State and pressures of the marine and coastal Mediterranean environment





NOTE

The contents of this report do not necessarily reflect the official opinion of the European Communities or other European Communities institutions. Neither the European Environment Agency nor any person or company acting on the behalf of the Agency is responsible for the use that may be made of the information contained in this report.

A great deal of additional information on the European Union is available on the Internet. It can be accessed through the Europa server (http://europa.eu.int).

Cataloguing data can be found at the end of this publication.

Luxembourg: Office for Official Publications of the European Communities, 1999

Cover: EEA

Layout:

Folkmann Design

ISBN

© European Communities, 1999

Printed in

Printed on recycled chlorine-free paper

European Environment Agency Kongens Nytorv 6 DK-1050 Copenhagen K Tel. (+45) 33 36 71 00 Fax (+45) 33 36 71 99

E-mail: eea@eea.eu.int

Home page: http://www.eea.eu.int

Contents

List of contributors6						
Fore	eword	7				
Executive summary9						
1.	Introduction	27				
2.	Natural characteristics	30				
2.1.	Morphology	30				
2.2.	Seismic and volcanic activity	32				
2.3.	Climate	34				
	Hydrography and physical oceanography					
	Chemical oceanography					
2.6.	Biological oceanography	41				
3.	Human activities and pressures	47				
3.1.	Population growth	47				
3.2.	Tourism	48				
3.3.	Agriculture	51				
	3.3.1. Use of fertilizers in agriculture	52				
	3.3.2. Use of pesticides in agriculture	53				
3.4.	Fishing and aquaculture activities	55				
	3.4.1. Marine fisheries	55				
	3.4.2 Fishing techniques	56				
	3.4.3. Interaction between fishing activities and the environment	56				
	3.4.4. Aquaculture					
	3.4.5. Interaction between aquaculture and the environment	60				
	3.4.6. Nitrogen and phosphorus loads from aquaculture	61				
	3.4.7. Conservation of living marine resources	61				
3.5.	Industry	62				
	3.5.1. Industries in the Mediterranean basin	62				
	3.5.2. Distribution of industrial activities	63				
	3.5.3. Industrial contaminants persistence: the case of TBT	63				
3.6.	Oil industry	64				
	3.6.1. Exploration and production	65				
	3.6.2. Refining and petrochemicals	66				
	3.6.3. Pipelines and terminals	66				
	3.6.4. The Mediterranean seaborne oil trade	66				
3.7.	Maritime traffic	66				
	3.7.1. Major traffic routes in the Mediterranean	66				
	3.7.2. Pressure of maritime traffic in connection with maritime accidents	68				
	3.7.3. Reported damage from accidents	68				
3.8.	Discharge from sewage outfalls	69				
	3.8.1. State of major coastal cities	70				
	3.8.2. Permanent population and seasonal increase	70				
	3.8.3. Discharge at sea	70				

3.9.	Discharges via rivers	
	3.9.1. Major rivers and loads of nutrients	70
	3.9.2. Harmful substances from rivers	71
4.	Environmental state and threats	76
11	Eutrophication	76
4.1.	4.1.1. General	
	4.1.2. Eutrophication in coastal areas	
	4.1.3. Algal blooms in the different seas	
	4.1.4. Effects on marine life, fish and shellfish	
12	Coastal zones	
4.2.	4.2.1. Introduction	
	4.2.2. Coastal evolution	
12	Heavy metals and chlorinated hydrocarbons	
4.3.	4.3.1. Introduction Environmental state and threats	
	4.3.2. Heavy metals	
	4.3.3. Chlorinated hydrocarbons	
1 1	<u> </u>	
4.4.	Oil pollution	
4 E	Microbiological contamination	
4.5.	4.5.1. Source of contamination	
	4.5.2. Dispersion and fate of micro-organisms	90
	in the Mediterranean marine environment	04
	4.5.3. Microbiological criteria and standards for	90
	Mediterranean coastal areas	96
	4.5.4. The state of microbiological pollution of	. /
	sensitive Mediterranean coastal areas	97
4.6.	Radioactive contamination	
	4.6.1. Sources	
	4.6.2. Radionuclides in sea water	
	4.6.3. Sediments	
	4.6.4. Organisms	
	no n o gameno	
5.	Ecosystem sensitivity and impacts	105
г 1	Climata ahanga	100
5.1.	Climate change	
	5.1.1. Sea level rise: a global issue	105
	5.1.2. Potential impacts and responses to climate change in the Mediterranean region	107
	5.1.3. Forecast of sea level rise in the	107
	Mediterranean region	107
	5.1.4. Risk assessment and planning	107
	for sea-level rise	108
5.2.	Biodiversity and ecosystem changes	
	5.2.1. Impacts on biodiversity	
	5.2.2. Non-indigenous species	
	5.2.3. Conservation in the Mediterranean	
5.3.	Health risks from marine pollution in the Mediterranean	
3.0.	5.3.1. General health risks	

	5.3.2. Health risks from microbiologically	110
	contaminated coastal areas	
	5.3.3. Health risks from chemically polluted seafood	
	5.3.4. Public health implications	120
6.	Regional activities and state of action	124
6.1.	International environmental programmes	124
6.2.	The Mediterranean Action Plan	125
	6.2.1. Legal component	125
	6.2.2. Programme and objectives	125
	6.2.3. Organisation	127
	6.2.4. The MED POL programme	128
6.3.	EU international projects	129
	6.3.1. Brief outline of the principal programmes	
	and projects concerning the Mediterranean	129
	6.3.2. Use of remote sensing	133
7.	Conclusions and recommendations	134
7.1.	State of the Mediterranean Sea	134
	Recommended measures	
	Improvement of data availability	
	Mediterranean monitoring	

List of Contributors

Overall coordination:

E. Papathanassiou (EEA) and G.P Gabrielides (UNEP/MAP)

Editor:

G. Izzo (ENEA) and S. Moretti (ENEA)

Executive summary

Author:

E. Papathanassiou (EEA)

1. Introduction

Authors:

F. S. Civili (UNEP/MAP) and E. Papathanassiou (EEA)

2. Natural characteristics

Coordination:

P. Picco (ENEA)

Authors:

P. Picco (ENEA), D. Sakellariou (NCMR), G. Martini (ENEA), C. Margottini (ENEA) G. Manzella (ENEA/CRAM), C. Nittis (NCMR), E. Souvermezoglou (NCMR), P. Panayotidis (NCMR) and Y. Henocque (IFREMER)

3. Human activities and pressures

Coordination:

Y. Henocque (IFREMER)

Authors:

G.P. Gabrielides (UNEP/MAP), Y. Henocque (IFREMER), G. Kamizoulis (WHO/MAP), E. Cotou (NCMR), R. Ceccarelli (ENEA), L. Triolo (ENEA) Schimberni M. (ENEA)

4. Environmental state and threats

Coordination:

P. Panayotidis (NCMR)

Authors

G. Izzo (ENEA), P. Pagou (NCMR), G.P. Gabrielides (UNEP/MAP), A.V. Catsiki (NCMR), M. Zagrande (NCMR), I. Hatzianestis (NCMR), E. Cotou (NCMR), G. Kamizoulis (WHO/MAP), R. Delfanti (ENEA/CRAM)

5. Ecosystem sensitivity and impacts

Coordination:

G. Izzo (ENEA)

Authors:

F. Antonioli (ENEA), A. Zenetos (NCMR) I. Karakassis (IMBC), G. Kamizoulis (WHO/MAP)

6. Regional activities and state of action *Coordination:*

G. P. Gabrielides (MAP)

Authors:

G.P. Gabrielides (MAP), Y. Henocque (IFREMER), S. Moretti (ENEA)

Final editing:

A. Künitzer (EEA)

Proof-editing:

C. Ashe and H. Møller (EEA)

Graph and map editing

R.Kuchling (EEA)

Foreword

When tackling the pressing issue of sustainable development in the Mediterranean Region - among which the challenging issues of rapid urbanisation rates; increasing tourism and coastal zone development and degradation; water scarcity; and trade - the need to establish a knowledge base and help come to grips with the problems is widely recognised, as is the current lack of timely and targeted information for action. To fulfil this need means also to contribute substantially to improving access to environmental data and information at the regional and national levels, both for governmental bodies and other institutions, as well as for the general public throughout the Mediterranean region.

Significant progress in building monitoring capacities (e.g. MEDPOL/MAP, environment/development observatories) and in framing, shaping and collecting data for commonly identified indicators (cf. the recent activities of the Mediterranean Commission for Sustainable Development) has been made. This is remarkable, but is it enough? We do not believe so. Is the best available information put to work for the right challenges, i.e. more stringent environmental political commitments and targets to improve in general environmental quality and the rational use of significant natural assets of the Mediterranean and, finally, to progress towards sustainable development? We must, indeed, consider the unique opportunity that a new generation of shared information could represent for an effective support to the national and regional decision-making processes and for stimulating the expected public participation.

What does this mean? For instance, the costs of environmental actions are often emphasised, but there are clearly also cost-effective opportunities for countries to develop ecoefficient economies, eg. increasing the share of renewable energies is realistic for many Mediterranean communities. Another example is given by the externalities of the tourism industry which, in many areas, offset the incomes and benefits it provides. If the right choices are to be made then new kinds of partnerships between all stakeholders are necessary as well as a new type of information

that is relevant to the choices of development paths available.

This said, it is fair to state that expectations in the development of harmonised environmental data in the Mediterranean region through a joint information provision exercise have been often raised. To fulfil this objective the various actors ask the European Environment Agency (EEA) to contribute directly by bridging the European partners with the other Mediterranean actors. We have therefore initiated a partnership between EEA and UNEP/MAP. One of EEA's tasks, through the work of the Topic Centre on Marine and Coastal Environment, is to establish an Inter-Regional Forum to facilitate the exchange and integration of existing data and information among regional and international conventions and organisations active in marine and coastal environmental monitoring. Major regional and international organisations/conventions such as MAP, OSPAR, HELCOM have joined the Forum. From the first discussions between EEA and UNEP/ MAP Secretariat, the need for an updated report on the state and trends for the Mediterranean Sea was emphasised.

The result of the cooperation on compiling and publishing such a report is presented here. It gives the best available information on the marine environment in the Mediterranean Sea and its coastal zone. It documents and describes the various interactions between human activities and the environment. It confirms and updates the major problems of the coastal zones. One of the major objectives of the report also includes the identification of possible gaps in current knowledge, especially in the field of marine environmental monitoring, following two decades of coordinated activities in the region under MEDPOL and complementary programmes. The final aim of the report is to identify objectives and recommend actions to improve the information, which can be achieved by encouraging better use of the scientific capacity in the region in order to focus more accurately on the existing problems and to propose suitable priorities and action.

It is worth stressing that the EEA and UNEP/MAP see this report both as a contribution to and a milestone towards an overall assessment

of the environmental situation of the whole Mediterranean basin. It is necessary, however, to go beyond, in support of the activities and political agenda dealing with environment/ development issues. A status report on the current situation and prospects of the whole basin, including state of action, would address the specific needs of the European Union, UNEP, countries and international financial organisations to have an objective basis for decision-making. We should not wait too long before deciding about the making of this assessment report. In fact, such a report, which we might call 'The Mediterranean Basin. Situation and Prospects for the Next 20 Years' should be available for the Rio+10 Conference in 2002 in order to mark the place and ambitions of the Mediterranean within the world community.

In the meantime, we must dare to convey some strong messages, as demonstrated by the present report. Allow us to give you our perception of the issues:

- The Mediterranean sea and region is traditionally very rich in environmental data and specific, targeted information and scientific knowledge but extremely poor in consistent and integrated assessments. This difficulty to produce regular integrated assessments, linked to the political agenda, is a major handicap that has to be overcome;
- The Mediterranean is a fantastic asset: it is a strong and healthy sea that we submit, in spite of the reduction of some pollution, to excessive pressures; hotspots identified by MAP are still numerous. Notwithstanding this, its natural conditions remain unique: its biodiversity, oligothrophic conditions,

- km of the 47 000 total km of Mediterranean coast, behind which the Mediterranean identity and its resources are gradually disappearing.
- We also discharge too much untreated waste water and toxic substances; and biodiversity is threatened by bringing invading fauna and flora species and scraping the sea beds.

The Mediterranean basin will only be what we make of the coasts. In line with the recommendations of the Mediterranean Commission for Sustainable development, the time has come to implement common policies for action aimed to improve the current situation and stop the degradation observed in this report. Otherwise, there is little hope of honouring our responsibility to take care of what is still a treasure; the Mediterranean Sea.

EEA and MAP will continue to develop their cooperation to provide more in-depth assessments; these should form the basis for the global action to reverse the present trends. It is not too late: it is a matter of understanding our collective interest as well as the rights of future generations.

Domingo Jiménez-Beltrán Executive Director, European Environment Agency

Lucien Chabason Coordinator, Mediterranean Action Plan

预览已结束, 完整报告链接和二维码如下:

https://www.yunbaogao.cn/report/index/report?reportId=5 12565

