

medwaves

The magazine of the Mediterranean Action Plan

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The Mediterranean, an ecosystem at risk

"We could save
25 % water by 2025"

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● EDITORIAL

The extremely warm autumn 2006 in Europe has again stressed the discussion on global warming. The temperatures in large parts of Europe have been record high between September and November 2006, and even in the first months of 2007 in the Mediterranean region.

Anyone monitoring the international media over the past twelve months could be in little doubt that the issue of climate change is now leading the political and public agenda. Scarcely a week goes by without a new study revealing that glaciers in Antarctica and Patagonia are sliding into the sea or that wildlife from temperate zones is gravitating towards the Arctic.

The overwhelming scientific consensus now is that the cause of climate change is the increasing emission of greenhouse gases into the atmosphere from human activity. This is the process by which concentrations of gases, including carbon dioxide, methane, nitrous oxide and CFCs, help trap the heat of the sun's rays within the earth's atmosphere.

Responsibility lies within a range of human activities, from the burning of fossil fuels to deforestation, all contributing to an increase in gas emissions, with the largest proportion coming from carbon dioxide.

Currently, over 2 billion people around the world struggle to live on less than a dollar a day, often depending heavily on agriculture, fishing and animal husbandry to maintain their livelihoods. They are not the people driving climate change.

Of those living on less than a dollar a day, few benefit from electricity, cars, and refrigerators. But their lives are intrinsically linked to climate changes, and therefore they are likely to bear the highest human costs.

This imbalance between responsibility for the current causes of climate change and its impacts creates an enduring global inequity. Climate change is not only an environmental issue; it has implications for achieving economic growth, human security, and broader social goals.



"Climate change touches on all aspects of our society. It is a threat not only to the environment, but also to our economies and, in the end, to our security."

Stavros Dimas, EC Environment Commissioner, "Meeting the Climate Challenge", 2005



Paul Mifsud
Coordinator
Mediterranean Action Plan



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According to the Millennium Ecosystem Assessment, endorsed by the United Nations and over 1,000 scientists from 95 countries, climate change is set to take over from habitat change and over-exploitation as the single biggest global cause of ecosystem disruption. From health to water supplies, food security, coastline development, species preservation, all societies are dependent on favorable climate conditions to thrive. Changing precipitations patterns, either wetter or drier, and altered temperatures, will affect crop productivity, availability of food, water resources.

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Buildings can play a key role in combating climate change

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Editor: Luisa Colasimone

Contributors to this issue:

F.S. Civili, A. Djoghlaf, S. Lombardo, INFO/RAC

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UNEP/MAP

United Nations Environment Programme /

Mediterranean Action Plan

48, Vassileos Konstantinou Avenue, 11635 Athens, Greece

Tel: 0030 210 72 73 100

Fax: 0030 210 72 53 196/7

E-mail: unepmedu@unepmap.gr

www.unepmap.org

Ecosystems and environmental governance

The environmental community of scientists, civil society and concerned citizens had until recently been portrayed as the purveyors of alarmists statements. This is now changing. As with the mythological Cassandra, the past warnings of over-exploitation of natural resources and the unsustainable use of national, regional and global goods are now seen to be happening for real, and to have an impact across a wide range of issues —from biodiversity loss, water scarcity and collapsing fisheries to the overarching concern about climate change.

The Millennium Ecosystem Assessment, the work of around 1,300 scientists from 95 countries in which UNEP and its specialized agencies played an important part, confirmed existing concerns and went even further. The first report, published in March 2005 ahead of the 2005 World Summit (the High-Level Plenary Meeting of the 60th Session General Assembly of the United Nations), concluded that some 60% of ecosystems* are being currently degraded or used unsustainably.

How we rise to the challenges of ecosystems degradation and seize the opportunities presented by the rapid environmental, social and technological change to address them will determine the world we leave for future generations.

In the case of the changes to the ecosystems, the risks outweigh the benefits. The obvious example is climate change. But this is one of the several threats to our planet that demand urgent attention. The accelerating loss of biological diversity, land degradation, impending water scarcity and deteriorating marine ecosystems are all prominent issues.

They threaten to undermine the many technological economic and social advances human society has experienced in recent decades, and represent an obstacle to the achievement of the Millennium Development Goals (MDGs).

* **Ecosystem:** a system involving the interactions between a community of living organisms in a particular area and its nonliving environment. Humans are part of and not separate from the ecosystem. Ecosystem services are the important benefits for human beings that arise from healthily functioning ecosystems, notably production of oxygen, soil genesis, and water detoxification.

Deficit of governance versus environmental challenges in the Mediterranean

In the Mediterranean, despite considerable efforts to strengthen environmental legislation, it has often been difficult to prevent environmental degradation by effective actions on the development process.

Over the past two decades, the Mediterranean countries have focused mainly on strengthening environmental policies and institutions, without finding complementary intervention mechanisms related to consumption and production activities, or to economic and social policies. While physical and land planning policies have shown some decline, there has been an unprecedented effort in the protection of the environment, and the integration of sustainable development in development policies.

Nature is the wealth of the poor

"Poverty and the Environment" is one element of UNEP's Reform discussed in Nairobi at the last UNEP Global Ministerial Environmental Council meeting this year.

It is also the theme of the joint UNEP-UNDP (UN Development Programme) initiative which will be carried forward during the course of 2007. According to a joint report issued in 2005 by these two organisations, every dollar invested in fighting land degradation and desertification may generate more than three dollars in economic benefits, helping to fight poverty among the billions of people living on fragile lands. Likewise, every dollar spent on delivering clean water and sanitation is likely to give impressive rates of return up to 14 dollars.

One of the aims of the discussions in Nairobi was to provide further impetus to the implementation of UNEP partnerships with other United Nations system entities. It was emphasized that environmental challenges needed to be integrated into development planning and economic strategies.

Today, there is increased recognition that environmental issues are interlinked not only with development and sustainable economic growth, but also with trade, agriculture, health, peace and security and that these interactions increase the need for global environmental leadership.

The current United Nations reform process presents an opportunity for strengthening the organisation's environmental activities. A steady increase in the political attention being accorded to the environment has supported this process and there is growing recognition that environmental sustainability cannot be separated from sustainable development and economic growth.



Pollution reduction: the silent battle is bearing fruits

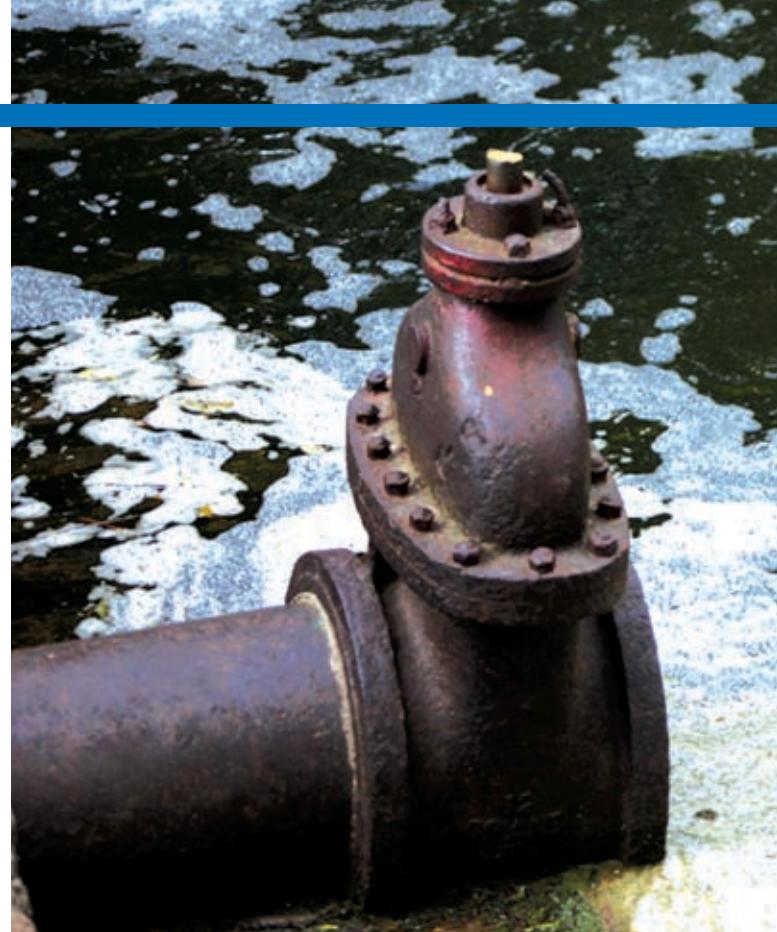
Good news in the Mediterranean from the programme for pollution phase-out. The silent battle in which the Mediterranean countries have engaged to prevent, reduce and ultimately eliminate land and sea-based sources of pollution is giving the first tangible results: the National Action Plans have been approved by the national governments, who have also committed to endorse them. These innovative plans, prepared with the involvement of all sectors of society, provide for the first time a concrete set of interventions to reduce pollution.

Mediterranean coastal waters are affected by maritime and land-based pollution. The land-based sources are responsible for 80 % of the total pollution affecting the Mediterranean, and responses have been developed over the past three decades to reduce and eventually eliminate this. Maritime pollution accounts for 20 % of the overall pollution.

With 46,000 kms of coastline, the Mediterranean hosts 150 million people, 110 million of which live in cities. Every year an additional 200 million tourists arrive in the region, mostly concentrating in the coastal areas. The narrow coastline also hosts over 200 petrochemical and energy installations, chemical industries and chlorine plants, all sources of pollution, and around 80 rivers carry to the sea heavy loads of pollution.

It is difficult to estimate the quality of coastal waters on such a vast scale. Coastal water pollution affects ecosystems, human health and the economy in many ways, such as increases in public health costs, reduction in seafood consumption and the related loss of jobs in fisheries, plus negative effects on tourism. All economic activities in an area can be directly affected by pollution.

The most significant forms of pollution in the Mediterranean are chemical contamination —including persistent toxic substances (PTS), pollution from organic and pathogenic micro-organisms and hazardous solid waste, and eutrophication (a process by which waters enriched with nutrients such as nitrogen and phosphorus stimulate primary aquatic production, inducing increases in biomass).



The most significant forms of pollution in the Mediterranean are chemical contamination and hazardous solid waste.

Reducing and eventually eliminating the pollution in the region is a complex challenge

The Mediterranean countries have devoted time, money and coordinated efforts over the past three decades to the fight against pollution.

We have seen a wealth of legally binding international agreements, which are increasingly shaping national regulations. As early as 1975 the Mediterranean Action Plan (MAP) set up a cooperation mechanism for the Mediterranean. To combat land-based pollution in particular, MAP, through MED POL, the marine pollution assessment and control component of MAP, has an extremely important protocol, the Land-Based Sources Protocol (LBS). According to article 5: "*The Parties undertake to eliminate pollution deriving from land-based sources and activities, in particular to phase out inputs of the substances that are toxic, persistent and liable to bio-accumulate. To this end, they shall elaborate and implement, individually or jointly, as appropriate, national and regional action plans and programmes, containing measures and timetables for their implementation.*"

MED POL plays an essential role to avoid the gap that would result between the "European" shore, endowed with regulations and resources to limit pollution, and a "non-European" shore, less equipped with instruments for implementing environmental policies, which could lead these countries to a considerable increase in pollution in the next 25 years unless appropriate pollution-control measures are put in place.

Such a division would compromise efforts of some countries to control their pollution. MED POL helps to avoid this division by



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contributing to the process of defining common priority objectives, harmonizing monitoring methods and regulations, and supporting the least-endowed countries in implementing them.

After a consolidation phase of the international legal instruments, MED POL has entered an operation phase, illustrated by the formulation in 1997 of the Strategic Action Plan (SAP) to support the LBS Protocol. The SAP's main objectives are to significantly reduce land-based pollution by 2025, and to halve cumulative industrial discharges in all countries by 2010. These objectives are defined in the National Action Plans (NAPs), which MED POL has helped countries to formulate, and subsequently to implement by lending support in mobilizing the required funds.

The last Meeting of the MAP Contracting Parties held in Portoroz in 2005 was particularly significant in this respect. The Parties endorsed the National Action Plans that countries had prepared, indicating the strong commitment of the national governments in the pollution-reduction process. These innovative plans, prepared with the involvement of all sectors of society, provide a concrete and realistic list of the interventions planned to effectively reduce pollution (for instance treating the wastewater of all cities; suppressing the discharge of persistent toxic substances such as zinc, copper and chromium, pesticides and hazardous waste).

For the first time the priority issues and needs are outlined and the planned measures to eradicate pollution in the Mediterranean are totally supported politically. In spite of the fact that the LBS Protocol is not in force yet, countries have decided to start preparing the programmes and measures that will become legally binding as required by article 15 of the Protocol.

Political support, concrete activities and funds to protect the region

"MAP/MED POL's initiative fits in the promising regional and international climate: GEF, FFEM and the World Bank aim at working in the region through a new Strategic Partnership and the EC Horizon 2020 Initiative.* Not by chance they are looking at what is happening in MAP to have a good basis and a reliable partner to assist countries and to reduce pollution", said Francesco Saverio Civili, Coordinator of MED POL.

The first concrete steps are already visible. The GEF Strategic Partnership and the related World Bank Investment Fund are expected to be soon operational and the European Investment Bank has already made contacts with MAP/MED POL to review the pollution interventions listed in the National Action Plans and have initial contacts with the countries for the implementation of the Horizon 2020.

In addition, after years of collation of data and information stored in disparate data bases, MED POL with the technical support of INFO/RAC, MAP's regional center for information, are working on the finalization of an Information System that is expected to be a helpful reference for decision makers, a working tool for scientists and an instrument of information for anybody who is interested in marine pollution. The System is ready to be tested and is expected to be operational in 2008. It already contains data on levels and sources of pollution and is ready to accommodate additional data and links with other national and international systems.

Finally, MED POL is setting up a mechanism to ensure financial sustainability to the implementation of the National Action Plans. The initiative includes the possibility to assist countries in bridging needs/projects with current financial opportunities at the national and international levels, thus facilitating the obtaining of grants and loans.

* a. The GEF, Global Environment Facility, is a multilateral financial institution, with 173 member countries. Its secretariat is based in Washington D.C. The GEF was established by the World Bank, the UN Development Program (UNDP) and the UN Environment Program (UNEP) in 1991 to fund developing country projects that have global environmental benefits, not only in the area of climate change, but also biodiversity, protection of the ozone layer and international waters.

b. The French Global Environment Facility (FFEM) has complemented the GEF's activities since 1994. Its goal is to finance the additional costs incurred in protecting the global environment in development strategies. It is a bilateral fund financed by the French Government, over and above the latter's development assistance and its contributions to the GEF. The French Development Agency (AFD) in Paris manages the FFEM Secretariat.

c. The European Commission launched the Horizon 2020 initiative that aims to tackle the top sources of Mediterranean pollution by the year 2020. The partners committed to: "endorse a feasible timetable to de-pollute the Mediterranean Sea by 2020, while providing appropriate financial resources and technical support to implement it, using the Mediterranean Strategy for Sustainable Development and exploring possible areas for co-operation in this regard with UNEP".

The heat is on

Most of us have not seen the early signs of climate change coming. Scientists working in the Mauna Loa Observatory (Hawaii) began monitoring carbon dioxide levels in the 1950s and saw the concentration increase year by year, but this was not considered newsworthy. Today however, few analysts seriously challenge that this global environmental phenomenon is happening. Recent scientific reports confirm that it is occurring at an even faster rate than had previously been envisaged.

Over the 20th century the average temperature of our planet had already risen by about 0.6 °C. By the end of the current century it is expected to have increased again by up to 5.8 °C. Globally the ten warmest years on record have all occurred since 1991. The result has not just been a warmer climate but a series of catastrophic environmental impacts, from the melting of the polar ice caps to volatile weather patterns to multiple threats to global fauna and flora on an unprecedented scale.

Most analyses of the phenomenon agree that if its worse side-effects are to be avoided, then the rise in average global surface temperature must be kept to below 2 °C.

Above that level, according to the 2005 report "Meeting the Climate Challenge" by the International Climate Change Taskforce, the risks to human societies and ecosystems grow significantly. With the potential for substantial agricultural losses, increasing numbers of people experiencing water shortages and widespread health impacts.

According to the Millennium Ecosystem Assessment, endorsed by the United Nations and over 1,000 scientists from 95 countries, climate change is set to take over from habitat change and over-exploitation as the single biggest global cause of ecosystem disruption.

From health to water supplies, food security, coastline development, species preservation, all societies are dependent on favorable climate conditions to thrive. Changing precipitation patterns, either wetter or drier, and altered temperatures, will affect crop productivity, availability of food, water resources as well as feeding locations of fish.

Disagreements continue however about what action should be taken in response. These mostly revolve around conflicts between economic and environmental objectives, around the nature and equity of international participation, and around the menu of technological and policy options available.

The Mediterranean, an ecosystem at risk

A 1989 technical report by UNEP/MAP read that "climatic changes must be taken into consideration in view of the current population explosion, increasing use of coastal areas (tourism, agriculture, fishing, harbours, industries) and the limited resources of the Mediterranean countries, especially in regard to water, good soil and fisheries".*

The Mediterranean Sea has a deficient hydrological balance, with loss through evaporation exceeding the input of water through rivers and rainfalls. This also explains the Mediterranean high salinity, its most outstanding differential characteristic compared to the Atlantic.

The length of the Mediterranean coastline is some 46,000 km. Although few in number, the major Mediterranean river (Ebro, Rhone, Po, Vardar, Ceyhan and Nile) inject large volumes of sediments into the system.

The Mediterranean alluvial and coastal plains are few and not extensive, but most have demographic and economic importance. Because of their ecological fragility, related to the land-sea transition, and their economic importance, these coastal lowlands are the most vulnerable to climate changes affecting the hydrological network, the ecosystem and a sea-level rise.

The entire coast around the North West Adriatic for instance can be classified at high risk of erosion because of the impacts of sea-levels rise. The Gulf of Lion, a wide embayment of the Mediterranean coastline of Languedoc-Roussillon and Provence in France, reaching from the border with Catalonia in the west to Toulon, with its tourist resorts and harbour, is also at risk.

It is a fact that regional changes in all climatic variables have already started to occur, but changes cannot yet be quantified, as so far the general circulation models cannot simulate reliably the regional details of today's climate.

What is lacking for the Mediterranean in particular is a model based on realistic topography, with a high spatial and temporal resolution that simulates observed climate patterns.

It will take time before these changes can be statistically detected and separated from the natural regional-scale climate variability, but the existence of a warming trend is gaining importance. With time, the probability of periods of extreme heat will increase; the increase in air temperatures will also lead to greater water evaporation.

* *Implications of Expected Climate Changes in the Mediterranean region: an overview (UNEP 1989, ID1289/N103).*



Burano Island, Venice. The entire coast around the North West Adriatic is at high risk of erosion because of the impacts of sea-levels rise.

80 % of dry areas already affected by desertification

Currently, over 80 % of arid and dry areas in the Mediterranean region are already affected by desertification, and the consequences will be further exacerbated by the additional impact of climate change.

Soils become salinized, dry, sterile, and unproductive in response to a combination of natural hazards —droughts, floods, forest fires— and human-controlled activities. Fertilizers, pesticides,

irrigation, contamination by heavy metals, and the introduction of invasive plant species are undermining the long-term health of the Mediterranean region's soils.

Much of the region is semi-arid and subject to seasonal droughts, high rainfall variability, or sudden intense downpours. Poor management of scarce natural resources —particularly water, agricultural land, energy and coastal zones— is compromising economic development, the quality of life and social stability.

● DIVING IN



Left: According to a report published in September 2006 by the University of Cantabria for the Spanish Ministry of the Environment, climate change will eat up some 15 metres of Spanish beaches by the year 2050. Sea levels are rising 2.5 millimetres every year in the country, threatening in particular the coasts and villages of la Albufera de Valencia, Doñana and Costa Brava.



Right: In Greece, sea level rise will cause significant damage along the whole coastline, as waves will easily overtop the sea barriers fronting the reclaimed agricultural land, and the cement seawall along the city of Thessaloniki.

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Expected climate changes in the coastal zones vary

In the coming years, desertification might accelerate migration to costal areas in the South Mediterranean. However the possible demographic and economic changes in the Mediterranean coastal areas vary considerably.

In Italy for instance, the main threats from climate change could affect the survival of the Venice Lagoon, and concern as well the tourism industry, the commercial activities of the main harbours and specialised agricultural productions.

In Greece, sea level rise will cause significant damage along the whole coastline, as waves will easily overtop the sea barriers fronting the reclaimed agricultural land, and the cement seawall along the city of Thessaloniki.

In the Nile Delta, the coastal development will have a direct effect on the nature and extent of climatic impacts. The increasing intensified land-use is inevitable, due to the continued growth of the population and the consequent need to increase food production, through a further extension of land reclamation and of fishing. The most serious effects of sea-level rise are likely to focus on ports, lagoonal fishing and lowland agriculture, and thus indirectly on population centers, which are tied to port and agriculture-related activities.

In North Tunisia water resources will be directly affected by climate change, both in terms of quantity available as of the quality of the water.

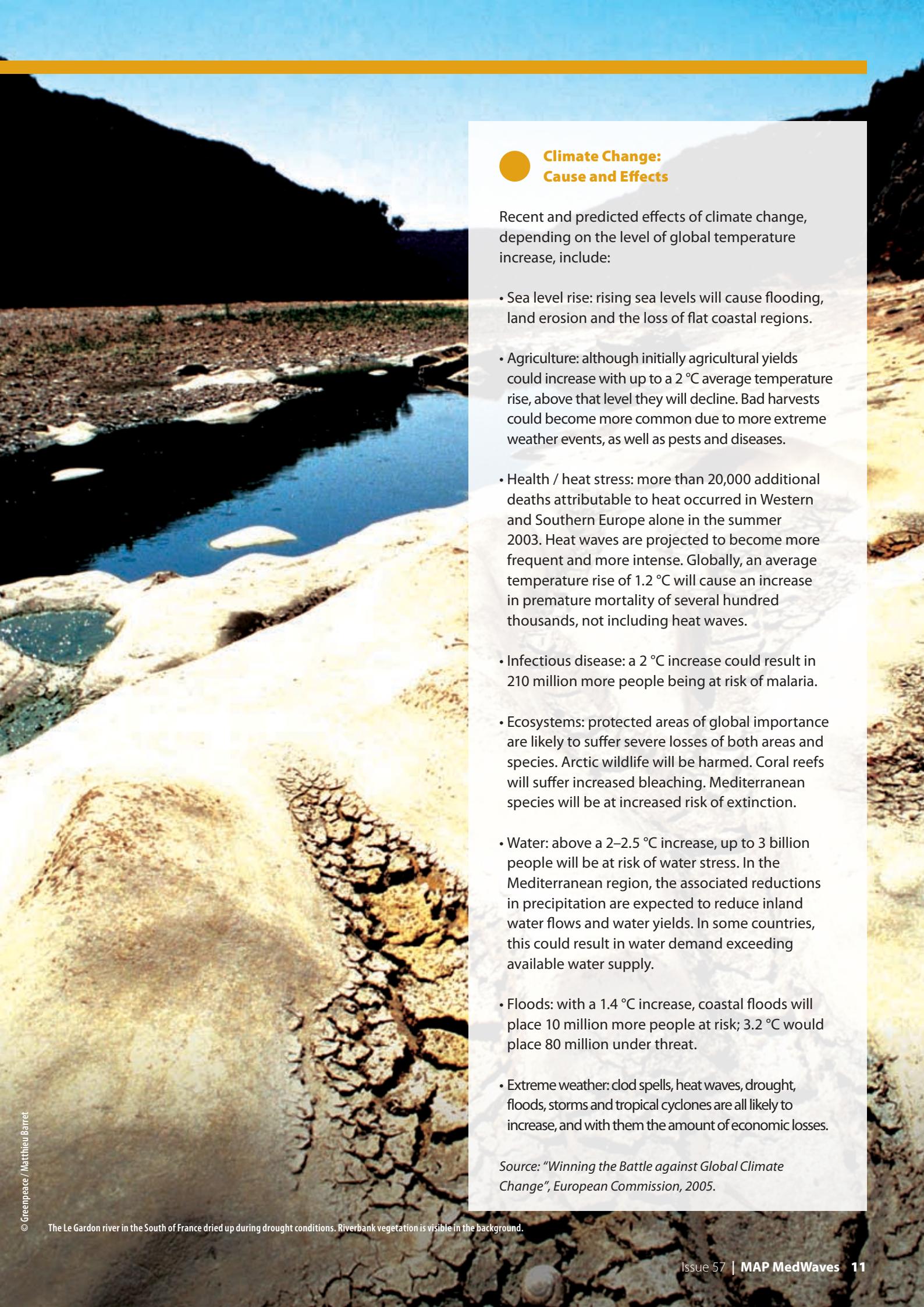
A more sustainable Mediterranean development could alleviate climate impacts

The cost of alleviating the consequences of climate changes could be easily met in the countries with the higher national incomes, but the developing countries would benefit from concrete help in alleviating the expected impacts. International bodies and national governments have responded to these global issues by developing and implementing actions at the regional and national levels.

The Mediterranean region presents deep challenges but also great opportunities. Climate changes cannot be tackled without the integration of sustainable development by the countries affected. As identified by UNEP/MAP in its Mediterranean Strategy for Sustainable Development (MSSD), the understanding of global processes, the development of modern research, the ability to cope with global environmental change, and the preservation of the global heritage depend to a large extent on the way the existing natural resources are managed and preserved.

UNEP/MAP has identified seven priorities, offering a concrete potential for progress in the region, and that take into consideration also the issue of combating climate change in the Mediterranean. These areas are the most threatened by unsustainable trends and by climate change. They are also crucial for economic and social progress.

They include better management of water resources and demand; improved rational use of energy, increased renewable energy use and mitigation of and adaptation to climate change; sustainable mobility through appropriate transport management; sustainable tourism as a leading economic sector; sustainable agriculture and rural development; sustainable urban development; sustainable management of the sea, coastal areas and marine resources.



Climate Change: Cause and Effects

Recent and predicted effects of climate change, depending on the level of global temperature increase, include:

- Sea level rise: rising sea levels will cause flooding, land erosion and the loss of flat coastal regions.
- Agriculture: although initially agricultural yields could increase with up to a 2 °C average temperature rise, above that level they will decline. Bad harvests could become more common due to more extreme weather events, as well as pests and diseases.
- Health / heat stress: more than 20,000 additional deaths attributable to heat occurred in Western and Southern Europe alone in the summer 2003. Heat waves are projected to become more frequent and more intense. Globally, an average temperature rise of 1.2 °C will cause an increase in premature mortality of several hundred thousands, not including heat waves.
- Infectious disease: a 2 °C increase could result in 210 million more people being at risk of malaria.
- Ecosystems: protected areas of global importance are likely to suffer severe losses of both areas and species. Arctic wildlife will be harmed. Coral reefs will suffer increased bleaching. Mediterranean species will be at increased risk of extinction.
- Water: above a 2–2.5 °C increase, up to 3 billion people will be at risk of water stress. In the Mediterranean region, the associated reductions in precipitation are expected to reduce inland water flows and water yields. In some countries, this could result in water demand exceeding available water supply.
- Floods: with a 1.4 °C increase, coastal floods will place 10 million more people at risk; 3.2 °C would place 80 million under threat.
- Extreme weather: clod spells, heat waves, drought, floods, storms and tropical cyclones are all likely to increase, and with them the amount of economic losses.

Source: "Winning the Battle against Global Climate Change", European Commission, 2005.

The Le Gardon river in the South of France dried up during drought conditions. Riverbank vegetation is visible in the background.

Earth climate warming caused by human activities

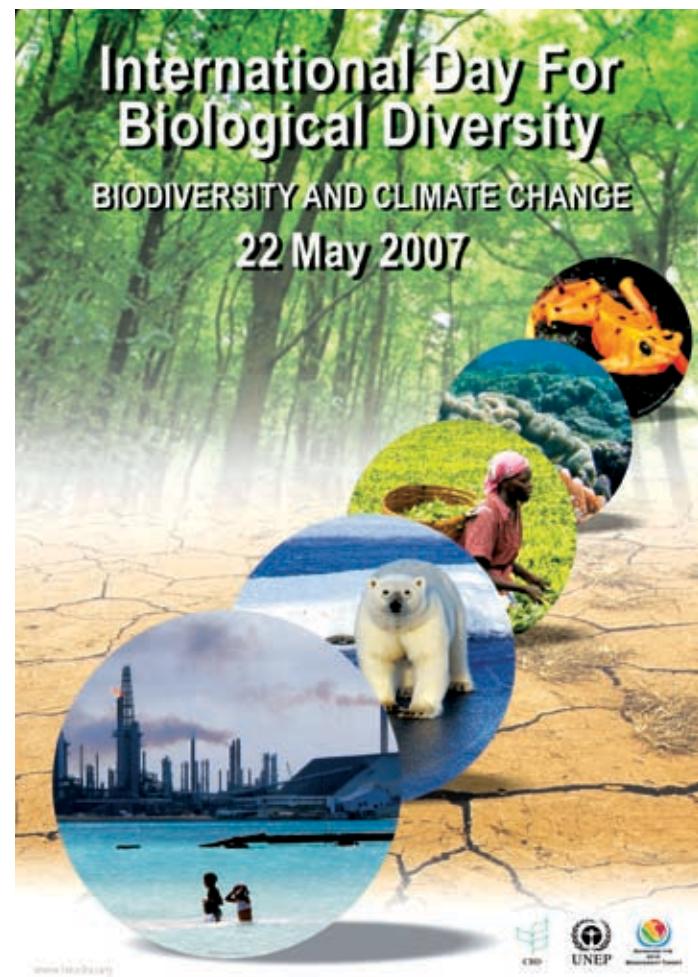
Ahmed Djoghlaf, an Algerian national, is the Executive Secretary of the Convention on Biological Diversity under the United Nations Environment Programme (UNEP). As Executive Secretary of the Convention, he has a key role in the field of sustainable development and protection of global biodiversity.

Since the mid-1800s global temperatures have increased by about 0.6 °C, impacting the entire world, from low-lying islands in the tropics to the vast polar regions. Current climate change predictions are not encouraging; they estimate further increases in temperatures of 1.4 °C to 5.8 °C by 2100. Even if all human sources of greenhouse gas emissions were stopped immediately, the impacts of climate change would continue for 50 years.

No area of the world is immune to the effects of climate change, and the Mediterranean region is no exception. The forecast is for global climate change to bring hotter, drier summers to the Mediterranean significantly impacting the ecology and economy of the region —including for example two of the region's largest industries, agriculture and tourism.

Mediterranean ecosystems are home to some of the richest biodiversity in the world. Climate change, however, could critically undermine this delicate balance and affect the numerous efforts envisaged in this respect within the Mediterranean Strategy for Sustainable Development. Specifically, climate change may add to existing problems of desertification, water scarcity and food production, while also introducing new threats to human health, ecosystems and national economies of Mediterranean countries.

Recent studies show a global warming of 2 °C and its associated reduction in precipitation are expected to reduce inland water flows and water yields in the Mediterranean region. In some countries, this could result in water demand exceeding available water supply. Climate change is also likely to lead to shifts in the distribution and abundance of Mediterranean species, increasing the risks of extinction. In addition, forest fires are expected to encourage the spread of invasive species, which in turn, have been shown to fuel more frequent and more intense fire.



Poster announcing the 2007 International Day for Biological Diversity.

Actually, in some regions of the world, climate change is already forcing biodiversity to adapt either through shifting habitat, changing life cycles, or the development of new physical traits. Those species that are unable to adapt are facing extinction. In fact, predictions estimate that up to 1 million species may become extinct as a result of climate change.

The links between biodiversity and climate change run both ways: biodiversity is threatened by human-induced climate change, but biodiversity resources can reduce the impacts of climate change on people and production. The conservation of habitats can reduce the amount of CO₂ released into the atmosphere. Currently deforestation is estimated to be responsible for 20 % of human-induced CO₂ emissions. Conserving certain species such as mangroves and drought resistant crops can reduce the disastrous impacts of climate change effects such as flooding and famine. The conservation and sustainable use of biodiversity can strengthen ecosystem resilience, improving the ability of ecosystems to provide critical services in the face of increasing climatic pressures.

Combating the causes and effects of climate change has major implications not just for the variety of life on our planet, but also for the livelihoods of people around the world. As emphasized in the Millennium Ecosystem Assessment, the rural poor are



Last summer, a plague of jellyfish along Mediterranean beaches was blamed on global warming. Holidaymakers heading for the region were warned to prepare for an unprecedented invasion of the invertebrates whose sting can, in extreme cases, cause heart failure. *Oceana*, an environmental group campaigning to protect and restore the world's oceans, attributed the rise in the number of jellyfish to a rise in water temperature because of climate change. It also highlighted over-fishing of natural predators that feed on jellyfish, and pollution along the continent's coasts.

especially vulnerable to the loss of essential services when an ecosystem becomes degraded. The maintenance of soils suitable for crop-growing, the availability of medicinal plants, the provision of fresh water and the income gained from ecotourism, for example, are all underpinned by the web of life and the interaction of species ranging from the smallest micro-organisms to the largest predators. The loss of these services has a devastating impact for the poor, who lack other options at their disposal. As policymakers from around the world seek ways to help the poorest to adapt to climate change, priority must be given to the role of biodiversity, an element often neglected from current adaptation strategies.

In this respect, there is an urgent need to raise public awareness on the relationship between the two most serious environmental threats facing mankind. It is for this reason that

this year the International Day for Biological Diversity, (IBD) held on 22 May, calls upon all citizens of the world to ensure that we take the necessary steps to enable conservation and sustainable use of biodiversity in a changing climate. The IBD offers as well the opportunity to launch stronger collaboration for joint information and communication activities with sister regional conventions —in the specific case with the INFO/RAC-MAP of the Barcelona Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean Sea, in order to set the path for maximized cooperation in ensuring livelihoods and protecting the biodiversity heritage for the generations to come.

If the threats of biodiversity loss and climate change are tackled together, the prospects for adapting successfully to the challenges of the coming decades will be greatly improved.

Signals of alarming water scarcity in the region

During the 3rd Regional Water Workshop convened by Blue Plan, a UNEP/MAP regional activity centre, in Zaragoza, 19–21 March, it was recommended to the national political authorities of the Mediterranean countries to include, in accordance to the Mediterranean Strategy for Sustainable Development (MSSD), water demand management in the national priority strategies.

In the Mediterranean Region, water resources are scarce and unevenly apportioned, the Southern Mediterranean countries for instance are endowed with only 13 % of the total water resources available.

During the second half of the 20th century, water demand plus unconventional production practices such as desalination and wastewater reuse has increased twofold, however thirty million people have still no access to drinking water, in particular in the Southern and East Mediterranean countries.

By 2025, the significant increase in pressures on water resources highlights strong and sometimes alarming contrasts as the regards the “future of water”. Currently, in some countries, water withdrawals already near or even exceed the limit threshold of renewable resources.

Pressures on water resources will increase significantly in the South and East, and it is expected that, by 2025, 63 million people in the Mediterranean will be limited to less than 500 m³ per capita per year (defined as the “shortage” threshold).

The increase in water demand for agriculture and for urban use and the scarcity of resources signify that one out of every three Mediterranean countries will withdraw over 50 % of the annual volume of its renewable natural resources. The percentage of unsustainable water supplies derived from fossil sources or from over-exploitation will grow (up to 30 % in Malta or Libya).

The rise in the demand for water will be steepest in the least water-rich countries, which will then be exposed to structural shortages. Under these circumstances, some fossil resources will rapidly be depleted and coastal aquifers further destroyed by salt-water intrusion.



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Agriculture is expected to remain the main water-consuming sector. According to FAO, irrigated surfaces could increase by 38 % in the South Mediterranean and by 58 % in the East Mediterranean by 2030.

Moreover the silting up of water retained in dams limits their lifespan (e.g. dams in Algeria have lost a quarter of their original capacity), and there are fewer and fewer sites on which to build new dams. Growing quantities of industrial and urban waste and reduced run-off resulting from increased extractions will also affect the quality of water and aquatic systems, and of their biodiversity. It is likely that wetlands will continue to retract. These elements further aggravate the factors leading to increasing water vulnerability (costs, health and conflicts).

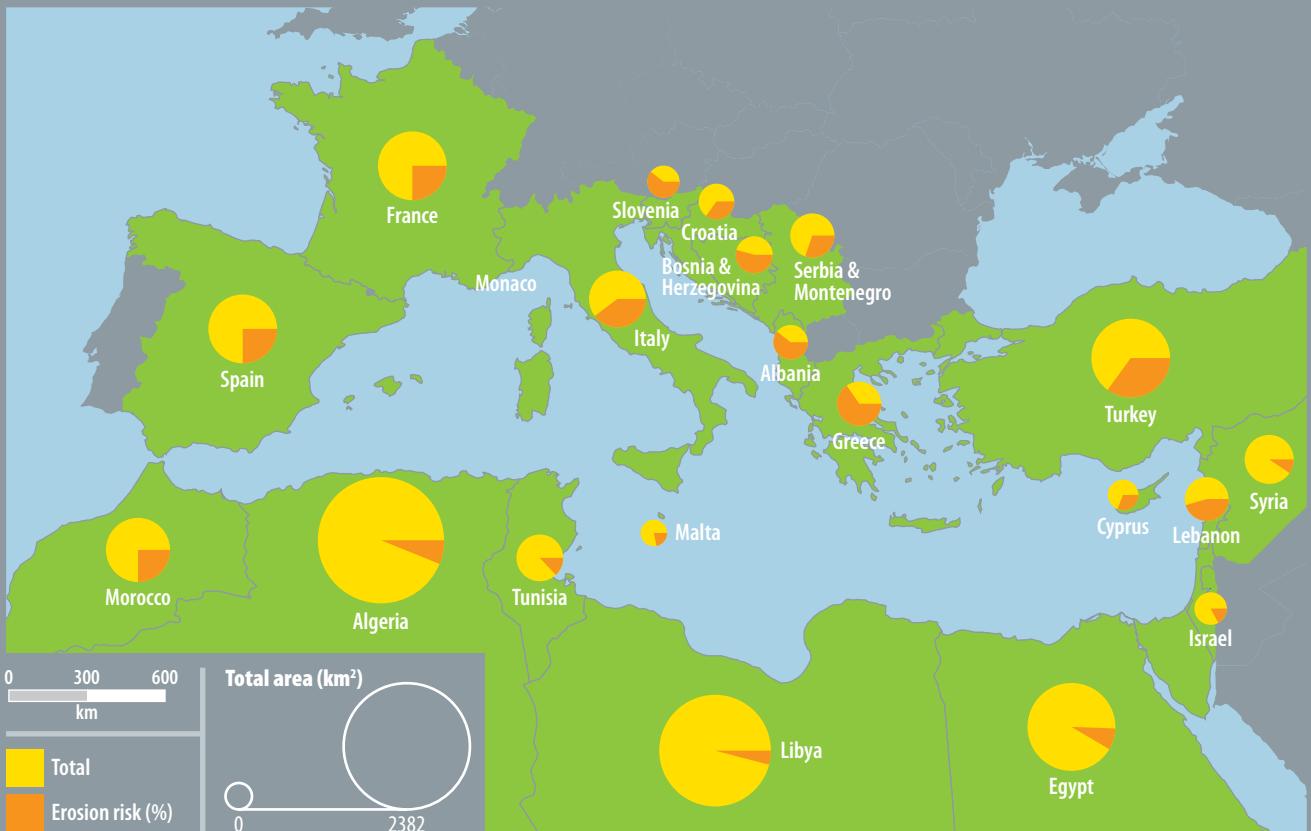
Policies focus mainly on water supplies

The current national policies are mainly supply-increase-driven, but in so-doing they constantly deteriorate natural resources, and present severe risks in the long-term, such as the rapid depletion of some fossil resources, the destruction of coastal aquifers through seawater intrusion, the degraded quality of water and aquatic systems, reduced flows and the drying-up of wetlands. Supply-based policies are therefore reaching physical, socio-economic and environmental limits —in Algeria for instance some reservoirs have already lost 25 % of their initial capacity.

The 3rd Regional Water Workshop indicated that problems connected with water demand management should also be properly integrated within the global environmental problems, such as climate change, biodiversity and ecosystem conservation, to which they are strongly related.

In addition it recommended to the national political authorities to promote the implementation of water demand management also by mobilising all necessary instruments and tools, normative, tariff, fiscal, contractual and market tools in the region.

Surfaces threatened by erosion in the countries of the Mediterranean rim



Source: FAO, TERRASAT; Blue Plan, 2003.

We could save 25 % water by 2025

According to Blue Plan projections outlined in their baseline scenario, water demand may increase by a further 43 km^3 by 2025, essentially in the Southern and Eastern countries, mainly in Turkey and Syria.

Agriculture is expected to remain the main water-consuming sector. According to FAO, irrigated surfaces could increase by 38 % in the South and by 58 % in the East by 2030, whereas in the Northern Mediterranean region the water demand would stabilise or even decline.

An additional 98 million urban dwellers are expected in the South and East by 2025, joined by growing numbers of tourists, therefore increasing the growth in drinking water demands.

Policies aimed at improving efficiency of use and further reduce losses and poor usage can help to invert the current trends. An improved water demand management would make it possible to save 25 % of water demand, approximately $86 \text{ km}^3/\text{year}$ in 2025.

The improved management of irrigated agriculture could help save a total 65 % of water demands, a further 22 % can be expected from the industry through water recycling, and another 13 % from a sounder management of drinking water supply.

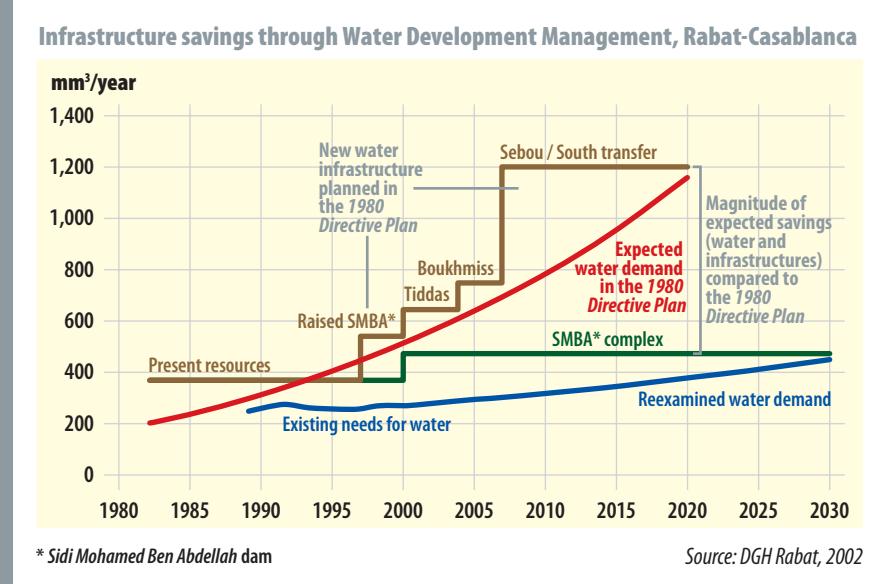
These global estimates are based on concrete experiences carried out in some countries, Tunisia and Morocco for instance (see boxes on page 16). It is also crucial to take all necessary measures to raise the awareness of the public, by informing them of the challenges involved and by identifying, and making use of good practices concerning the maintenance of water distribution systems, individual consumption of drinking water and its rational use in agriculture.

Among the recommendations from the Workshop, it was prompted the establishment of a Mediterranean Water Observatory which would compile data information and good practices useful to Mediterranean stakeholders and decision makers. Every two years, Blue Plan will also issue a report on progress accomplished in the Mediterranean, it will contribute to establish a compendium of good practices and will organise in 2012 the 4th Regional Workshop in Water Demand Management.



Morocco sails against the current

In Morocco, increasing water demand in Rabat-Casablanca has been slowed down noticeably during the past fifteen years despite intense urban growth. Improved water management (reduction of leaks, progressive pricing, systematic metering, public campaign) has deferred or perhaps completely avoided some costly investments (dams, transfer canals) initially planned in the 1980 Master Plan, while satisfying the needs. These investments, which are difficult to finance without extra debts, may prove unnecessary in the long-term.

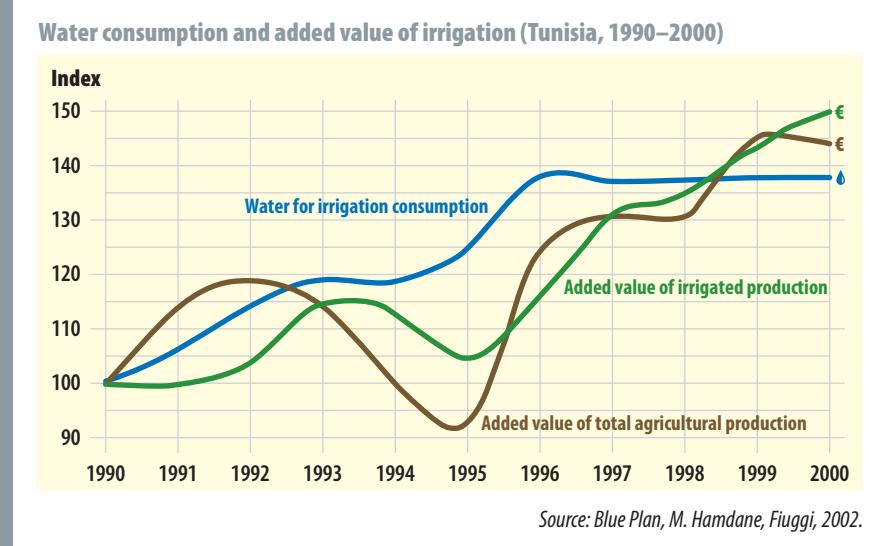


Tunisia: good example of water management

Tunisia undertook a national water-savings strategy at an early stage for both urban and agricultural needs. Thanks to this policy, water demand for irrigation has been stabilized for over 6 years, despite increasing agricultural development, seasonal peaks in demand and unfavourable climate conditions (droughts). The water demands of tourism (a source of foreign currency) and cities (a source of social stability) have been secured.

The underlying principles of the Tunisian strategy are:

- moving from isolated technical measures to an integrated approach;
- a participatory approach which makes the users more responsible (960 water-user associations were created covering 60 % of the irrigated public area);



- gradual introduction of reforms and adaptation to local situations;
- financial incentive mechanisms to promote water efficient equipment and technologies (purchases equipment subsidized at 60 %);
- supporting farmers' income, to allow them to plan for and secure agricultural investment and labour;

- a transparent and flexible pricing system, aligned with the national goals of food security, leading to gradual recovery of costs.

Source: Blue Plan, M. Hamdane, Fiuggi, 2002.



More than a billion people live without drinkable water

The United Nations has declared the 22nd March "World Water Day". Designated by the UN General Assembly, the day has been observed internationally since 1993 to focus on problems surrounding this precious commodity. This year's theme is water scarcity, notably as global warming begins to bite.

24 hours to remind the world, in particular the rich one, that the emergency of the planet's water resources has dramatic contours and it continues to get worse.

According to the UN data, without an immediate intervention, by 2025 2/3 of the world population could be in critical conditions. 3.4 billions people, approximately half of the world population, are those who are already exposed to relevant climate risks, such as drought, floodings, landslides, cyclones, volcanic eruptions and earthquakes.

Still today, in spite of the engagements confirmed in numerous international conferences from the representatives of States and Governments, over 1.2 billions people have no access to drinkable and safe water and nearly 2.5 billions people cannot make use of hygienic-sanitary services. These dire conditions are the cause of death for tens of millions of people, and they create unacceptable imbalances and total insecurity.

If water is not better managed, conflicts are likely to increase. These will not be confined to the developing world, such as potential flashpoints between India and Pakistan, Israel and Palestine, and over the Niger and Volta rivers in west Africa. Experts also predict water conflicts between the US and Mexico, and problems in southern Europe. Martin Mulenga, senior researcher at the International Institute for Environment and Development, an international policy research institute funded by governments, says: "*This is a problem for the whole world.*"

Buildings can play a key role in combating climate change

In the life time of an average building most energy is consumed, not for construction, but during the period when the building is in use. That is, when energy is being used for heating, cooling, lighting, cooking, ventilation and so on. Significant gains can be made in efforts to combat global warming by reducing energy use and improving energy efficiency in buildings. Many opportunities exist for governments, industry and consumers to take appropriate actions during the life span of buildings that will help mitigate the impacts of global warming.

The right mix of appropriate government regulation, greater use of energy saving technologies and behavioural change can substantially reduce carbon dioxide (CO₂) emissions from the building sector which accounts for 30–40 % of global energy use, according to a new report from the United Nations Environment Programme (UNEP) Sustainable Construction and Building Initiative (SBCI).*

It pushes for a greater use of existing technologies like thermal insulation, solar shading and more efficient lighting and electrical appliances, as well as the importance of educational and awareness campaigns.

* "Buildings and Climate Change: Status, Challenges and Opportunities, a UNEP SBCI Buildings and Climate Change report", can be downloaded from <http://www.unep.fr> or <http://www.unep.org>.



Significant gains can be made in efforts to combat global warming by reducing energy use and improving energy efficiency in buildings.

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In developed countries the main challenge is to achieve emission reduction among mostly existing buildings, and this can largely be done by reducing the use of energy. In other parts of the world, the challenge is to leapfrog directly to more energy efficient building solutions, the report says.

In addition to a greater use of relevant energy saving technologies, the report underlines the importance of appropriate government policies on building codes, energy pricing and financial incentives that encourage reductions in energy consumption.

The responsibility also lies with the building sector stakeholders themselves, including investors, architects, property developers, construction companies, tenants, etc., who need to understand and support such policies in order for them to function effectively.

Citing the example of Europe, UNEP stresses that more than one-fifth of present energy consumption and up to 45 million tonnes of CO₂ per year could be saved by 2010 by applying more ambitious standards to new and existing buildings.



Greenpeace Greece building is an example of how it is possible to take appropriate actions during the life span of buildings and help mitigate the impacts of global warming. Solar panels and proper insulation were installed in the premises to save energy. Currently the building consumes 53 % less energy than before the renovation. Natural gas is used for heating, as the biomass central heating option that was favoured by Greenpeace Greece as more sustainable is not yet authorised by the legislation in Athens and Thessaloniki.

Achim Steiner, UN Under-Secretary General and UNEP Executive Director, said: "Energy efficiency, along with cleaner and renewable forms of energy generation, is one of the pillars upon which a decarbonized world will stand or fall. The savings that can be made right now are potentially huge and the costs to implement them relatively low if sufficient numbers of governments, industries, businesses and consumers act".

"This report focuses on the building sector. By some conservative estimates, the building sector world-wide could deliver emission reductions of 1.8 billion tonnes of CO₂. A more aggressive energy efficiency policy might deliver over two billion tonnes or close to three times the amount scheduled to be reduced under the Kyoto Protocol," he added.

"There is more low hanging fruit to be harvested. Several countries, including Australia, Cuba and the European Union are looking to phase out or ban the traditional incandescent light bulb that has been around for well over a century in various forms. The International Energy Agency estimates that a total global switch to compact fluorescent bulbs would, in 2010 deliver CO₂ savings of 470 million tonnes or slightly over half of the Kyoto reductions. We have to ask what the hurdles are—if any—to achieving such positive low cost change and set about decisively and swiftly to overcome them, if they exist at all".



Fountain in the Alcazaba of Almería,
the Arab Fortress.

The Alcazaba, a defensive medieval monument built
on a hillock in the 10th century, is considered to be the
largest fortification that the Muslims left in Spain.

15th Meeting of the Contracting Parties to the Barcelona Convention

10–13 December 2007
Almería, Spain

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A flooded petrol station and victims of the flood escaping in a canoe in Arles, France.

Front cover: © Imagine; stock.xchng

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