive, strong

As it is apparent from the above table, all effects of this measure are likely to be positive for the natural environment. As the measure is related to the promotion of the strategies of territorial development, where best practices are introduced, holding back the negative consequences of unsustainable territorial development, it can have a positive impact on the environmental sectors such as water, air, soil, climatic factors and noise. Moreover, the introduction and promotion of environmental managements systems such as ISO 14001 and EMAS, which aim towards the environment friendly performance of the industry, enterprises etc, it can have also a positive effect.

The territorial planning at local, metropolitan, urban, rural and basin level could allow for different types of activities to be located in the right areas, allowing for a sustainable tourism development , or protecting in that way others of a sensitive, or even saturated state. Areas of cultural interest can be protected and the value of an area can be increased, if it is planned properly, for its use. In other words, the effects on the cultural heritage or material assets can be positively strong or of medium magnitude.

Additionally, the promotion of the welfare system, promoting public/private partnership for the health services, can be proved valuable for the areas of the basin that do not have a good or modern welfare network. The impact of such a measure can have positive (medium) effects on human health and the population.

7.2 Priority 2: “Promotion of environmental sustainability at the basin level”

7.2.1 “Measure 2.1: Prevention and reduction of risk factors for the environment and enhancement of natural common heritage”

Priority 2: Promotion of environmental sustainability at the basin level	
Measure 2.1: “Prevention and reduction of risk factors for the environment and enhancement of natural common heritage”	
Environmental Field	Likely significant effects
Biodiversity	Positive, medium, indirect
Population	Positive, strong, direct and/or indirect
Human health	Positive, medium, indirect, long term
Flora / fauna	Positive, strong, direct,
Soil	Positive, strong, direct, long term
Water	Positive, strong, direct, long term
Air	Positive, medium, direct
Landscape	Positive, strong, direct,
Climatic factors	Positive, small
Material assets	Positive, strong, direct
Cultural Heritage	Positive, medium, indirect
Economic sectors	Positive, medium, direct and indirect,

Measure 2.1 “Prevention and reduction of risk factors for the environment and enhancement of natural common heritage” is one of the two measures of Priority 2 “**Promotion of environmental sustainability at the basin level**” of the Med Programme strongly oriented to the environmental protection of the Basin.

The **areas of intervention** decided by the participating countries are:

- i) fighting against land desertification and coastal erosion;
- ii) prevention of natural risks (floods and fires);
- iii) water cycle management and fighting against sea and river pollution;
- iv) reduction of the effects of different sources of pollution at the level of urban, industrial, and agricultural areas;
- v) waste management and recycling;
- vi) protection and sustainable enhancement of natural, land, and marine resources for economic and tourism purposes and the adoption of sustainable fishery techniques.

Trans-national actions and *pilot projects*, with strong transferability potential, will be implemented focusing on:

- the transfer of prevention practices with specific reference to new technologies of:
 - *harmonisation of procedures* (for prevention, evaluation of impacts and joint intervention in case of natural disasters or caused by human activities),
 - *management and monitoring of phenomena*,
 - *communication and awareness raising of local actors*.
- the sustainable use of natural, maritime and land heritage, through:
 - *the setting up of networks, natural parks and reserves*,
 - *the enhancement of the specificities of the Mediterranean landscapes*, in order to diversify the offer of tourism products to less advanced areas.

Some *indicative examples of possible actions* are:¹

- Support for the *reduction of marine pollution* through the implementation of transnational initiatives for the *adoption of environmental monitoring systems in port areas* and during maritime navigation, and drawing up of joint protocols for dealing with shipping damages;
- Development of *good practices*, mainly through the exchange of experiences, in the *management of coastal areas*, in combating coastal over-exploitation, beach degradation, in preventing and reducing the pollution of natural resources (water and soil) in urban, industrial and agricultural areas; mitigation and management of the effects of the climatic changes;
- Support for the *conservation and enhancement of the maritime heritage* (flora and fauna, archaeological sites, etc.) by adopting joint transnational *monitoring systems*;
- Promoting pilot initiatives for the *joint use of new technologies for environmental protection, risk management and territorial planning*;
- Development of pilot projects for the transfer of experiences on *management and urban waste recycling* and integrated planning in the framework of the management of natural resources;
- Adoption of joint approaches on *water cycle planning and management* (including rivers);
- Support for the *creation of networks* among the Mediterranean's *natural parks and protected areas for sustainable tourism purposes*;
- Improving *technical and administrative skills at local level* for the *prevention, monitoring and management of natural and technological risk*, particularly through the exchange of best practices in the preparation of *Environmental Action Plans* and on *monitoring and on the development of common methodologies and instruments* (for example the Strategic Environmental Assessment);
- Promoting *coordination among emergency services and civil protection departments* in order to promote the development of joint intervention procedures in cases of major crises as consequence of natural phenomena or human activities;
- Promoting joint *awareness, sensibilisation and mobilising campaigns* for people on common challenges and environmental issues related to the valorisation and the rational utilisation of natural resources.

This list of possible action of the programme, although not finalised, still provides an indication of the type of actions expected to materialize through the Programme. These are “soft” actions, i.e. not referring to the construction of infrastructure, but rather to the improved efficiency of the local actors

¹ More examples are annexed to the Programme. These are likely to be integrated and amended to focus better on the Programme.

and promotion of cooperation in sustainable development at basin level. Local actors and potential beneficiaries of the measure include local authorities, local development agencies, environmental agencies or similar organisations, governmental public national services, universities, community and environmental associations and economic operators.

Trans-national pilot projects, creation of networks, exchange of best practices and set up of common monitoring networks will promote cooperation, enhance the capacity of local actors and consequently contribute to the improvement of the environment as a whole.

The measure has fully integrated ENPI objectives of: the promotion of people-to-people cooperation at local level, working together to address common challenges (environment being one of them) and promoting the social and economic development in a sustainable way.

Similar objectives or areas of intervention are also targeted by other programmes, initiatives and/or strategies ²in the Mediterranean region, completed, on –going or planned for the coming years. These were taken into account in the development of the strategy of the Mediterranean Basin Programme to safeguard coherence and complementarity of this Programme with other initiatives.

As stated in the programme document, over the coming years the projects will establish synergies with the initiatives foreseen in the cooperation area, in terms of contents and integration of financial resources. In particular, the programme will contribute to the pursuit of shared solutions within the framework of transnational partnership, in order to face challenges and opportunities which characterize the development of the eligible territories.

The primary objective of the areas of intervention adopted and the resulting actions is to deal with environmental challenges and to contribute to the protection of the environment. Consequently the likely effects to each one of the environmental characteristics/issues examined will be *positive*.

Also, the kind of projects to be implemented aim in the generation of a *long term* positive effect on the environment, even though certain geographical areas will benefit more in the short or medium term through their participation in pilot projects.

Improvement of the environmental status affects in a positive way the population and human health.

Enhancement of natural resources for economic purposes, including tourism and through the adoption of sustainable fishery techniques is one of the targeted areas of intervention with positive effect to the economic sectors, and to the population of less developed areas.

The magnitude of effect (i.e. small, medium, strong) is assessed in a comparative way, considering as “**strong**” the effect on environmental characteristics/issues that will mainly benefit from the measure, these being:

- **Population**, through actions related with improved risk management, pollution abatement and sustainable development (e.g. tourism and fishing activities) (direct effect), and through the enhancement of natural resources and environmental protection (indirect or secondary effect)
- **Water**, through actions related with improved water cycle management and pollution abatement either from land based sources or from accidental pollution, protection of natural and marine resources.
- **Soil**, through actions related with fighting against land desertification, coastal erosion, prevention of floods and fires, pollution abatement, protection of land resources.
- **Flora/fauna**, through actions related with prevention of natural risks, especially fires and protection of the natural environment.

² Detailed list is presented in tabulated form in the Programme document. Relevant programmes and strategies are presented in Chapter 6.

- **Landscape and material assets**, through actions related with prevention of natural risks (floods and fires), fighting against coastal erosion and land desertification

Complementarity of the selected actions with on-going projects and focus on areas known to be in greater need or more vulnerable regarding the areas of intervention would enhance the strong effect of the measure, on the aforementioned issues or “environmental fields”.

The environmental fields or issues that are less (still positive) affected are:

- **Human health**: medium, indirect, long term effect is anticipated through actions related with pollution abatement (improved water and air quality) and prevention of risk
- **Biodiversity**: only medium and indirect effect is anticipated through the protection and sustainable enhancement of the natural, land and marine resources.
- **Air**: medium, direct through actions related with pollution abatement from land based source and prevention or risk of fires.
- **Economic sectors**: medium effect is anticipated as the measure is mainly oriented to environmental protection and sustainable development through the enhancement of natural resources. Direct effect can be expected for the economic sectors involved in the realisation of the projects foreseen, e.g. different type of services.
- **Climatic factors**: only small effect is anticipated through this measure. Measure 2.2 of the Programme is the one mainly focusing on this aspect of positive affecting the “climate change” issue through reduction of GHG emissions.
- **Cultural heritage**: again, only small and mainly indirect effect is anticipated through this measure, on the basis of promoting sustainable environment in the basin will have a positive effect on its cultural heritage as well, being one of the main dimensions of the Mediterranean Environment.

7.2.2 “Measure 2.2: Diffusion of renewable energies and improvement in energy effectiveness”

Priority 2: Promotion of environmental sustainability at the basin level	
Measure 2.2: “Diffusion of renewable energies and improvement in energy effectiveness”	
Environmental Field	Likely Effects
Human Health	positive, small, secondary
Air	positive, strong, secondary
Climatic Factors	positive, strong, primary
Economic sectors	positive, strong, primary

The aim of this measure is to address the unsustainable and polluting fossil fuel based energy system of the Mediterranean basin and mitigate, mainly the effects related with climate change (greenhouse effect emissions) and air pollution caused by the energy sector.

By improving energy efficiency and the increase of renewable energy share in the Mediterranean energy mix, the programme aims at opening up untapped economic opportunities that arise from facing the challenge of climate change. There is great potential for the energy intense sectors

(residential, industrial, transport, etc.) of the region to improve their performance (Chapter 5). By putting priority to energy saving and diversification of the energy sources, a win-win situation can be created, where at the same time the environmental risks are reduced and the economic activity can be enhanced.

Despite the large potential and clear-cut benefits of energy efficiency and renewable energy, these have been largely underexploited in the Mediterranean. It must be stressed that the potential is much more 'cashed in' by the NMC than the SEMC (see ch. 3&5). However, the need to undertake far reaching information and dissemination programmes for awareness raising, taking account the local context and the adoption of appropriate regulatory institutional frameworks, still exists for both countries of the north and south.

The diffusion of renewable energy technological know-how and the promotion of energy effectiveness can enhance the economic sector, through transnational activities such as, technology transfer and experiences, increased institutional capacity, R&D focusing on this field and investment opportunities that will arise.

In such transnational activities the actors to be involved should include environmental agencies, local NGO's, public authorities, universities and economic actors related to energy.

The measure has a reciprocal synergistic effect with the measures of Priority 1 "Economic promotion and enhancement of territories", where *promotion of research and development* and *strengthening of trans-Mediterranean economic clusters* could be oriented in energy efficiency and renewable energy.

The priority to energy efficiency and renewable energy given in this programme is included in the framework of major conventions and international agreements, particularly the Framework Convention on Climate Change and the Johannesburg Plan of Action. It also plays a complementary role in regional cooperation initiatives such as MEDENER, the Mediterranean network of energy efficiency agencies, where it promotes the exchange of experience in the energy efficiency and renewable energy fields. Furthermore, standards harmonization and institutional capacity building promotion for this priority could be achieved by the application in national strategies of the many European Directives (energy efficiency, labelling of household appliances, the harmonization of energy taxes, thermal regulation, renewable energies, etc.).

The effect of the measure on the environment of the Mediterranean Basin will have positive impact primarily to the economic sector and to the climate change.

Secondary positive impacts have being identified for the air and human health. The adoption of cleaner energy sources (i.e transport sector) or the diversification of the electricity production with an increased share of renewable energy sources (wind, photovoltaic, biomass, etc.) will eventually have positive impacts to air quality and consequently human health. However, it takes more time, as it requires actual introduction of new infrastructure.

The *energy efficiency* part of the measure is expected to have more immediate effects to the productive sector of the region, by reducing energy costs through better planning and capacity building without the need for building new infrastructure. Energy saving activities can also reduce the environmental risks of climate change in a more immediate manner as they reduce energy demand.

The *renewable energy* part of the measure will pave the way for actual implementation of pilot projects, expanding of renewable energies markets to the whole region, mainly by increasing institutional capacities and by raising the awareness of decision makers and end users.

These conclusions have being made on the basis that, as far as renewable energy is concerned, potential impacts on the environment from the actual construction of renewable energy infrastructure cannot be considered bearing in mind the "soft" action character of the measure. Thus, potential effects on landscape, flora/fauna etc., should be considered in detail on the actual implementation of relevant projects that would be generated from this programme. See. Chapter 8

7.3 Priority 3: “Promotion of better conditions and modalities for ensuring the mobility of ideas, persons, goods and capitals”

7.3.1 “Measure 3.1: Support to people flows among territories as a means of cultural, social and economic enrichment”

Priority 3: Promotion of better conditions and modalities for ensuring the mobility of ideas, persons, goods and capitals	
Measure 3.1: “Support to people flows among territories as a means of cultural, social and economic enrichment”	
Environmental Field	Likely Effects
Population	positive, medium
Water	negative, medium, indirect
Air	negative, small, indirect
Landscape	negative, small, indirect
Climatic Factors	negative, small, indirect
Material Assets	positive, medium
Cultural Heritage	positive, strong
Economic sectors	positive, strong

As this measure aims at supporting people flows, in other words migration, through the social and economic integration of migrants, it is considered to have significant positive effects on the anthropogenic environment. Interventions on the inclusion of migrants in the labour market of the hosting countries are expected to have positive effects on the economic sectors of the Mediterranean countries whereas others focusing on providing social services, education, welfare, legal advice, housing etc, would bring positive results on the population, its quality of life and social behaviour. The integration of migrants through activities which would lead to awareness raising about the migrants culture or communication between the two parts could help towards the exchange of cultural elements and the cultural enrichment of both sides.

It should however be considered that the increase of population in some areas, is related to pressures to the environment. Water supply and wastewater issues are common, increase of traffic, construction, manufacturing, therefore increase of air emissions and climatic factors deterioration are expected, if migration is not realised in a planned and sustainable manner. The landscape could also be deteriorated if housing or other activities related to people flows do not occur after appropriate planning. These effects are “mild” and not direct results, as they are not the immediate effects of constructions; they are considered as likely, secondary consequences of the conditions described above.

7.3.2 “Measure 3.2: Improvement of conditions and modalities of circulation of goods and capitals among the territories”

Priority 3: Promotion of better conditions and modalities for ensuring the mobility of ideas, persons, goods and capitals	
Measure 3.2: “Improvement of conditions and modalities of circulation of goods and capitals among the territories”	
Environmental Field	Likely Effects
Population	positive, small, indirect
Human Health	positive, medium, indirect
Economic sectors	positive, strong, direct

This measure focuses on the improvement of conditions and modalities for the circulation of goods and capitals among the areas within the Mediterranean basin. This does not appear to have an environmental dimension, but only to be related to the amelioration of the quality of life of the population, the improvement of human health and the economic sectors.

The dissemination and application of procedures and actions related to the circulation of goods and capital, being in compliance with international, national and regional regulations would bring obvious, positive, direct effects on the economic sectors of the area, as more goods would be circulated, more jobs would be created and prices of goods would become competitive. The involvement of the public sector is expected to play a crucial role; however, the appropriate mechanisms and circumstances would be prepared, so that private actors could also be involved.

There is provision, under this measure, for the introduction of new Information and Communication Technologies (ICT) for the improvement of technical and administrative operations of maritime transports, the improvement of customs, for the improvement of connections and competitiveness of logistic structures and transport, bringing in that way an increase to the efficiency of trans-national trade and consequently, adding to the quality of life of the population. This would be accomplished through the promotion education and information campaigns to all key actors.

Moreover, this measure would also provide the consumers of the Basin the opportunity to trace the origin of products available, increasing therefore, the reliability as well as the quality of products circulated and as a consequence, human health and population.

7.4 Priority 4: Promotion of cultural dialogue and local governance

7.4.1 “Measure 4.1: Support to mobility, exchanges, training and professionalism of young people”

Priority 4. Promotion of cultural dialogue and local governance	
Measure 4.1 “Support to mobility, exchanges, training and professionalism of young people”	
Environmental Field	Effects
Biodiversity	positive, small, secondary
Population	positive, medium, primary
Flora/Fauna	positive, small, secondary
Soil	positive, small, secondary
Water	positive, small, secondary
Air	positive, small, secondary
Landscape	positive, small, secondary
Climatic Factors	positive, small, secondary
Cultural Heritage	positive, small, secondary
Economic sectors	positive, medium, primary

The north-south differences of the Mediterranean region are in many aspects clear when dealing with economic progress or capacities. However, when it comes to co-operation among communities of the Mediterranean area to pursue social cohesion and mutual prosperity, the region’s territories should be treated as equal as both sides of the rim will benefit from each other. Cultural dialogue is fundamental to erase differences and create a culture that all people will benefit.

The measure’s strategic focus on the young citizens of the area to make them adopt a culture that will ensure the promotion of exchange, dialogue and co-operation in the long-term.

The facilitation of know-how and dialogue through exchange initiatives, increasing professionalism of young people that is responsive to the needs of productive sectors, as well as, promotion of entrepreneurship and skills, creates a base with a critical mass that has the abilities to communicate, be open to new ideas, understanding deferent cultures and adopting to ever changing environments.

Schools, universities (expanding EU programmes such as ERASMUS), vocational training centres, etc., will be the main actors to promote such transnational initiatives or joint actions. There exists an obvious synergy with this measure and the measures of Priority 1, which promotes *economic*

enhancement and Priority 3, where support to people flows among territories as a means of cultural, social and economic enrichment is in pursuit.

This measure was found to have primary positive effects on the population and the economic sectors, as it promotes development of qualifications, skills and training among young people. By acquiring better qualifications, a person can increase the chances of raising its living standards. On the other hand, highly skilled young professionals become a valuable asset for the productive sector.

The positive effects on the environment, identified for this measure, will be more indirect and long-term envisioned. They are founded on the basis that by building human capacity, knowledge and awareness is raised on environmental matters. The pursuit of better quality of life goes hand in hand with the better environmental quality. This measure creates a great chance for the Mediterranean region's environmental problem to be treated as a pan-Mediterranean issue by young people. Furthermore, in order to deal with environmental issues, it requires continuity and long-term treatment.

Lastly, the promotion of entrepreneurship and a culture of voluntary actions can open the way for young people to create businesses or NGO's with a 'green' orientation.

7.4.2 "Measure 4.2: Support to the artistic creativity in all forms to encourage dialogue among communities"

Priority 4: Promotion of cultural dialogue and local governance	
Measure 4.2: "Support to the artistic creativity in all forms to encourage dialogue among communities"	
Environmental Field	Likely Effects
Population	positive, medium, secondary
Landscape	positive, medium, secondary
Cultural Heritage	positive, strong, primary
Economic sectors	positive, medium, primary

The Mediterranean is a region with a rich and unique cultural heritage. Apart from the heritage, it is very rich and diverse in cultural creativity at present. As this measure envisions encouraging dialog among communities, its heritage and present creative expressions can become an important tool in order to achieve it.

Both tangible and intangible cultural heritage is viewed as a pan-Mediterranean issue that will encourage cooperation among countries. Apart from working together for common issues, it is equally important to preserve and promote local identity.

Transnational initiative and intercultural exchange, as well as artistic cross-fertilization encourage dialogue between the region's communities, while opening up economic development possibilities through culture-oriented tourism.

The measure is mainly addressed to young people or emerging artists, as they will assure the continuity and create a macro-vision on the dialogue of the basin's cultural heritage.

Potential actors to be involved are identified as local authorities, academies, museums, national and international (UNESCO) cultural associations, universities, events organizers and the art production sector.

This measure will primarily affect in a positive way the cultural heritage, as it promotes better understanding and preservation of the region's tangible and intangible cultural heritage.

It will also have a direct positive effect on the economic sector as it encourages culture oriented tourism and initiatives in artistic sectors (artistic and industrial creation, fashion and design, architecture, literature, cinema and media).

Indirect, long-term positive effects can be expected for the population as increased interaction with culture and availability of chances in creation and expression are an essential element for improving quality of life. In this respect, the enrichment of cultural content also develops the "aesthetics" criteria that could possibly have in the long-term positive effect to the landscape. In the same frame of mind, "aesthetics" could have positive effects in other environmental fields. However, the linkage cannot be made so easily in respect to the presently discussed measure.

7.4.3 Measure 4.3: Improvement of the governance process at local level

Priority 4: Promotion of cultural dialogue and local governance	
Measure 4.3: "Improvement of the governance process at local level"	
Environmental Field	Likely Effects
Biodiversity	positive, medium, secondary
Population	positive, medium, secondary
Flora / fauna	positive, medium, secondary
Soil	positive, medium, secondary
Water	positive, medium, secondary
Air	positive, medium, secondary
Landscape	positive, medium, secondary
Noise	positive, medium, secondary
Climatic factors	positive, medium, secondary
Cultural Heritage	positive, strong, secondary
Economic sectors	positive, medium, primary

The process of policy making and governance constitute the conceptual framework leading to sustainable development through institutional building and policy implementation. Since the subject itself, development and sustainability, represents a cross-cutting area, effective governance requires horizontal coordination between the various sectoral agents and stakeholders through all steps of the process. By this participatory nature governance fosters continuous relationships and partnerships among all the actors and the members of the society. Linkages and negotiations are imperative to effective institutional management and capacity building obviating isolation and control.

In that respect local government bodies (municipalities, regional authorities) have a crucial role to play in developmental issues, as their competences range from critical regulatory tasks to 'softer' but nevertheless important, which is their role of informing, involving and mobilising public opinion. It

goes without saying that local authorities are much closely associated with citizens, and hence their potential for integrated planning and effective implementation is augmented.

This measure of the Programme provides an opportunity to ensure that the local level of government has an opportunity to influence policy and legislation that will have an impact on their own particular set of circumstances. It also ties the national level of government into a dialogue with local and regional authorities. This will make for greater influence in the regions and therefore make policy more focussed and relevant to the needs of specific region. This will be achieved through the effective balance of dialogue and the transnational exchange of experiences among the different actors involved in the process of local development.

As such, the effects of this measure at the various environmental fields are all of them considered to be positive, medium and secondary (except that of the economic sectors, which is characterised as primary). The intention to increase the involvement of local and regional actors (including wider civil society) in the formulation and implementation of policy is essential to good governance, because policy can only be strengthened when taking the views of those who will either implement it or be the subject of it at the outset.

7. LIKELY EFFECTS ON THE ENVIRONMENT	7-1
7.1 Priority 1: “Economic promotion and enhancement of territories”	7-4
7.1.1 “Measure 1.1: Support to innovation and research in the process of development of Mediterranean territories”	7-4
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Table 7.1: Effects Matrix – synoptic presentation of the likely environmental effects of the Programme 7-3

8. PREVENTIVE AND MITIGATION MEASURES

In accordance with SEA Directive requirements, once the significant adverse effects have been identified, preventive and mitigation measures should be put forward to offset these effects.

As presented in the previous Chapter, significant adverse effects on the environment are not likely, provided that the principles of sustainability and compliance with environmental protection legal requirements are adhered to.

These prerequisites together with any assumptions made to safeguard that the Programme will not result in any significant adverse effects as well as recommendations to enhance the identified positive effects are discussed in this Chapter.

Preventive actions, mitigation measures and recommendations are discussed separately for each measure.

8.1 Priority 1: “Economic promotion and enhancement of territories”

8.1.1 “Measure 1.1: Support to innovation and research in the process of development of Mediterranean territories”

The likely effects of this measure, aiming towards the support of innovation and research are all expected to be positive and no adverse effects were identified. However, it should be noted that some guidelines towards the proper implementation of this measure should be given for preventing any negative results.

In general, research and innovation activities should be concentrated on issues that are of major concern for the Mediterranean Basin. Priority is to be given to the following sectors: i) Marine sciences (marine and coastal ecosystems); ii) Agro-food technologies and biotechnologies; iii) Technologies for protection, maintenance and optimisation of historical and archaeological resources; iv) Logistics and harmonisation of port procedures v) Development of alternative energy sources (solar, photovoltaic, wind, etc.) and promotion of energy efficiency in production activities and in public affairs; vi) Technologies applied to public services (management of urban transport, waste treatment and recycling, water desalination, rational use and re-use of wastewater for productive purposes, etc.); vii) Biomedical sciences and monitoring/treatment of common health pathologies of Mediterranean countries.

In order for the innovation technologies to be properly introduced and diffused in the Mediterranean market, the following measures should be taken. Under this framework, it should be established that, public awareness campaigns and promotion actions should be organised in order to inform people of the use and benefit of all these aspects of technology, to acknowledge all potential uses and practises for the communities and to create a positive reaction to it, so these applications are easily accepted and preferred over others. Additionally, educational, training seminars and documentaries, should also be organised, in order to easily and efficiently spread the use of the new technologies and applications of technology to the people of these territories.

8.1.2 “Measure 1.2: Strengthening trans-Mediterranean economic clusters synergies among potential of territories”

The possible negative effects of this measure are mainly related to the biodiversity, water, air, climatic factors and soil, as the result of unsustainable fishing, aquaculture, or the development of some productive sectors. For this reason, measures should be taken for the protection of all environmental fields, in order to prevent these effects.

The fundamental step for the minimisation of environmental effects is the actual compliance with the relevant EU legislation, for EUPC and the national legislation for Non-EUPC. International conventions, treaties and agreements on marine protection, air pollution, fishing, biodiversity etc. should also be followed, constituting the basis of environmental protection requirements, applicable even for NEUPC.

Measures to be taken, should be focused on the following issues:

- Touristic development in a sustainable manner, so that that no negative effects are created for the environment (traffic congestion, noise increase, water supply shortage, wastewater increase, waste management problems, housing and construction irregularities, landscape deterioration/degradation, cultural heritage degradation)
- Sustainable aquaculture and fishing industry growth, so that no threats are posed to marine ecosystems and the marine environment
- Promotion of clean technologies in industries and integration of the use of “best available techniques” for industrial sectors, applicable
- Waste minimisation and waste management techniques and practices dissemination
- Reduction of fossil fuel use and promotion of renewable energies - efficient use of energetic resources, adoption of mechanisms for social accountability of SMEs

8.1.3 *“Measure 1.3: Supporting to the development of Mediterranean strategies of territorial development integrating different levels: local, metropolitan urban rural and basin”*

The possible effects of the measure, aiming towards the support to the development of Mediterranean strategies of territorial development at different levels are all expected to be positive and no adverse effects were identified. For the correct implementation of this measure and for the actual positive effects on the environment, some issues should be particularly taken into account, as preventive actions/measures.

The relative failure of policies for controlling construction is often related to deficiencies in the application of scheduled plans through lack of means or political will. In order to carry out more efficient rural and urban planning it is indispensable that there is better consideration of the social issues and constraints related to financial pressures. In some cases it may be interesting to establish measures containing equalisation systems that compensate the social negative results, such as loss of property value, due to the conservation of natural or farming space. In cases where regulations are not coercive enough and do not carry strong enough obligations, land acquisition remains the best way to engage active protection.

A detailed spatial planning for the areas to be affected under this measure is therefore necessary. Common territorial issues with a social context such as tourism development in coastal areas, the protection of archaeological sites, traffic management/reduction, transport problems, spatial development for the promotion of economic activities should be considered in a way that environmental issues are taken into account, before the realisation of any plans or relevant projects, and that the minimisation of environmental and social impacts is addressed.

More specifically, improvements must be made on the following issues:

- a more coherent conception of urban and rural planning,
- a more consequent application of these plans,
- the implementation of tools adapted to land management, in particular to the sustainable conservation of the best agricultural land,
- accrued efforts to enhance the value of suburban agriculture

– true integration of good practices in welfare, education, employment within the different countries of the Basin.

Additionally, under this Programme, in order to underline and promote its environmental dimension, it could be suggested that the financing of projects, should be decided upon some environment-related criteria. More specifically, projects involving the activities of an enterprise or industry bearing an Environmental Management System (EMAS or ISO 14001) should be promoted, as opposed to others that do not demonstrate any environmental protection actions. In that way, the creation or encouragement of industries, light industries and enterprises could be facilitated and an example would be given for the other facilities.

8.2 Priority 2: “Promotion of environmental sustainability at the basin level”

8.2.1 “Measure 2.1: Prevention and reduction of risk factors for the environment and enhancement of natural common heritage”

As discussed in Chapter 7 only positive effects are anticipated from the actions foreseen in the framework of this measure, with strong environmental character.

This is the result of an assessment based on the overall aim of this measure.

Strictly speaking any kind of action can potentially have adverse effect on the environment if this action is to be assessed in detail.

For this reason, before any action is to be considered for funding by the Programme, assessment of its effects on the environment should be carried out. Depending on the size and type of the action/project, the type of EIA or its level of detail will have to be defined.

For EUPC, the European legislative framework provides the basis with which compliance should be observed. For Non-EUPC, international conventions provide the basis of environmental protection requirements that should be followed. Provided that the EU legislation is more detailed Non EUPC could consider consulting and/or following it.

Apart from compliance with environmental requirements, the following could be general principles to be followed in order to enhance the positive effects:

- *Synergy* with parallel activities and/or further development of initiatives already completed in order to achieve cumulative positive results.
- *Strengthen the human factor:*
 - Public administration is not sufficiently large (nor qualified) in most of the Mediterranean countries to safeguard compliance with environmental protection law. Capacity building projects can be of extremely high added value for the protection of the Mediterranean Basin, as it is often the lack of experience that burdens its protection and not the lack of legislative requirements or lack of willingness to protect the environment from the side of actors involved.
 - Promote public awareness; getting people involved in what aims in the improvement of their quality of life is very important and can achieve a lot, probably more than the construction of an expensive technical solution.
- *Tackle deficiencies* between countries of their inspections system (e.g. in maritime safety), through promotion of modern technical solutions or training, as well as of their legislative requirements for aspects of strong common interest.
- *Prevention is better than cure*; it's been a well established principle for “risk management” but also well accepted and promoted for pollution reduction. Thus, it's been widely recognized that actions aiming in preventing pollution can be more effective in terms of results and cost.

Promotion of clean technologies for the industrial sector or raising farmers awareness in order to reduce fertilizers consumption are some indicative examples.

- Promotion of eco-efficiency *innovation* (e.g. recycling waste, adopting environmental management standards such as EMAS or applying the High Quality Environmental standard in new buildings)
- *Increase the exploitable potential of resources in a sustainable way*; there is a wide range of resource management methods that could make it possible to increase the exploitable potential of renewable natural resources such as: artificial recharge of water tables or interconnection of water networks (for water resources), and re-vegetation or change of cultivation practices (for soil conservation).
- *Improving demand management*, especially in the case of water and for some countries, “soft” actions towards this direction could prevent a predictable water demand crises, with social as well as economic benefits (e.g. rise in agricultural incomes, or less expenditure for water infrastructure)
- *Unless you measure it, you can't manage it*, used to be the motto for promoting monitoring (measuring) of water consumption. But this is applicable for more environmental aspects, including monitoring of pollutants. Promotion of common monitoring practices in the Mediterranean would result in better management of pollution as well.
- *Strengthen regional preparedness in dealing with “emergencies” for improved civil protection*; with the majority of Med countries having to deal with several kind of emergencies but with often limited resources, the maintenance of a reliable regional system for responding to major crises is important for the whole basin.
- *A holistic and integrated approach* should be followed in the selection of actions: given the complexity of the environment itself and of the human activities impacting upon it, a shift towards holistic and integrated policies is needed.
- *Promoting institutional integration*: The institutional integration is too often insufficient between the different decision-making and action levels concerned e.g. by urban and rural planning. In certain cases plans are based on purely local analyses that do not make it possible to ensure consistency of development plans at national, even regional, level.

8.2.2 “Measure 2.2: Diffusion of renewable energies and improvement in energy effectiveness”

The diffusion of renewable energies and the promotion of energy effectiveness that measure 2.2 proposes was found to have only positive effects for the environment of the Mediterranean region. The positive assessment was made on the basis that no ‘hard’ actions, like actual construction of renewable energy infrastructures is envisaged in this phase of the programme.

The promotion of energy efficiency entails better planning and design processes, more efficient technologies and institutional capacity to establish or adopt regulative measures in order to reduce energy demand. Significant environmental effects from such ‘soft’ action cannot be identified. Therefore, preventive measures cannot be discussed for this part of the measure. It should be mentioned though, that when transnational initiatives on energy efficiency are beginning to take shape, a careful consideration of the regional context of each participant must be made. In this way the transfer of practices or technologies that do not fit in the local context of a given country can be avoided, thus potentially preventing any possible environmental effects that might be caused from such actions.

Promoting awareness, knowledge and capacity building in relation to renewable energy, as this measure will do in this phase of the programme, does not directly entail significant impacts to the environment. However, actual implementation of renewable energy projects that will be generated in

the future in the context of the euro-Med partnership, may have potential environmental impacts if not be taken into consideration at an early stage of the planning.

In general, the impacts on the environment from renewable energy infrastructure can be:

- alteration of landscape, as in the case of wind farms or photovoltaics
- disturbance of the flora/fauna and biodiversity in the construction area
- noise from technologies such as wind power
- polluting materials from such technologies

In order to minimize such effects from the construction of renewable energy projects, a careful planning should be made. In the planning process for example the trans-Mediterranean migration routes of birds or the impact of offshore wind farms on the already fragile Mediterranean marine ecosystem should be taken into account. Micro hydropower plants are also often opposed because of the potential impact on wildlife. Along with careful planning, EIA of the projects and socio-economic impacts analysis for the directly affected regions should also be made. Here again, the local context plays a major role when it comes to technology or know-how transfer. Every new human made structure has effects on the environment. However, those impacts can be minimized by careful planning and by taking into account the regional or local characteristics of the area the new construction will be created. For example, implementation of large wind energy projects in small islands where favourable air conditions exist and the potential socio-economic benefits are significant may also cause irreversible alteration of the islands landscape.

In the diverse Mediterranean region the exploitation of renewable energy is vital. However, the very diversity of the area calls for careful planning in order to prevent or limit any impacts that might arise.

8.3 Priority 3: “Promotion of better conditions and modalities for ensuring the mobility of ideas, persons, goods and capitals”

8.3.1 “Measure 3.1: Support to people flows among territories as a means of cultural, social and economic enrichment”

The effects on the physical environment related to this measure are linked to the increase of population in some areas, not able to host such amounts. Wastewater issues, water supply, air emissions due to increase in traffic, construction, manufacturing are typical results of this kind of people flows.

In order to prevent these negative effects, the relevant measures, should be directed towards the shifting of people flows in areas of high capacity, able to host a relevant increase in demand and not to areas where an increase of population would bring deterioration to an already saturated or poorly planned area.

As far as mitigation measures are concerned, it can be suggested that through the Programme, economic motivation should be given to a number of areas for migrants support, so that migration flows would be evenly spread throughout the Mediterranean Basin and not concentrated in areas of limited capacity. Additionally, larger economic incentives could be given to territories in need of labour in the productive sectors or in the domestic and care activities, so that the immigrant flows could be more beneficial to these territories.

Although these are negative effects related to people flows, there are also, significant positive effects on the population, material assets, cultural heritage and economic sectors, as such flows can be a way of social, cultural and economic enrichment of the relevant territories. However, for the accomplishment of this enrichment, preventive measures should be taken, to ensure that no negative effects would emerge.

Efforts for the social, educational and economic integration of migrants should be made, not allowing for their exclusion and marginalisation. Awareness campaigns on migrants rights, the migrants culture and history, already suggested within the Programme, should be organised, along with actions for their education, hosting country language learning, etc. Economic activities between the hosting country and countries of origin should be pursued in order to strengthen the relation between the two sides.

8.3.2 *“Measure 3.2: Improvement of conditions and modalities of circulation of goods and capitals among the territories”*

All effects assessed as relevant to this measure were identified as positive, as a result of the absence of an environmental dimension to this measure and for its general beneficial context, for the Basin. However, preventive measures and directions should be given in order to secure these positive impacts and to avoid the creation of any negative ones.

- Full compliance with regulations (national, international and regional) on the circulation of goods should be kept by all countries involved.
- Education and awareness raising campaigns should be organised in order to inform parties involved, of opportunities available for the safe, beneficial and competitive circulation of goods
- Promotion of the use of new Information and Communication Technologies (ICT) for the improvement of communication and efficiency of the circulation system
- Promotion of services and goods under Environmental Management Systems (EMAS, ISO 14001) such be pursued

8.4 Priority 4: Promotion of cultural dialogue and local governance

8.4.1 *“Measure 4.1: Support to mobility, exchanges, raining and professionalism of young people”*

The overall positive impact of the measure to the environment of the Mediterranean region that the promotion of cultural dialogue through young people can have in the long run is founded on the assumption that all the actions promoted will have a clear sustainability orientation. If exchanges, training and professionalism of young people will be implemented by treating equally the three pillars (environmental, social and economic) of sustainability then the expected outcome for the environment of the region will be significant in the long-term. The shaping of a young population that has strong environmental awareness will have a multiplying effect. For example, developing professionalism, entrepreneurship and skills in ways that are always ‘filtered’ through the environmental context creates potential innovative initiatives (NGO creation, volunteering actions, etc.) that both enhance economic activity and environmental protection.

It is therefore very important to treat equally the environment aspect when taking actions to shape young professionals. The risk of creating a young Mediterranean group that will put weight primarily to quantity (economic development) and not quality (environment), surely does not appear with the implementation of this measure, as it is clearly described in the framework. However, it is a critical aspect to be considered when more concrete actions derived from the programme will start taking shape in the future.

8.4.2 *“Measure 4.2: Support to the artistic creativity in all forms to encourage dialogue among communities”*

Measure 4.2 does not have any negative effects on the environment. The view of the positive impact that could potentially have in the environment (i.e. landscape) of the region was developed under the mind-set of the relation between increased cultural interaction/exchange and the development of “aesthetics” among the Mediterranean population.

It should be mentioned however, that cultural interaction always has the risk of increasing homogenization of people’s views, beliefs and values. In relation to the environment such homogenization can provoke loss of cultural identity that could also lead to the alteration, for example, of landscape. There is a thin line that has to be preserved when encouraging cultural exchange. Preserving cultural diversity by promoting cultural exchange is a very delicate task.

When more concrete actions or projects evoke from this programme careful consideration of the above dimension must always be made. The expertise that international organizations like UNESCO have on cultural exchange, as well as the relevant programmes that it runs at present or has run in the past can prove very helpful and potential synergies should also be considered.

8.4.3 *“Measure 4.3: Improvement of the governance process at local level*

The possible effects of the measure, aiming towards the improvement of governance process at local level are all expected to be positive to the various environmental fields and no adverse effects were identified. The positive impact that this measure could potentially have on the environment of the region was developed through the rationale that effective governance supports the implementation of environmental policy.

However, it should be mentioned, that a prerequisite for securing this fact, is *transparency* in government decisions. In turn, transparency requires *adequate information* about long term environmental, social and economic implications of government policies. Adequate opportunities for *public participation* should also be provided. Only through recognition, respect and relationship can stakeholders and citizens play fully the social, economic, political, and administrative roles destined to contribute to a productive and sustainable future.

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9. MONITORING THE ENVIRONMENTAL EFFECTS

9.1 Monitoring provisions set by the SEA Directive

In accordance with Article 10 of the SEA Directive “Member States shall monitor the significant environmental effects of the implementation of plans and programmes in order, *inter alia*, to identify at an early stage unforeseen adverse effects, and to be able to undertake appropriate remedial action.”

Article 10 extends Member States' duties beyond the planning phase to the implementation phase and lays down the obligation to *monitor the significant environmental effects of the implementation of plans and programmes*. Monitoring is an important element of the Directive since *it enables the results of the environmental assessment to be compared with the environmental effects which in fact occur*.

The Directive does not define the meaning of '**monitor**'. Monitoring can, however, be generally described as an activity of following the development of the parameters of concern in **magnitude**, **time** and **space**. Also the **character** (e.g. quantitative or qualitative) and **detail** of the environmental information necessary for monitoring *depend on the character and detail of the plan or programme and its predicted environmental effects*.

If monitoring can be satisfactorily integrated in the regular planning cycle, it may not be necessary to establish a separate procedural step for carrying it out. Monitoring may coincide for example with the regular revision of a plan or programme, depending on which effects are being monitored and upon the length of intervals between revisions¹.

The limited level of detail of the current Programme coupled with the fact that the anticipated effects are rather “indirect” and impossible to measure and/or “quantify”, the suggested monitoring of the environmental dimension will be integrated in the regular planning cycle and implementation monitoring of the Programme itself.

For this reason the monitoring system of the Programme is described in the following section.

9.2 The monitoring system of the Mediterranean Basin Programme

The structure of the Programme, defined according to the planned strategy, **identifies general and specific objectives**, **priorities** and **measures** that have to be linked to different types of **indicators** in order to develop the activities for the monitoring and evaluation of the Programme itself.

The **programme will include a monitoring system** whose collection of data will be organised on a **yearly basis**. Data will be submitted by the Project Lead Partners. Applications must indicate forecasts regarding monitoring indicators. During the life of the projects, operational and financial reports will make it possible to obtain physical, procedural, and financial indicators informing on the progress of the of projects, and consequently of the Programme.

The JTS (Joint Technical Secretariat) will maintain a database with the indicators obtained, and will prepare periodic reports at the consolidated Programme level to assess developments in the indicators as compared with the projections.

¹ Implementation of Directive 2001/42 on the Assessment of the Effects of Certain Plans and Programmes on the Environment

Table 9.1: Log Frame of the Mediterranean Basin Programme – General Objective

GENERAL OBJECTIVE	INDICATORS		
	IMPACT	RESULT	REALISATION
1. To contribute to promoting the sustainable and harmonious cooperation process of the Mediterranean Basin by dealing with the common issues and enhancing its endogenous potential	<ul style="list-style-type: none"> - Rate of development GDP per capita - Increase of employment rate - Quantitative and qualitative improvement of connections (goods, people) - Improvement in the respects of environmental standards and reduction of pollution - Number of stable partnerships - Number of transnational projects realized 		

Table 9.2: Log Frame of the Mediterranean Basin Programme – Specific Objectives and Monitoring Indicators

PRIORITIES AND MEASURES	INDICATORS		
	IMPACT	RESULTS	REALISATION
1. Economic promotion and enhancement of territories		<ul style="list-style-type: none"> - Increase of employment perspectives - Creation of stable collaboration relationship between authorities and institutions - Increase in fluxes of goods and passengers - Increase in volume of business in the main economic sectors (tourism, textile) 	
1.1. Support to innovation and research in the process of development of Mediterranean territories			<ul style="list-style-type: none"> - n. of joint projects in the field of applied research and technological development - n. of participating countries for applied research and technological development - n. of structures consumed in the applied research and technological development
1.2. Strengthening trans-Mediterranean economic clusters creating synergies among potential of territories			<ul style="list-style-type: none"> - n. of clusters - n. of territories concerned in the joint management of tourist areas - n. of stable collaborations between enterprises of the different countries involved - n. of projects to support entrepreneurial spirit and n. of participating countries

PRIORITIES AND MEASURES	INDICATORS		
	IMPACT	RESULTS	REALISATION
1.3. Support to the development of Mediterranean strategies of territorial development integrating different levels: local, metropolitan, urban, rural and basin			<ul style="list-style-type: none"> - n. of seminars and formative initiatives and n. of participating countries - n. of projects and systems for optimised management of traffics and transport network and n. of participating countries - n. of enterprises/organisms interested in projects for strengthening transport infrastructures and n. of participating countries - Creation of networks between Mediterranean medium – size town and n. of participating counties - n. of permanent cross border structures/ organisations for intermodality in the Mediterranean basin

PRIORITIES AND MEASURES	INDICATORS		
	IMPACT	RESULTS	REALISATION
2. Promotion of environmental sustainability at the basin level		<ul style="list-style-type: none"> - Reduction of the pollution level - Improvement of efficient energy management - Improvement of local structures capacities concerning the enhancement of the common natural heritage 	
2.1. Prevention and reduction of risk factors for the environment and enhancement of natural common heritage			<ul style="list-style-type: none"> - n. of plans and projects for environmental preservation and n. of participating countries - n. of consultancies provided on spatial and environmental certification - n. of enterprises/organisms interested in projects for territorial management and preservation - Territory interested in the joint management of nature reserves - n. of plans and projects to prevent natural disasters and to strengthen civil protection and n. of participating countries
2.2 Diffusion of renewable energies and improvement in energy effectiveness			<ul style="list-style-type: none"> - n. of plans and projects for the efficient energy management and n. of participating countries - n. of enterprises/organisms interested in projects for the efficient energy management

PRIORITIES AND MEASURES	INDICATORS		
	IMPACT	RESULTS	REALISATION
3. Promotion of better conditions and modalities for ensuring the mobility of ideas, persons, goods and capitals		<ul style="list-style-type: none"> - Consolidation of cooperation among institutions concerning the functioning of borders - Number of websites and portals serving authorities responsible for the functioning of borders - Increase in work-permits - Improvement of qualitative standards and efficiency in movements of goods and capitals (decrease of risks and transfer times) 	
3.1. Support to people flows among territories as a means of cultural, social and economic enrichment			<ul style="list-style-type: none"> - n. of projects for the joint implementation of control and monitoring systems and n. of participating countries - n. of initiatives to study immigration and its impacts and n. of participating countries. - Number of websites and portals serving authorities responsible for the functioning of borders
3.2 Improvement of conditions and modalities of circulation of goods and capitals among the territories			<ul style="list-style-type: none"> - n. of projects for the joint implementation of control and monitoring systems and n. of participating countries. - N. of initiatives to study and control movements of goods and capitals and n. of participating countries.

PRIORITIES AND MEASURES	INDICATORS		
	IMPACT	RESULTS	REALISATION
4. Promotion of cultural dialogue and local governance		<ul style="list-style-type: none"> - Increase of youth employment rate - Increase of employment rate of the participants to post lauream courses - Qualitative improvement of supplied services - Reduction in services supply times 	
4.1. Support to mobility, exchanges, training and professionalism of young people			<ul style="list-style-type: none"> - n. of cultural exchanges activated and n. of participating countries - n. of stable cultural cooperation initiatives between universities and high education institutes of the area and n. of participating countries
4.2. Support to the artistic creativity in all its forms to encourage dialogue among communities			<ul style="list-style-type: none"> - n. of cultural exchanges projects activated between young artists - n. of projects to organize events for the diffusion of knowledge and n. of participating counties - n. of stable cultural cooperation initiatives between artistic schools and other institutes in the area
4.3. Improvement of governance processes at local level			<ul style="list-style-type: none"> - n. of consultancies developed for local structures empowerment projects and n. of participating countries - n. of projects for training of local officers and n. of participating countries.

It should be noted that the above listed indicators are taken from the version of the Programme dated at 30.3.2007, which was the latest at the time of preparation of this report.

The different categories of possible indicators were illustrated as examples, together with their relative definitions. These indicators were still to be verified and validated, their pertinence, their measurability and the adequacy of the quantification process had to be evaluated, as well as the costs for the collection of the relevant data. Once this verification and validation process is completed the set of the selected indicators will have been formulated.

Regarding the quantification of the selected indicators, particularly those of realisation and result, this will be implemented after the Financial Plan is developed, that means after the financial resources are allocated to the different priorities and measures.

9.3 Monitoring the environmental effects of the Programme

Monitoring has to cover **the significant environmental effects**. These cover in principle all kinds of effects, including positive, direct etc. described in the environmental report.

As discussed already in Chapter 7, the Programme is not expected to cause any significant negative effects due to the integration of the sustainability principle in the design of the Programme and the nature of the actions foreseen (soft actions mainly focusing on strengthening collaboration and interaction between the eligible countries and territories).

The significant environmental effects identified in Chapter 7 are positive and related with priority 2 and its measures 2.1 & 2.2, which are the ones with the stronger environmental objective, i.e. the promotion of environmental sustainability at basin level.

Apart from the results and realisation indicators suggested by the Monitoring System of the Programme, the following could also be considered as **additional indicators for the monitoring of the environmental effects**:

- n. of joint projects in the field of applied research and development with strong environmental orientation, e.g. protection of the marine environment or solid waste management (measure 1.1)
- n. of joint projects promoting clean technologies and/or EMS (e.g. EMAS or ISO 14000) in the industrial sector (measure 1.2 and/or measure 2.1)
- n. of joint projects promoting sustainable tourism development (measure 1.2 and/or measure 2.1)
- n. of joint projects promoting sustainable fishing and aquaculture (measure 1.2 and/or measure 2.1)
- n. of joint projects promoting environmentally sound solid waste management (measure 1.2 and/or measure 2.1)
- n. of joint projects promoting sustainable urban planning (measure 1.3)
- n. of plans and projects fighting against land desertification and coastal erosion (measure 2.1)
- n. of plans and projects promoting sustainable water cycle management (measure 2.1)
- n. of plans and projects fighting pollution from land based sources (measure 2.1)
- n. of plans and projects fighting operational marine traffic pollution and increasing preparedness for dealing with pollution from accidental marine pollution (measure 2.1)
- n. of conferences on renewable energy diffusion/awareness raising and n. of participating countries (measure 2.2)
- n. of enterprises/organisms interested in projects on renewable energy (measure 2.2)
- n. of training initiatives on environmental matters and n. of participating countries (measure 4.1)
- n. of stable cooperation initiatives on environmental matters between universities and high education institutes of the area and n. of participating countries (measure 4.1)
- n. of projects for training of local officers on environmental matters and n. of participating countries (measure 4.3)

This list of additional suggested indicators could be considered in the finalisation process of the "selected" indicators for the monitoring of the Programme itself. The environmental monitoring of the Programme would be integrated in the monitoring of the overall implementation of the Mediterranean Basin Programme.

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NON-TECHNICAL SUMMARY

ENPI CBC Mediterranean Sea Basin Programme 2007-2013 provides the framework for the implementation of cross border and cooperation activities in the context of the European Neighbourhood Policy (ENP), with the final aim of developing an area of prosperity and good neighbourliness involving EU countries and Partner Countries as they are listed in the Strategy Paper on European Neighbourhood and Partnership Instrument (ENPI). In 2006 the countries whose territories are eligible to this Programme hosted 451 million inhabitants, equal to 6.9% of world population, and accounted for 10.9% of world GDP. The countries bordering the Mediterranean Sea are largely diversified, in terms of geographical structure, economic specialization, social organization, political and cultural forms. This very diversity is at the origin of the deep economic and cultural exchanges that historically have characterized and enriched the region.

Following the principle of co-ownership as an horizontal element of the Programme, the entire process of defining its strategy and structure have been characterised by a participatory approach of the whole partnership through continuous consultations within task forces and working groups that have led to a fully shared vision of the Programme among the participating countries.

The strategy of the Programme is based on the combination of three main components:

- the institutional, economic, social, cultural, environmental characteristics of the cooperation area
- the strategy of ongoing and future programmes in the Mediterranean area
- the finalities and objectives of the territorial cooperation component in the framework of the ENPI

The definition of the Programme strategy takes into serious account strategies and programmes active in the concerned cooperation area, drafting an overall framework of actions, projects and programmes implemented by different partners, in order to ensure the due consistency and to create effective synergies among initiatives. In particular Euro Mediterranean programmes' strategies of international actors, multi and bilateral programmes have been carefully considered.

In the definition of the contents of the Programme, participating countries agreed on a set of principles, co-ownership, common benefits, partnership, sustainable development, equality of opportunity, territorial dimension of the processes of development, reinforcing the level of competitiveness of the Mediterranean basin countries, mainly stemming from those set by ENPI, further complemented, in order to guarantee the respect of the aims of the Programme, while ensuring its effectiveness.

An outline of the Programme

Due to the cross border co-operation nature of the Programme, its strategy was built around the objectives of the ENP as defined by the Regulation of ENPI. The formulation of the strategy descends from the effective implementation of the culture of dialogue among the concerned actors. Furthermore this is required in order to establish trust-based relationships among partners and to stimulate a process of continuous exchange that is essential to achieve an effective and shared planning, defining the principles governing the Programme, the general aim and the strategy adopted as well as the contents of specific and operational objectives.

The four priority areas include:

1. Economic promotion and enhancement of territories
2. Promotion of environmental sustainability at the Basin level
3. Promotion of better conditions and modalities for ensuring the mobility of ideas, persons, goods and capitals
4. Promotion of cultural dialogue and local governance

It is foreseen that a total of 19 countries will be influenced by this programme and within some selected countries specific regions will be targeted.

A/A	Country	Area
1	Algeria	Tlemcen, Ain Temouchent, Oran, Mostaganem, Chlef, Tipaza, Alger, Boumerdes, Tizi Ouzou, Bejaia, Jijel, Skika, Annaba, El Tarf
2	Cyprus	the whole country
3	Egypt	Marsa Matruh, Al Iskandanyah, Al Buhayrah, Kafr ash Shaykh, Ad Daqahliyah, Dumyat, Ash Sharquiyah, Al Isma'iliyah, Bur Sa'id, Shamal Sina'
4	France	Corse, Languedoc-Roussillon, Provence-Alpes-Côte d'Azur
5	Greece	Anatoliki Makedonia - Thraki, Kentriki Makedonia, Thessalia, Ipeiros, Ionia Nisia, Dytiki Ellada, Sterea Ellada, Peloponnisos, Attiki, Voreio Aigaio, Notio Aigaio, Kriti
6	Israel	The whole country
7	Italy	Basilicata, Calabria, Campania, Lazio, Liguria, Puglia, Sardegna, Sicilia, Toscana

8	Jordan	Irbid, Al-Balga, Madaba, Al-Karak, Al-Trafilia, Al-Aqaba
9	Lebanon	The whole country
10	Libya	Nuquat Al Kharms, Al Zawia, Al Aziziyah, Tarabulus, Tarunah, Al Khons, Zeleitin, Misurata, Sawfajin, Surt, Ajdabiya, Banghazi, Al Fatah, Al Jabal Al Akhdar, Damah, Tubruq
11	Malta	The whole country
12	Morocco	Oriental, Taza-Al Hoceima-Taounate, Tanger-Tetouan
13	Palestinian Authority	The whole country
14	Portugal	Algarve
15	Spain	Andalucía, Cataluña, Comunidad Valenciana, Murcia, Islas Baleares, Ceuta, Melilla
16	Syria	Al Ladhqiyan, Tartus
17	Tunisia	Madanin, Qabis, Safaqis, Al Mahdiah, Al Munastir, Susah, Nabal, Bin Arous, Tunis, Al, Arianah, Banzart, Bajah, Juridubah
18	Turkey:	Tekirdağ, Balıkesir, Izmir, Aydın, Antalya, Adana, Hatay
19	United Kingdom	Gibraltar

Priorities and Measures of the Mediterranean Programme - Environmental Effects and “Mitigation measures”

The nature of the actions foreseen to materialize through the Mediterranean Sea Basin Programme is mainly of a strategic or pilot project level, without “hard” actions such as development of new infrastructure. Therefore, the Programme’s implementation is not expected to cause *per se* significant adverse effects on the environment.

The whole Programme is based on the Sustainable Development principles. Thus, each one of the measures takes into consideration the environmental dimension, being one of the main dimensions of the sustainable development. As a consequence, the Programme is expected to have an overall positive impact on the Mediterranean environment.

However, it has to be remembered that because the level of specialisation of the actions of the Programme does not allow for detailed assessment to be made and because some actions could be implemented only in some of the countries involved, the overall impact on Mediterranean Basin level cannot be assessed in adequate precision.

Regarding the mitigation measures these refer mainly to recommendations in order to ensure that the positive effects of the programme will be realised.

Priority 1: Economic promotion and enhancement of territories

Due to the socio-economic imbalances of the territories of the co-operation area of the Programme, the resolute commitment of the partners is required for the promotion of actions able to ensure the population conditions of prosperity and stability at both a social and economic level. Considering the results of the SWOT analysis and the nature of the Programme, the measures adopted by this priority relate to the promotion of technology innovation in different areas of local development, integration of local productive systems and strengthening the capacity of strategic planning at different levels.

Measure 1.1: "Support to innovation and research in the process of development of Mediterranean territories"

Initiatives included in this measure will contribute to the promotion of innovation inputs in territorial systems to make innovation functional to the strengthening of economic activities and to the improvement of the quality of life of the population. In particular, innovation will support the modernisation of local economic systems and the diversification of activities (production of goods and services giving priority to those with strong added value.

This means working to make innovation available to "mature" productive sectors, frequently the most subject to competitiveness on a global level, but also to promote economic activities based on natural and cultural specificities of territories and on the know-how of their population, as well as responding to new demands mainly emerging in the service sector.

The diffusion of innovation technologies requires the promotion of a better cooperation through the setting up of trans-national networks among production clusters, as well as the development of cooperation among companies, research institutions (universities and research centres), incubators, technology parks, public and private organisations offering financial and non financial services to Small and Medium Enterprises (SMEs) and public authorities.

Local actors – potential beneficiaries

For the implementation of the activities envisaged within this measure, in addition to the relevant local and national authorities, research institutions of different kinds (universities, public or private research centres, technological and scientific parks, and business incubators) as well as SMEs (clusters and individual SMEs), will be mobilised.

Effects

This measure, being linked to the economic promotion of the area through the support to research and promotion of innovation activities, is expected to have the biggest of its effects on the area's economy. This effect is expected to be strongly, positive for the economic sectors, given that through this measure a boost to the competitive development of these territories is planned, by the diffusion of innovation technologies and research activities in globally competitive productive sectors. This is going to be a primary (direct) effect, of a cumulative nature, as its benefit to the economic sectors would be gradually growing, by more and more new technologies being introduced to the market.

The environmental effects of this measure are secondary (indirect), being considered as a result of this economic development. The research and innovation activities are going to be focused primarily on marine sciences (marine and coastal ecosystems), therefore the effects on the water are expected to be positive of medium magnitude and of a cumulative nature. The same applies for the air and climatic factors, as the measure will mainly focus on the development of alternative energy sources (solar, photovoltaic, wind, etc.) and the promotion of energy efficiency in production activities and the public affairs, resulting to the promotion of green energy, the production of less air pollution and less greenhouse gases.

“Mitigation measures”

The likely effects of this measure, aiming towards the support of innovation and research are all expected to be positive and no adverse effects were identified. However, it should be noted that some guidelines towards the proper implementation of this measure should be given for preventing any negative results.

In general, research and innovation activities should be concentrated on issues that are of major concern for the Mediterranean Basin.

In order for the innovation technologies to be properly introduced and diffused in the Mediterranean market, the following measures should be taken:

- public awareness campaigns and promotion actions should be organised in order to inform people of the use and benefit of all these aspects of technology, to acknowledge all potential uses and practises for the communities and to create a positive reaction to it, so these applications are easily accepted and preferred over others.
- educational, training seminars and documentaries to be organised, in order to easily and efficiently spread the use of the new technologies and applications of technology to the people of these territories.

- **Measure 1.2:** Strengthening trans-Mediterranean economic clusters synergies among potential of territories

The economic sectors in the Mediterranean Basin include sectors that in terms of competitiveness would benefit from enhanced north-south as well as south-south integration. The Programme aims to pursue this by strengthening the trans-national partnership between SMEs and SMEs clusters. This aims to integrate certain production chains which are built on the transfer of new technologies and adoption of more efficient production and management procedures.

Countries participating in the Programme, taking into account the results of the analysis of the cooperation area, as well as its feature of trans-national cooperation initiative, identified the following priority sectors to implement actions contributing to a cooperation with a strong Mediterranean characteristics: i) agriculture and agro-food (including zootechnic and milk productive chains); ii) fishery; iii) handicrafts and Mediterranean habitat; iv) textile and clothing; v) sustainable tourism based on the enhancement of cultural and natural common assets.

Local actors – potential beneficiaries

Actions within this measure will involve companies (individual, clusters, and professional associations), local and national public institutions, development agencies, actors working in the whole process of integration of chains offering financial and non financial services, trade unions and consumers' organisations.

Effects

Given the strong economic context of this measure, its implementation is expected to mainly benefit the economic sectors of the area. The anticipated effect of this measure is considered as strongly positive, as it would be based on the fact that the cooperation actions under this measure, concerning agriculture, agro-food, fisheries, aquaculture, handicrafts, textile, clothing and tourism, will aim towards the transnational partnership of economic clusters on these sectors. The promotion of aquaculture or unsustainable fishing could however, have negative effects, of a medium or smaller magnitude for the biodiversity of the area of their operation. These effects are usually linked to the degradation of water quality in the area of the aquaculture units and as for the case of fishing, unsustainable fishing is usually reflected

on marine biodiversity. However, these effects on biodiversity are not considered as the direct effects of this measure, but as indirect effects related to the long-term growth of the fishing industry through this measure.

Small and medium negative effects are expected for the case of air and climatic factors respectively, as the result of the anticipated development of some productive sectors which could be eventually the source of air emissions and more specifically, greenhouse gas emissions. It should be noted that the negative effects on water and soil are also linked to the development of these productive/industrial sectors, including agriculture, which is expected to have a significant share of the effects.

“Mitigation measures”

The possible negative effects of this measure are mainly related to the biodiversity, water, air, climatic factors and soil, as the result of unsustainable fishing, aquaculture, or the development of some productive sectors. For this reason, measures should be taken for the protection of all environmental fields, in order to prevent these effects.

The fundamental step for the minimisation of environmental effects is the actual compliance with the relevant EU legislation, for EU Member States and the national legislation for non-EU Member States. International conventions, treaties and agreements on marine protection, air pollution, fishing, biodiversity etc. should also be followed, constituting the basis of environmental protection requirements, applicable even for non-EU countries

- **Measure 1.3:** Supporting to the development of Mediterranean strategies of territorial development integrating different levels: local, metropolitan urban rural and basin

This measure is based on trans-national exchanges among communities on the subject of territorial planning. The initiatives will involve territorial planning, diagnostics, evaluation and perspectives, and transfer of experiences to address the common territorial issues of the territories participating in the Programme, providing them solid basis for cohesion and competitiveness.

The initiatives included in this measure will relate to the development of trans-national co-operation, mainly aimed at territorial planning, integrating the different levels, diagnostics, evaluation and environmental certification, transfer of experiences and good practices, joint development of procedures and laws (regulatory and fiscal) in order to respond to common territorial issues and ensure the strengthening of the basis for cohesion and competitiveness. Considering that the co-operation area is characterised by strong differences among and within its territories, this measure will also take into account actions of exchange and transfer of good practices in the areas of welfare, education and employment, as well as the promotion of sustainable economic activities in rural areas meant as territorial strategies to safeguard the natural environment.

Local actors – potential beneficiaries

Actions envisaged within this measure will entail the particular involvement of local authorities as well as of development agents, private actors (individuals and professional associations), civil society organisations, universities and research centres. The competent national authorities may become involved to ensure the coherence of national strategies to development policies at local level.

Effects

All effects of this measure are likely to be positive for the natural environment. As the measure is related to the promotion of the strategies of territorial development, where best practices are introduced, holding back the negative consequences of unsustainable territorial development, it can have a positive impact on the environmental sectors such as water, air, soil, climatic factors and noise. Moreover, the introduction and promotion of environmental managements systems such as ISO 14001 and EMAS, which aim towards the environment friendly performance of the industry, enterprises etc, it can have also a positive effect.

The territorial planning at local, metropolitan, urban, rural and basin level could allow for different types of activities to be located in the right areas, allowing for a sustainable tourism development , or protecting in that way others of a sensitive, or even saturated state. Areas of cultural interest can be protected and the value of an area can be increased, if it is planned properly, for its use. In other words, the effects on the cultural heritage or material assets can be positively strong or of medium magnitude.

Additionally, the promotion of the welfare system, promoting public/private partnership for the health services, can be proved valuable for the areas of the basin that do not have a good or modern welfare network. The impact of such a measure can have positive (medium) effects on human health and the population.

“Mitigation measures” The possible effects of the measure, aiming towards the support to the development of Mediterranean strategies of territorial development at different levels are all expected to be positive and no adverse effects were identified. For the actual positive effects on the environment, some issues should be particularly taken into account, as preventive actions/measures. A detailed spatial planning for the areas to be affected under this measure is necessary. Common territorial issues such as tourism development in coastal areas, the protection of archaeological sites, traffic management/reduction, transport problems, spatial development for the promotion of economic activities should be considered in a way that environmental issues are taken into account, before the realisation of any plans or relevant projects, and that the minimisation of environmental impacts is addressed. Additionally, under this Programme, in order to underline and promote its environmental dimension, it could be suggested that the financing of projects, should be decided upon some environment-related criteria.

Priority 2: Promotion of environmental sustainability at the basin level

Participating countries decided to focus this priority exclusively on environmental challenges considering their relevant impact on the social and economic life of the territories and considering that they refer to areas likely to be considered at basin level.

Safeguarding and enhancing of natural, maritime and land heritage, promotion and use of renewable resources and energy savings (at the level of economic and domestic activities), also in terms of contribution to the reduction of greenhouse effects following Kyoto commitments, have been adopted as priority areas actions of the Programme. This approach aims to contribute to the reduction of the pollution of natural of resources.

- **Measure 2.1:** “Prevention and reduction of risk factors for the environment and enhancement of natural common heritage”

All territories participating in the Programme have a large natural and diversified heritage mainly composed of a rich maritime and land bio-diversity together with a unique landscape resulting from the combined effects of the natural elements and of the know-how of their population which have left their mark over the centuries. This capital is nevertheless fragile. Environmental risks and degradation affecting the Mediterranean basin are different and

originate from human activities (industry, intensive agriculture, mass tourism, intensive and growing maritime traffic, etc.), but they are also linked to geographic specificities of the territories and to demographic trends. Considering their relevance, participating countries, decided to adopt the following areas of intervention: i) fighting against land desertification and coastal erosion; ii) prevention of natural risks (floods and fires); iii) water cycle management and fighting against sea and river pollution; iv) reduction of the effects of different sources of pollution at the level of urban, industrial, and agricultural areas; v) waste management and recycling; vi) Protection and sustainable enhancement of natural, land, and marine resources for economic and tourism purposes and the adoption of sustainable fishery techniques.

These areas of intervention will be taken into account especially through trans-national actions and the transfer of prevention practices with specific reference to new technologies, of harmonisation of procedures (for prevention, evaluation of impacts and joint intervention in case of natural disasters or caused by human activities), of management and monitoring of phenomena, of communication and awareness raising of local actors.

Local actors – potential beneficiaries

Actors to be involved in activities related to this measure include local authorities, local development agencies, environmental agencies or similar organisations, governmental public national services centralised and decentralised, universities (particularly in terms of research and monitoring), community and environmental associations and economic operators.

Effects

The primary objective of the areas of intervention adopted and the resulting actions is to deal with environmental challenges and to contribute to the protection of the environment. Consequently the likely effects to each one of the environmental characteristics/issues examined will be positive. Also, the kind of projects to be implemented aim in the generation of a long term positive effect on the environment, even though certain geographical areas will benefit more in the short or medium term through their participation in pilot projects. Improvement of the environmental status will also affect in a positive way the population and human health. Finally, enhancement of natural resources for economic purposes including tourism and through the adoption of sustainable fishery techniques is one of the targeted areas of intervention with positive effect to the economic sectors, and to the population of less developed areas.

The environmental characteristics/issues that will mostly benefit from the measure include:

- Population, through actions related with improved risk management, pollution abatement and sustainable development (e.g. tourism and fishing activities) (direct effect), and through the enhancement of natural resources and environmental protection (indirect or secondary effect)
- Water, through actions related with improved water cycle management and pollution abatement either from land based sources or from accidental pollution, protection of natural and marine resources.
- Soil, through actions related with fighting against land desertification, coastal erosion, prevention of floods and fires, pollution abatement, protection of land resources.
- Flora/fauna, through actions related with prevention of natural risks, especially fires and protection of the natural environment.
- Landscape and material assets, through actions related with prevention of natural risks (floods and fires), fighting against coastal erosion and land desertification

“Mitigation measures”

No mitigation measures are needed, since the Measure 2.1. aims at the prevention and reduction of risk factors for the environment.

However, before any action is to be considered for funding by the Programme, assessment of its effects on the environment should be carried out.

Apart from compliance with environmental requirements, the following could be *general principles to be followed in order to enhance the positive effects*:

- Synergy with parallel activities and/or further development of initiatives already completed in order to achieve cumulative positive results.
- Strengthen the human factor:
 - Capacity building of public administration
 - Promote public awareness;
- Tackle deficiencies between countries of their inspections system (e.g. in maritime safety), through promotion of modern technical solutions or training, as well as of their legislative requirements for aspects of strong common interest.
- Prevention is better than cure; it's been a well established principle for “risk management” but also well accepted and promoted for pollution reduction.
- Promotion of eco-efficiency innovation (e.g. recycling waste, adopting environmental management standards such as EMAS)
- Increase the exploitable potential of resources in a sustainable way;
- Improving demand management, especially in the case of water
- Promotion of common monitoring practices in the Mediterranean would result in better management of pollution as well.
- Strengthen regional preparedness in dealing with “emergencies” for improved civil protection;
- A holistic and integrated approach should be followed in the selection of actions:
- Promoting institutional integration: The institutional integration is too often insufficient between the different decision-making and action levels.

<ul style="list-style-type: none">• Measure 2.2: Diffusion of renewable energies and improvement in energy effectiveness

This measure is part of a wider logic aimed at reducing pollution sources (urban, industrial, agricultural and domestic) so as to safeguard natural heritage. The promotion of renewable energies (solar, photovoltaic, wind, geothermic, etc.) and the improvement of energy effectiveness at the level of productive activities, of buildings, transport and domestic activities may greatly contribute to reduce greenhouse effect emissions and to mitigate the effects of climate changes. Orienting the process of local development in this direction is not only a contribution to the reduction of polluting sources but it opens up an economic opportunity (research, innovation, investments, etc.). This opportunity may be supported as a trans-national activity since it is a tool to reach necessary critical mass to proceed in the introduction of alternative energy sources, enhancing natural issues of the Mediterranean countries.

Diversification of energy sources using renewable sources as well as the improvement of energy performance require an evolution in the way of producing and consuming which will be supported by technology innovation, by the adoption of rules encouraging a change of

behaviour (for example as far as buildings is concerned) or making investments aimed at energy effectiveness more attractive.

Local actors – potential beneficiaries

Actors to be involved in the actions envisaged for this measure are: local authorities, environmental agencies or similar institutions, central and decentralised governmental public services, universities (mainly for research), environmental associations, economic actors (producers and distributors of renewable and non renewable energies).

Effects

The aim of this measure is to address the unsustainable and polluting fossil fuel based energy system of the Mediterranean basin and mitigate, mainly the effects related with climate change (greenhouse effect emissions) and air pollution caused by the energy sector. By improving energy efficiency and the increase of renewable energy share in the Mediterranean energy mix, the programme aims at opening up untapped economic opportunities that arise from facing the challenge of climate change. There is great potential for the energy intense sectors (residential, industrial, transport, etc.) of the region to improve their performance. By putting priority to energy saving and diversification of the energy sources, a win-win situation can be created, where at the same time the environmental risks are reduced and the economic activity can be enhanced.

The effect of the measure on the environment of the Mediterranean Basin will have positive impact primarily to the economic sector and to the climate change. Secondary positive impacts have been identified for the air and human health. The adoption of cleaner energy sources (i.e transport sector) or the diversification of the electricity production with an increased share of renewable energy sources (wind, photovoltaic, biomass, etc.) will eventually have positive impacts to air quality and consequently human health. However, it takes more time, as it requires actual introduction of new infrastructure.

The energy efficiency part of the measure is expected to have more immediate effects to the productive sector of the region, by reducing energy costs through better planning and capacity building without the need for building new infrastructure. Energy saving activities can also reduce the environmental risks of climate change in a more immediate manner as they reduce energy demand. The renewable energy part of the measure will pave the way for actual implementation of pilot projects, expanding of renewable energies markets to the whole region, mainly by increasing institutional capacities and by raising the awareness of decision makers and end users.

“Mitigation measures”

The diffusion of renewable energies and the promotion of energy effectiveness that measure 2.2 proposes were found to have only positive effects for the environment of the Mediterranean region. The positive assessment was made on the basis that no ‘hard’ actions, like actual construction of renewable energy infrastructures is envisaged in this phase of the programme.

The promotion of energy efficiency entails better planning and design processes, more efficient technologies and institutional capacity to establish or adopt regulative measures in order to reduce energy demand.

Priority 3: Promotion of better conditions and modalities for ensuring the mobility of ideas, persons, goods and capitals

The subjects covered by this priority mainly relate to the capacities of national institutions. They are largely considered at the level of strategies and initiatives planned in the framework of European Neighbourhood Policy. Since these subjects have relevant impacts on social and economic development of border areas they will be considered within the framework of cross border co-operation only in close co-ordination with national policies and initiatives. Measures identified by this priority are related to the facilitation of flows of people among territories, with reference to the welcoming of migrants, as well as to the improvement of mechanisms and procedures ensuring effectiveness and quality in exchange of goods and capitals.

- **Measure 3.1:** Support to people flows among territories as a means of cultural, social and economic enrichment

Territories of the Mediterranean area are to be involved in the search for the most appropriate tools to face the impacts generated by the nature of an area with relevant migration, frequently being only a transit area. Impacts of moving are, first of all, of a social nature since they create a demand of sanitary services, education, housing, etc. They also have an influence on economy since welcoming territories usually need labour, also on a seasonal basis, in the productive sectors and in domestic and care activities. Interventions to be submitted within this measure include transnational activities of observation, impact analysis, communication, information and awareness rising about migration (legal and illegal) aimed at different target groups (migrants according to their status and age, economic actors, institutions, communities, associations, etc.). This measure will also include initiatives aimed at promoting exchanges of public and private good practices supporting social and economic integration of migrants (inclusion in the labour market, education, languages, dedicated services related to housing, social services and legal assistance, etc.) Immigrants can also provide impetus for activities to develop and create/strengthen relations between their home communities and those where they live. This could be achieved by means of cultural and exchange initiatives, but also through a better use of migrants transfers, using these resources in initiatives of local development in their country of origin.

Local actors – potential beneficiaries

In addition to the local authorities, the actors that should be mobilised to carry out these activities are local authorities, immigrants and their associations, associations from the local communities, NGOs, immigrants welcoming centres, social research centres, public and private services supporting immigrants' integration, local development agencies and the competent national authorities.

Effects

As this measure aims at supporting people flows, in other words migration, through the social and economic integration of migrants, it is considered to have significant positive effects on the anthropogenic environment. Interventions on the inclusion of migrants in the labour market of the hosting countries are expected to have positive effects on the economic sectors of the Mediterranean countries whereas others focusing on providing social services, education, welfare, legal advice, housing etc, would bring positive results on the population, its quality of life and social behaviour. The integration of migrants through activities which would lead to awareness raising about the migrants culture or communication between the two parts could help towards the exchange of cultural elements and cultural enrichment for both sides.

It should however be considered that the increase of population in some areas, is related to pressures to the environment. Water supply issues are common, increase of traffic, construction, manufacturing, therefore increase of air emissions and climatic factors deterioration are expected, if migration is not realised in a planned and sustainable manner. The landscape could also be deteriorated if housing or other activities related to people flows do not occur after appropriate planning. These effects are “mild” and not direct results, as they are not the immediate effects of constructions; they are considered as likely, secondary consequences of the conditions described above.

“Mitigation measures”

The effects on the physical environment related to this measure are linked to the increase of population in some areas, not able to host such amounts. Wastewater issues, water supply, air emissions due to increase in traffic, construction, manufacturing are typical results of this kind of people flows.

As far as mitigation measures are concerned, it can be suggested that through the Programme, economic motivation should be given to a number of areas for migrants support, so that migration flows would be evenly spread throughout the Mediterranean Basin and not concentrated in areas of limited capacity. Additionally, larger economic incentives could be given to territories in need of labour in the productive sectors or in the domestic and care activities, so that the immigrant flows could be more beneficial to these territories.

Although these are negative effects related to people flows, there are also, significant positive effects on the population, material assets, cultural heritage and economic sectors, as such flows can be a way of social, cultural and economic enrichment of the relevant territories.

Efforts for the social, educational and economic integration of migrants should be made, not allowing for their exclusion and marginalisation.

- **Measure 3.2:** Improvement of conditions and modalities of circulation of goods and capitals among the territories

The establishment of an integrated cooperation area with a view to sustainable socioeconomic development requires dissemination, adoption and application of shared procedures and of mechanisms related to the circulation of goods and capital, fully compliant with international, national and regional regulations. The activities implemented in connection with this objective therefore refer to the opportunity to increase efficiency of trans-national trade through the improvement of connections and competitiveness of logistic structures (harmonisation of procedures, enhancement of operations, specifically with the application of information and communication technologies (ACT) to maritime transportation activities) and its enhanced security, particularly in terms of quality.

Local actors – potential beneficiaries

Considering the activities envisaged within this measure, the actors involved are the local authorities, the competent national authorities, those responsible for the management of ports and related operations (customs, logistics, health, etc.), as well as banking and financial institutions. Private economic operators, such as service users and providers, should also be involved, along with local communities.

Effects

This measure focuses on the improvement of conditions and modalities for the circulation of goods and capitals among the areas within the Mediterranean basin. This does not appear to have an environmental dimension, but only to be related to the amelioration of the quality of life of the population, the improvement of human health and the economic sectors. The dissemination and application of procedures and actions related to the circulation of goods

and capital, being in compliance with international, national and regional regulations would bring obvious, positive, direct effects on the economic sectors of the area, as more goods would be circulated, more jobs would be created and prices of goods would become competitive. The involvement of the public sector is expected to play a crucial role; however, the appropriate mechanisms and circumstances would be prepared, so that private actors could also be involved.

There is provision, under this measure, for the introduction of new Information and Communication Technologies (ICT) for the improvement of technical and administrative operations of maritime transports, the improvement of customs, for the improvement of connections and competitiveness of logistic structures and transport, bringing in that way an increase to the efficiency of trans-national trade and consequently, adding to the quality of life of the population. This would be accomplished through the promotion education and information campaigns to all key actors.

“Mitigation measures”

All effects assessed as relevant to this measure were identified as positive, as a result of the absence of an environmental dimension to this measure and for its general beneficial context, for the Basin. However, preventive measures and directions should be given in order to secure these positive impacts and to avoid the creation of any negative ones.

- Full compliance with regulations (national, international and regional) on the circulation of goods should be kept by all countries involved.
- Education and awareness raising campaigns should be organised in order to inform parties involved, of opportunities available for the safe, beneficial and competitive circulation of goods
- Promotion of the use of new Information and Communication Technologies (ICT) for the improvement of communication and efficiency of the circulation system
- Promotion of services and goods under Environmental Management Systems (EMAS, ISO 14001) such be pursued

4. Promotion of cultural dialogue and local governance

Co-operation among communities is particularly effective to contribute to making the Mediterranean an area of joint peace, cohesion, prosperity. This priority will thus be addressed to consolidate the territorial organisations and institutions, to support administrative reforms, to stimulate social and cultural exchanges and dialogue, mainly among young people, and to promote co-operation and relationships among the communities of the territories involved in the Programme.

- **4.1 Support to mobility, exchanges, training and professionalism of young people**

Young people are an important component of the communities, in terms of quantity and even more of quality: They are the main group for the dissemination and the consolidation of a real and continuous culture of dialogue and relationships among communities. In other words, they are one of the fundamental elements in order to create an area of stable and flourishing exchange, dialogue and cooperation. Initiatives targeted at young people will not be limited to exchanges, and to promotion of dialogue, but they will also include the designing of joint measures to improve standards of training and skill certification, and the introduction of young people in the European/Mediterranean labour market.

Local actors – potential beneficiaries

Key actors in this measure, along with the local authorities (and possibly their specialised services), are schools (students, teachers, educators, parent-teacher organisations, etc.), universities, training centres and local socio-cultural organisations. The competent national authorities might also be involved, particularly to enhance co-ordination with measures they have taken to support young people (from education and training to integration in the labour market).

Effects

The north-south differences of the Mediterranean region are in many aspects clear when dealing with economic progress or capacities. However, when it comes to co-operation among communities of the Mediterranean area to pursue social cohesion and mutual prosperity, the region's territories should be treated as equal as both sides of the rim will benefit from each other. Cultural dialogue is fundamental to erase differences and create a Mediterranean culture that all people will benefit.

The measure's strategic focus on the young citizens of the area to make them adopt a Mediterranean culture is a tool that will ensure the promotion of exchange, dialogue and co-operation in the long-term. The facilitation of know-how and dialogue through exchange initiatives, increasing professionalism of young people that is responsive to the needs of productive sectors, as well as, promotion of entrepreneurship and skills, creates a base with a critical mass that has the abilities to communicate, be open to new ideas, understanding deferent cultures and adopting to ever changing environments. Schools, universities (expanding EU programmes such as ERASMUS), vocational training centres, etc., will be the main actors to promote such transnational initiatives or joint actions. There exists an obvious synergy with this measure and the measures of Priority 1, which promotes *economic enhancement* and Priority 3, where support to people flows among territories as a means of cultural, social and economic enrichment is in pursuit.

This measure was found to have primary positive effects on the population and the economic sectors, as it promotes development of qualifications, skills and training among young people. By acquiring better qualifications, a person can increase the chances of raising its living standards. On the other hand, highly skilled young professionals become a valuable asset for the productive sector. The positive effects on the environment, identified for this measure, will be more indirect and long-term envisioned. They are founded on the basis that by building human capacity, knowledge and awareness is raised on environmental matters. The pursuit of better quality of life goes hand in hand with the better environmental quality. This measure creates a great chance for the Mediterranean region's environmental problem to be treated as a pan-Mediterranean issue by young people. Furthermore, in order to deal with environmental issues, it requires continuity and long-term treatment.

"Mitigation measures"

The overall positive impact of the measure to the environment of the Mediterranean region that the promotion of cultural dialogue through young people can have in the long run is founded on the assumption that all the actions promoted will have a clear sustainability orientation. If exchanges, training and professionalism of young people will be implemented by treating equally the three pillars (environmental, social and economic) of sustainability then the expected outcome for the environment of the region will be significant in the long-term. The shaping of a young population that has strong environmental awareness will have a multiplying effect. For example, developing professionalism, entrepreneurship and skills in ways that are always 'filtered' through the environmental context creates potential innovative initiatives (NGO creation, volunteering actions, etc.) that both enhance economic activity and environmental protection.

- **Measure 4.2:** Support to the artistic creativity in all forms to encourage dialogue among communities

While the Mediterranean has a consistent, unique cultural heritage to be enhanced in order to benefit its citizens and for tourism purposes, transnational initiatives must also be promoted to support cultural and artistic common sector (artistic and industrial creation, fashion and design, architecture, literature, cinema and media, etc.). This effort will be focused on helping to overcome existing divisions, particularly through co-production of cultural events, as a source of pride and confidence in belonging to a living Mediterranean culture. Dialogue, networking exchanges and communication will promote interactions of Mediterranean cultures. Actions will be oriented towards the raising up of innovative development potentialities linked to an economy based on the enhancement of cultural assets of the Mediterranean territories and to innovation and development of new technologies related to creativity.

Local actors – potential beneficiaries

The actors involved are local authorities, and competent national authorities, specialised public and private operators such as art academies and conservatories, museums and libraries, cultural associations, permanent organisations responsible for organising festivals, universities, journalists, communication operators including publishers, etc.

Effects

The Mediterranean is a region with a rich and unique cultural heritage. Apart from the heritage, it is very rich and diverse in cultural creativity at present. As this measure envisions encouraging dialog among communities, its heritage and present creative expressions can become an important tool in order to achieve it. Both tangible and intangible cultural heritage is viewed as a Mediterranean issue that will encourage cooperation among countries. Apart from working together for common issues, it is equally important to preserve and promote local identity. Trans-national initiative and intercultural exchange, as well as artistic cross-fertilization encourage dialogue between the region's communities, while opening up economic development possibilities through culture-oriented tourism.

The measure is mainly addressed to young people or emerging artists, as they will assure the continuity and create a macro-vision on the dialogue of the basin's cultural heritage. Potential actors to be involved are identified as local authorities, academies, museums, national and international (UNESCO) cultural associations, universities, events organizers and the art production sector. This measure will primarily affect in a positive way the cultural heritage, as it promotes better understanding and preservation of the region's tangible and intangible cultural heritage.

"Mitigation measures"

Measure 4.2 does not have any negative effects on the environment. The view of the positive impact that could potentially have in the environment (i.e. landscape) of the region was developed under the mind-set of the relation between increased cultural interaction/exchange and the development of "aesthetics" among the Mediterranean population.

It should be mentioned however, that cultural interaction always has the risk of increasing homogenization of people's views, beliefs and values. Preserving cultural diversity by promoting cultural exchange is a very delicate task.

When more concrete actions or projects evoke from this programme careful consideration of the above dimension must always be made.

• **Measure 4.3: Improvement of the governance process at local level**

This measure includes cooperation activities supporting civil society of local communities and local institutions in the sector of administrative reform and good governance. Exchange of experiences and of good practices and dialogue at local level, as well as training and capacity building activities focused on different types of local actors (elected officials, public administrators, NGO's operators and associations, including professional ones) will be accompanied by specific activities to highlight the benefits that transnational co-operation can bring to local development strategies.

Local actors – potential beneficiaries

The target actors for this measure are all types of territorial organisations - public and private - representing the different groups of citizens on a geographic and/or sectorial basis.

Effects

The participatory nature of governance fosters continuous relationships and partnerships among all the actors and the members of the society. Linkages and negotiations are imperative to effective institutional management and capacity building obviating isolation and control.

In that respect local government bodies (municipalities, regional authorities) have a crucial role to play in developmental issues, as their competences range from critical regulatory tasks to 'softer' but nevertheless important, which is their role of informing, involving and mobilising public opinion. It goes without saying that local authorities are much closely associated with citizens, and hence their potential for integrated planning and effective implementation is augmented.

This measure of the Programme provides an opportunity to ensure that the local level of government has an opportunity to influence policy and legislation that will have an impact on their own particular set of circumstances. It also ties the national level of government into a dialogue with local and regional authorities. This will make for greater influence in the regions and therefore make policy more focussed and relevant to the needs of specific region. This will be achieved through the effective balance of dialogue and the transnational exchange of experiences among the different actors involved in the process of local development.

As such, the effects of this measure at the various environmental fields are all of them considered to be positive, medium and secondary (except that of the economic sectors, which is characterised as primary). The positive impact that this measure could potentially have on the environment of the region was developed through the rationale that effective governance supports the implementation of environmental policy.

The intention to increase the involvement of local and regional actors (including wider civil society) in the formulation and implementation of policy is essential to good governance, because policy can only be strengthened when taking the views of those who will either implement it or be the subject of it at the outset.

"Mitigation measures"

A prerequisite for securing these positive effects arising from this measure is *transparency* in government decisions. In turn, transparency requires *adequate information* about long term environmental, social and economic implications of government policies. Adequate opportunities for *public participation* should also be provided. Only through recognition, respect and relationship can stakeholders and citizens play fully the social, economic, political, and administrative roles destined to contribute to a productive and sustainable future.

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