



Union for the Mediterranean  
Union pour la Méditerranée  
الإتحاد من أجل المتوسط

## Key players' perspective on climate change in the Mediterranean



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## Preface

### Perspectives on the transition towards low-carbon development in the Mediterranean

This is a defining moment. Together, we are starting to build towards the low-carbon era. This is indeed a collective effort. States, communities, civil society organisations, businesses, international and intergovernmental organisations: we are all mobilised for the challenges that face us. The complexity of the climate challenge requires us to not only work at the global level but also to foster support at the appropriate intermediary levels. The Euro-Mediterranean region is undeniably one of these levels.

By strengthening cooperation, the Euro-Mediterranean States can improve the efficiency of their respective climate-related policies and, together, move towards the implementation of the Paris Agreement, for which they are all collectively responsible. The COP21, organised by France, was decision time. It laid the foundation for a new, ambitious climate regime based on collective action. The COP22, which is being hosted by Morocco, is time for action.



– by Mr Fathallah Sijilmassi,  
Union for the Mediterranean  
Secretary General



The Union for the Mediterranean, under the orientation of its Co-Presidency — chaired by the European Union and the Hashemite Kingdom of Jordan — is ready to fully take its part. With 12 climate-related regional pilot projects labelled by its 43 members and representing more than €2.6 billion, the Union for the Mediterranean is an important stakeholder and developing continuously new initiatives, especially on the southern and eastern shores of the Mediterranean.

Regional action at the Euro-Mediterranean level is feeded by local, national and international initiatives. For that reason, beyond the development of regional projects, regional dialogue is crucial. The establishment within the Union for the Mediterranean's framework of platforms for structured political dialogue not only creates the conditions for the exchange of information and best practices, but also ensures the complementarity of the different initiatives.

Climate change is a challenge for the region, but it is also a tremendous source of opportunity for achieving more equitable, inclusive and sustainable development models. We must take advantage of the situation to foster investments, reactivate technological transfer, create job opportunities for young people, promote the key role of women and develop production and consumption models that contribute towards sustainable development efforts.

All the stakeholders who have contributed to this publication have expressed an acute awareness of the challenges facing the region but also of the great development potential of the transition towards a low-carbon economy. Their points of view are invaluable for developing a common Mediterranean climate agenda and I must thank them for their contributions.

The Secretary General of the Union for the Mediterranean is guided by a shared political will to step up efforts in order to help make the Mediterranean region a place of stability and prosperity, as well as a model of sustainable development. There will be no stability and prosperity without sustainable development and no sustainable development without stability and prosperity. That is the principle that guides the actions of the Union for the Mediterranean.

The Mediterranean has played a decisive role in building the world of today, at political, economic, cultural and social levels. If we know how to prepare for the future and tackle climate change, then the Mediterranean will also play a decisive role in building the world of tomorrow.

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## The Paris Agreement provides a new impetus for a Mediterranean climate agenda

The historic Agreement reached in Paris on 12 December 2015 triggered a dynamic. It's a step towards a new world. It confirms the target of keeping the rise in temperature below 2°C. The agreement even establishes, for the first time, that we should be aiming for a maximum 1.5°C increase to safeguard island nations, which are most threatened by the rise in sea levels. It provides for the strengthening of adaptive capacities, with a view to ensuring that all States are able to cope with the adverse effects of climate change. Lastly, it aims to make finance flows compatible with an evolution towards development that is low in greenhouse gas emissions and resilient to climate change.

To achieve these objectives, we must act now. Every nation in the world recognises that. And they are not alone. Local authorities, businesses, non-governmental organisations, banks and an ever-growing number of citizens are mobilising to tackle global warming. New initiatives and innovative projects are emerging every day. Today, it is no longer a case of wondering what should be done and when, but of how to take effective action.

*The challenges of global low-carbon development are immense and it is important that every stakeholder remains actively involved.*

The challenges of global low-carbon development are immense and it is important that every stakeholder remains actively involved. The Paris Agreement is based on the national contributions. These contributions have already made a difference and moved us away from the worst, but they must be reinforced with cooperation between States. In view of the urgent climate crisis, it is crucial that synergies and cooperation emanate between States.

As an area rich in exceptional biodiversity and yet subjected for thousands of years to intense human activity, the Mediterranean is increasingly facing many challenges in terms of climate change, which is exacerbating the already existing tensions. It is one of the areas of the world most sensitive to climate change, and yet also one of the most complex. The Mediterranean has, however, many possibilities to address these challenges by fostering solutions built on a broad dialogue that includes all the region's stakeholders.

The region also benefits from a unique set of skills for responding to the challenges of cutting greenhouse gases and adapting to climate change. In the sphere of urban planning, for example, the Mediterranean States have agreed to formulate a set of guidelines for sustainable Euro-Mediterranean towns and areas, and the Covenant of Mayors for Climate and Energy is expanding in the Mediterranean. Within the same domain, a flagship project, supported by the Agence Française de Développement (AFD, the French development agency), deserves special attention: a new urban centre has been created at Sfax in Tunisia that will enable residents to reclaim the seafront while drastically reducing greenhouse gas emissions and increasing the town's resilience to climate change. It is the perfect example of the complementarity between development and tackling climate change.

Civil society is extremely active in this area. Civil society is very involved in global initiatives such as the Paris Pact on water and adaptation to climate change in basins of rivers, lakes and aquifers, which was signed at the COP21 by 305 organisations and 87 countries.

Governments are already working together to improve the future of this region, as is evidenced by the creation of a trust fund for marine protected areas, supported by France, Monaco, Tunisia and Croatia; and the water data observatory that brings together Jordan, Lebanon, Morocco, Monaco, Spain and Tunisia and is supported by the European Commission.



– by Mrs Ségolène Royal,  
President of the 21st Conference  
of Parties to the UNFCCC



The Mediterranean area also has regional institutions that have the capacity to bolster the region's low-carbon development in a consistent and structured manner.

The Union for the Mediterranean is the intergovernmental mechanism for political dialogue between the Euro-Mediterranean nations. It is an essential instrument for making the Mediterranean region a place of peace, stability, security and prosperity. Low-carbon development cannot prosper without a global vision that encompasses matters relating to education, job creation, gender equality, energy supply, transport, and so on. All these issues, which are also the objectives of concrete projects and initiatives, are discussed in the Union for the Mediterranean's dialogue platforms, to which France actively contributes.

The Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (the Barcelona Convention) – which France specifically supports through Plan Bleu, a regional action centre based in Sophia Antipolis – is the operational structure of the United Nations in the Mediterranean region. This Convention, with its Mediterranean Action Plan Coordinating Unit and its Mediterranean Strategy for Sustainable Development, provides a legal and institutional framework essential for concerted action by States and other stakeholders, as the recent adoption, on 12 February 2016, of a regional framework for adaptation to climate change for Mediterranean marine and coastal areas, on the occasion of its 19th Conference of Parties.

Other structures exist, such as the Center for Mediterranean Integration, which France also supports. These structures all focus on specific themes or geographical areas, and it would take too long to provide an exhaustive list here. What is important to remember is that the Mediterranean has the capacity to meet the challenges awaiting it and that the new parameters of the Paris Agreement serve only to reinforce the impetus that is already under way.

One of the pressing challenges in the Mediterranean is the adaptation to climate change. Intense droughts aggravate the rural exodus and have a serious impact on food security. Tourism, the region's main economic resource, feels the full force of changes to coastal areas. We must do more, and more quickly, particularly at the level of urban centres, where almost 70% of the Euro-Mediterranean population is concentrated. We also need to ensure better water resource management, which means stronger cross-border cooperation, among other aspects.

*The Union for the Mediterranean is an essential instrument for making the Mediterranean region a place of peace, stability, security and prosperity.*

The Mediterranean region can also play an important role in energy issues, in particular when it comes to access to energy in Africa. And to do so, we have to develop a coherent development framework for renewable energies, particularly in setting a carbon price signal and in encouraging interconnections.

The transition towards a low-carbon economy is, therefore, of vital importance to the entire Euro-Mediterranean region and goes beyond the climate issue. At its scale, the Mediterranean region constitutes a good experimental laboratory in which to solve the world's climate problem. That's why the drive for a stronger Mediterranean agenda will actively contribute to global impetus for negotiations and international solutions. Marrakech, where the 22nd Conference of Parties will take place in November 2016, will, I am convinced, be the place where Mediterranean action really takes off.

Courtesy translation. November 2016

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## The Mediterranean emergency

The Mediterranean Sea, “the sea between the lands” (from the Latin *mediterraneus* meaning ‘inland’), is a familiar territory that we love so dearly, with 46,000 km of coastline and covering an area of 2.5 million km<sup>2</sup>, an intercontinental sea that is almost completely enclosed and links three large continents: Europe, North Africa and Asia. It has seen great civilisations, from the Mesopotamians to the Phoenicians, from the Greeks to the Berbers. But it’s an area that could, however, face a future of unavoidable deterioration if we do not act. The fact is that it is also one of the areas of the world most affected by climate change, as His Majesty King Mohammed VI of Morocco pointed out on 18 July 2016 at the MedCOP Climate Conference in Tangier, which was attended by 2,000 participants from 22 countries.

All environmental threats — whether they relate to the water cycle, soil cycles, ground cover, the health of the deep seas, the adverse impact on rich biodiversity or even coastal erosion and air pollution — converge on the Mediterranean. Global warming is increasing faster there than anywhere else. And extreme climate events are only increasing. The busiest area of the world, and continuously reshaped by humankind throughout the course of history, the Mediterranean is also struggling with the combined effects of global geopolitical upheaval and economic and social inequalities, which are generating massive migratory flows in its waters.

### A model of resilience

And even though it represents just 1.5% of the planet’s surface, the Mediterranean basin is still considered by many scientists to be a completely unique ecosystem, a type of micro-planet that contains a richness and diversity like no other. This originality also enables us to understand how and why the Mediterranean has been a model of resilience over the centuries, as shown by the report

entitled *The Mediterranean Region under Climate Change: A Scientific Update*, undertaken by the IRD (French Research Institute for Development) and the AllEnvi (French Alliance for Environmental Research) at the request of myself and Morocco in view of the upcoming COP22. The report demonstrates that more than any other area of the world the Mediterranean region must be approached as a complex system where human, environmental, economic and social aspects are deeply interlinked. Yet, scientists conclude that in the Mediterranean, more than anywhere else, the climate impacts are directly linked to land occupancy by humans in the Mediterranean since the region is particularly marked by demographic growth and the extreme concentration of populations in its cities. The urban population is expected to account for 74% of the entire population by 2025. Some 90 million inhabitants will live in around 600 coastal towns, and yet will be almost entirely dependent on fossil fuels (87% by 2025).

The key to economic development and the type of development adopted by Mediterranean countries will, therefore, be determined by how the climate emergency is dealt with, while economic and social development may hold the key to how best to respond to this emergency. More than anywhere else, the Mediterranean climate emergency is forcing us to reinvent the model of production and consumption of low-carbon goods. It is this that makes it the ideal laboratory for the global energy transformation that involves the implementation of the Sustainable Development Goals and the Paris Agreement. It’s a momentum in which all stakeholders, States, businesses, local authorities and civil society must move forward together and in an organised manner.

*The Mediterranean climate emergency is forcing us to reinvent the model of production and consumption of low-carbon goods.*

– by Ms Hakima El Haite,  
Moroccan Minister of the Environment,  
Climate Champion, Member of the COP22  
Mediterranean Steering Committee



Fortunately, there is greater awareness around the Mediterranean Sea. Thanks to the Union for the Mediterranean, 43 countries have already declared their intention to work together in the areas of water, the environment, renewable energy, energy efficiency, climate change, the Blue Economy, sustainable urban development and transport. Regional dialogue platforms have been created that bring the governments involved into contact with representatives from local authorities, the private sector, civil society and financial institutions in order to facilitate the exchange of knowledge and good practices, as well as to identify common activities. With 45 regional labelled projects worth more than €5 billion, the Union for the Mediterranean is also supporting concrete initiatives promoted by governments or other stakeholders involved in regional cooperation. It's a start. Now we need to accelerate efforts in Marrakech.

## Action and innovation

Encouraging action and innovation among all stakeholders for green growth: that is exactly the ambition of COP22, which, from 7-18 November in Marrakech, will become the COP of Action and of implementation following the historic ratification of the Paris Agreement. As His Majesty King Mohammed VI said, "Marrakech will be the decisive moment in climate diplomacy". It will also be a moment to demonstrate that it is possible to transform our economic models to move towards global green growth. This first COP since the adoption of the Paris Agreement is supported by Morocco, which has made the decision to become a model country in terms of its environmental policy. Since 2009, our country has proved that, in a region that is as vulnerable to global warming as the Mediterranean, it can adapt to its environment, in particular by establishing a substantial renewable energy development programme.

## Making progress together

We have, as His Majesty King Mohammed VI has stated, a duty to set an example to Mediterranean countries when it comes to implementing a low-carbon civilisation and creating new consumption and production patterns, as well as innovating, in terms of sustainable development. We must coordinate our efforts in Marrakech to speed up the movement. We must not only make sure that all Mediterranean countries are working in unison on advances in scientific knowledge but also on their national contributions so as to ensure that they standardise their time-related indicators and perhaps agree on a common calendar. The countries within the Mediterranean basin must make progress together. We must make better coordinated climate financing in the Mediterranean basin; right now, it is too hit-and-miss.

I am an optimist. Awareness of the need to preserve the Mediterranean's unique riches is increasing day by day. In particular, initiatives related to the Blue Economy are increasing. And because the Mediterranean — one of the world's oldest inhabited regions, continuously being reshaped by humans — is considered to have been a model of resilience over the centuries, we can have confidence in the mobilising capacity of its countries when it comes to defining this new chapter in its history. Beyond the climate issue, what I believe is at stake over the next 30 years is the Mediterranean's capacity to once again become the world economy and the centre of civilisation that it has been for many centuries.

Courtesy translation. November 2016

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# Making the Mediterranean a laboratory for international climate action

## Twelve months that made history

It has been a historic year for global climate action. The landmark deal reached in Paris last December heralded a new era in international cooperation on climate change. With the Paris Agreement, we took an important step forward towards a safer and more sustainable world. We agreed not only to hold global warming well below 2°C but also to pursue efforts towards 1.5°C and a global framework to guide and monitor progress towards our objectives. This framework is backed by more than 190 national climate action plans representing 97% of global emissions: a clear sign of the global commitment to make the shift to low-carbon, climate-resilient societies.

The Paris Agreement created an irresistible momentum that saw us move from adoption to ratification in record speed. When the European Union ratified the deal in October it ensured the Agreement would enter into force even before the start of COP22 in Marrakech. Industry has also responded. In October, the International Civil Aviation Organization (ICAO) reached an agreement to curb CO<sub>2</sub> emissions from international aviation. Just days later in Kigali, a deal was agreed on a global phase-down of climate-warming hydrofluorocarbon gases (HFCs) that will make a significant dent in global greenhouse gas emissions.

These remarkable achievements teach us two lessons. First, that in a time of global turbulence and lack of confidence in institutions, the world's decision-makers are able to act together decisively, at a speed that matches the urgency of the climate crisis. Second, that climate change has become a unifying topic that has given new credibility to the multilateral process.

This vindicates the EU's approach of leadership by joint action and example. We will continue to be a driving force in sustaining the Paris spirit and strengthening common action.

## Time for action

The Paris Agreement provides us with the necessary tools to curb climate change. It gives the world a clear signal that a radical transformation is underway. But it is the seriousness and the speed of implementation that will determine its success. Moreover, we already know that the sum of the national emission reduction pledges will not be enough to get us to our agreed target. It is already time to look at how to increase ambition.

COP22 has been rightly framed as a COP of action and implementation. It is a crucial moment for progress in making the new structure operational and for accelerating the delivery of finance to developing countries to help them implement their domestic climate plans.

COP22 is also the occasion to take stock of the tremendous climate efforts being undertaken by cities, businesses, financial organisations and other actors. Under the umbrella of the Global Climate Action Agenda, both state and non-state actors have already committed to ambitious action. Some of these initiatives are particularly relevant for the Mediterranean region, such as the new Global Covenant of Mayors for Climate and Energy, the Africa Renewable Energy Initiative and the Climate and Clean Air Coalition.

The EU has lost no time in putting the Paris Agreement into action. We are already delivering on our Paris pledge. All the key proposals to implement the EU's target to reduce greenhouse gas emissions by at least 40% by 2030 are now on the table. We are preparing the ground to deliver the emissions reductions needed in industrial sectors as well as in other key sectors such as transport, buildings, agriculture and waste. And we are preparing legislation that will put energy efficiency first and boost the uptake of renewable energy. The EU has also committed to dedicate at least 20% of its spending on climate-related action between 2014 and 2020.

– by Mr Miguel Arias Cañete,  
EU Commissioner for  
Climate Action & Energy



## The Mediterranean region: a laboratory for climate cooperation

The close ties between the EU and its Mediterranean neighbours are special and reflect centuries of common history and economic and cultural exchange. Besides, the Mediterranean region is an obvious priority for climate action. It is characterised by a high vulnerability to climate change and has been recognised by the Intergovernmental Panel on Climate Change as a "hotspot" in terms of climate impacts. Greenhouse gas emissions are rapidly growing, notably as a result of the significant increase in energy consumption, urban development and population growth.

There is a high probability that by 2025, 80 to 100 million people in this region will be exposed to water shortages as climate change puts more pressure on already over-exploited surface and groundwater resources. Other climate-related hazards such as prolonged heatwaves will affect well-being and health, particularly in densely populated urban areas. The region is also expected to suffer more severe and frequent extreme weather events, including intense rainfall and flooding, with potentially serious social and economic consequences.

Impacts such as water scarcity, desertification and land degradation, degradation of forests and coastal ecosystems and heatwaves are already increasingly affecting key sectors of the economy such as agriculture. In some instances, they are also hindering economic development and exacerbating social and geopolitical tensions.

On the other hand, the region can benefit from the significant opportunities arising from a move to a low-carbon and energy-efficient development, notably through its vast renewable energy potential as well as stronger policies and measures on energy efficiency.

Most of these challenges and opportunities are shared by countries throughout the Mediterranean region, including in Europe, with many impacts of climate change being felt across borders. This makes a regional approach the best way to address them.

The European Neighbourhood Policy and its financial instruments are at the core of the EU's regional cooperation with North African and Middle Eastern countries, and we have since long made climate mitigation and adaptation an integral part of this cooperation.

Last year, the European Commission adopted the revised outline of its cooperation with its partner countries in the Southern and Eastern Mediterranean region. To take account of the Paris Agreement and reflect this priority for climate cooperation, the revised document includes for the first time a dedicated chapter on climate and energy. It will be the basis of our future policy and financial support for climate action in the Southern neighbourhood.

The current EU regional cooperation in the field of climate change and sustainable energy in the Mediterranean is manifold. It consists of policy dialogue, in particular through the Union for the Mediterranean Climate Change Expert Group and the Platform on Renewable Energy and Energy Efficiency. It also includes technical assistance, in particular through the ClimaSouth project, a Mediterranean component of the Covenant of Mayors, and support to investments through dedicated facilities.

COP22 comes at the right moment to highlight this and other structures of regional cooperation and to explore how to do even better as a region.

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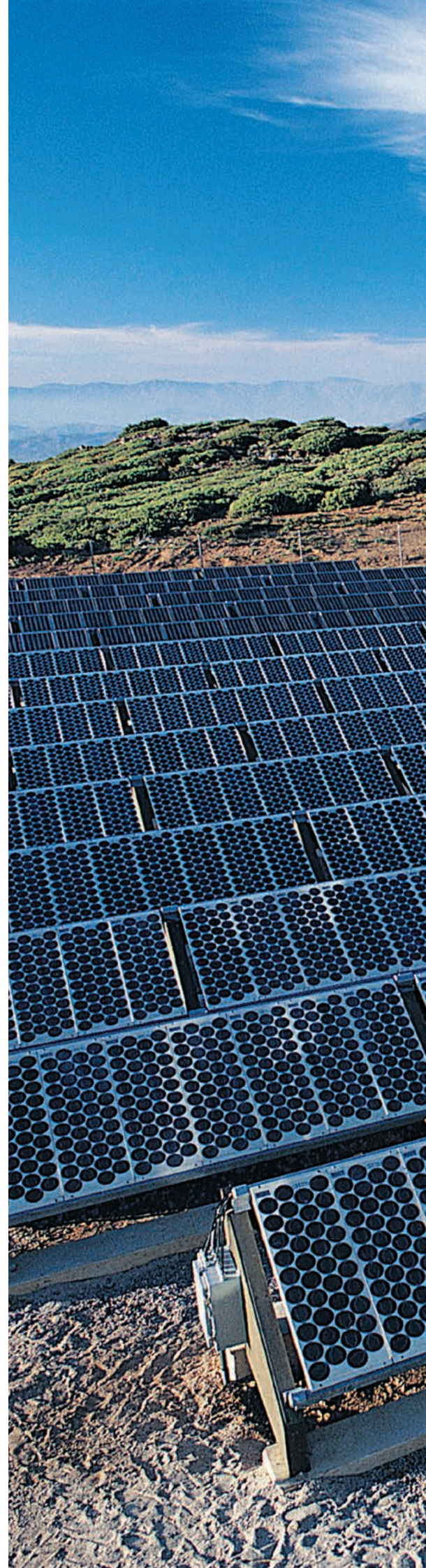
## The UfM – a channel for increased cooperation

Since 2014, climate change has been part of the mandate of the Union for the Mediterranean. The establishment of a Climate Change Expert Group allowed UfM Member States to regularly meet, exchange experience and interact with other regional institutions, scientists, local authorities, businesses and civil society organisations from the Mediterranean. The first series of meetings, which covered a large variety of topics on climate mitigation and adaptation, started to define the outline of a common Mediterranean climate agenda.

This agenda is set to expand further, with the UfM Platform on Renewable Energy and Energy Efficiency due to be launched in Marrakech on 14 November 2016. This will link our cooperation on security of supply, energy efficiency and access to clean energy with the Expert Group's work on reducing emissions and adapting to the impacts of climate change. There is much scope for further cooperation and exchanges within the UfM on cross-cutting topics such as buildings, urban planning and network infrastructures.

As Co-Presidency of the UfM, the EU seeks to encourage this process and make sure that discussions lead to more tangible outcomes, such as the UfM-labelled Desalination Facility for the Gaza Strip, which will help address the major water deficit faced by more than 1.8 million people.

COP22 will have a strong Mediterranean dimension, with dozens of events discussing climate action in the region including at the EU Pavilion, which will host a UfM debate on climate change, stability and sustainable development. These events are an opportunity for Mediterranean countries to show a common understanding of the challenges they share, and to make the Mediterranean region a laboratory of ambitious international climate cooperation.





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## Climate change challenges in the Mediterranean

The Paris Agreement has opened the door for profound changes in global development models. The transition, which has just been initiated, is a source of vast opportunities. Managing this change adequately is a key opportunity for a region facing unprecedented challenges.





# Regional dialogue and knowledge sharing for feeding the Mediterranean's future

– by Prof Masum Burak, President of CIHEAM<sup>1</sup>

Climatic constraints have always marked Mediterranean societies, which have continuously developed agricultural production systems that are able to adapt to a greater or lesser extent. Today, this adaptability or “resilience” is being put to the test. In fact, agriculture is one of the most climate-dependent of economic sectors. Rising temperatures, decreasing and more irregular rainfall, desertification and poorer soil quality all have a major impact on agriculture at a time when better quality and greater quantities of food must be produced in the Mediterranean in order to ensure food security for a growing population. The countries of the Mediterranean must face these challenges right now while planning for those of tomorrow, particularly when it comes to the population movements that can follow climate catastrophes.

Climate change lies at the very core of the Mediterranean's strategic issues since it impacts the lives of millions of men and women. Indeed, in addition to the fact that we depend exclusively on agriculture to feed ourselves and that any impact on the climate has direct consequences for food security, we must also pay particular attention to the secondary effects that climate change has on health (animal and plant health) and on social, economic and political dimensions (poverty and rural exodus, destabilisation of markets, and so on). Agriculture has existed for more than 10,000 years and has nevertheless demonstrated a great capacity for adaptation and innovation. Today, our societies are developing solutions and innovative responses to meet challenges that are very specific to the Mediterranean basin. They should be utilised and shared, because the future will be played out on the basis of our ability to stop wasting precious resources, including, as a priority, the knowledge and expertise of the region. This message, one that CIHEAM has supported for many years, is the cornerstone of our training, our networks, our research projects and our development programmes.

## The Mediterranean space “under high surveillance”

The Mediterranean is becoming more and more vulnerable to natural disasters and to the effects of climate change. The region is situated between two climate systems (mild and humid to the North, hot and dry to the South), which are also marked by differences between coastal areas, plains and mountains. But developments point to a serious deterioration in the habitability of the Mediterranean in years to come, to the point that it has been placed “under high surveillance” in the category of regions at risk of non-sustainability and it is a red spot on the world map of climate alerts. According to the Intergovernmental Panel on Climate Change (IPCC), by the end of the century, average annual temperatures will increase by between 2.2 to 5.1°C, which is significantly higher than the global average. Summer rainfall could decrease by 35% on the southern shore and by 25% on the northern rim, while the number of days of rainfall will fall sharply. While these projections should be treated with caution, they do forewarn of trends that will definitely make the Mediterranean's climate situation more complex. According to these projections, it is the countries of the Maghreb and the Gulf that will pay the highest price. For this region, scientists predict an intensification and protracted duration of heatwaves and dry periods on already arid lands, an increased incidence of sudden and torrential rains that may cause flooding, an aggravation of air and water pollution, a reduction in forest cover, an increase in sea levels and the loss of marine and plant biodiversity.

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<sup>1</sup> This text was prepared with the help of Sébastien Abis and Yasmine Seghirate-El Guerrab, officials at CIHEAM-Headquarters.

## Water and earth: a heavy burden for Mediterranean agriculture

The need to adapt to the aridity and the climatic variations while also producing food in spite of scant water and land resources has long been part of daily agricultural life in the Mediterranean. But these difficulties are growing and giving rise to new legitimate concerns. The main cause is that water is scarce and poorly distributed in the region: three quarters of all renewable resources are found on the northern rim. In terms of populations, these water resources range from overabundance in Albania and the countries of the former Yugoslavia (10,000m<sup>3</sup> per year per inhabitant) to the extreme water poverty of the Palestinian territories and Malta (100 m<sup>3</sup>/year/inhabitant). Water insecurity, an issue for countries where the availability of water per person and per year is lower than 1,700m<sup>3</sup>, affects 10 nations in the Mediterranean region (Libya, Israel, Egypt, Jordan, Morocco, Algeria, Tunisia, Malta, Palestine and Syria). Nearly 180 million people are therefore classified as “water-poor” in the region. To these quantitative indicators, we must also add signs of water quality degradation. This is the case, in particular, for island or coastal territories, which are generally most suited to agriculture. By 2025, all the countries of North Africa and the Middle East will, in all likelihood, have fallen into water scarcity, which is categorised as being under the symbolic threshold of 1,000m<sup>3</sup>/year/inhabitant. This situation will have a direct impact on development and on the economies of these countries. Agriculture will be one of the main victims, since it is still a major economic sector in the Mediterranean basin and the primary consumer of water (up to 80% of total water usage). While water wastage remains very high, owing to the lack of efficient, modern irrigation systems, it seems that any future water savings will be found in the area of irrigation, where better management of the resource could lead to increases in the volume available.

In addition to the precious nature of water, we must add a scarcity of land. Almost 95% of arable land in the Mediterranean countries is already being farmed. There are virtually no more land reserves in this Mediterranean region, owing to urbanisation, erosion and desertification. Although some Mediterranean countries have had recourse to subsidies for new lands and irrigation to create agricultural areas, these processes come up against limitations that are very difficult to overcome. They require considerable input, including the corresponding financial and environmental consideration. In the Mediterranean area, salinity and desertification are often closely linked. Desertification leads to an accumulation of salt while salinisation leads to a decrease in vegetation on

the ground surface. These phenomena can, in turn, lead to a gradual loss of soil productivity and even the disappearance of vegetation. Ultimately, the biodiversity of the Mediterranean countries is also under threat.

## Climate change and its associated risks to agricultural systems

Climate change has other effects beyond the enormous impact it has on water and soil. In a context marked by the ramping up of trade, the surge in mobility of global populations and escalation of extreme weather events, crops are increasingly fragile, particularly because of invasive species. These harmful organisms very quickly become a problem for countries because they affect key sectors of their economies. Climate change increases the probability that these non-native invasive species will establish themselves, spread and cause widespread damage. And we need hardly remind ourselves that invasive, harmful species disregard national borders. Hence, the significance of the challenges to crop health in the Mediterranean region, which strongly depend on the ability of stakeholders to share information and coordinate agreed actions on a regional scale. Only recently, the threat to olive trees posed by the emergence of the *Xylella fastidiosa* bacteria resulted in an important strategy of cooperation in the Mediterranean – in which CIHEAM played a pivotal role – with a view to protecting the olive oil business that is so crucial to Mediterranean agricultural economies.

Climate change also increases the risks to animal health and to the livestock sector. Indeed, the climate influences both the distribution and dynamics of pathogenic agents (hosts and carriers) and the systems involved in the transmission of the disease. The outbreak of bluetongue that spread from the Southern Mediterranean to the edges of Northern Europe in 2009 and the foot-and-mouth crises that regularly reappear in the region prove how important it is to deliver multilateral responses to cross-border animal diseases. According to climatologists, the 2015-2016 El Niño phenomenon may be one of the strongest on record. And we know that extreme weather events, particularly torrential rain, can unleash a massive increase in locust populations and invasions of desert locusts. These invasions that regularly hit the Sahel and Maghreb regions represent another danger to agricultural land.



## Crises and dependencies, the other face of climate change

Health, nutrition and progress spread throughout these lands represent the three key variables for the human security and stability of these countries. While the quality of the produce and the famous Mediterranean diet are both positive aspects, the serious food insecurity of the Mediterranean basin at the quantitative level must be emphasised. National figures on agricultural production have recorded substantial increases but they are not sufficient to keep pace with more sustained population growth. In 1970, the Mediterranean region had approximately 250 million inhabitants: half as many as there are today. At that time, the northern rim was home to 50% of the region's population. By 2030, two thirds of the Mediterranean population will be living on the southern and eastern shores. The countries of North Africa and the Middle East cover a large part of their food needs by resorting to imports. According to statistics compiled by the World Trade Organization (WTO), their food imports far surpass their exports, both in monetary value and in volume. The five nations of North Africa alone add up to 20-25 billion in imports of agricultural produce every year since 2010. In recent years, price rises in raw materials for agriculture have, inevitably, increased the vulnerability

of these countries to food dependency. Climate changes that make crop conditions less predictable could make the international agricultural markets even more nervous.

*Almost 95% of arable land in the Mediterranean countries is already being farmed.*

Food security must, therefore, be constructed against this demographical context, on the one hand, and very limited geographical resources, on the other. Improved productivity and output, or even a reduction in waste thanks to better infrastructure and enhanced logistics, could mitigate in part the food shock caused by the spectacular population boom. The nations of North Africa and the Middle East must increase cooperation if they are to reduce these uncertainties, in particular by implementing shared systems of agricultural market analysis and information exchange. In any event, in view of the future climate data, further developments are needed to the existing systems, political strategies, financial mechanisms, agricultural techniques and international trade operations.

We must stress that climate change makes living conditions in rural areas even harder for already vulnerable populations, communities that are often marginalised and, for the most part, have no hope of migrating. If episodes of drought become more severe and of longer duration, or if diseases put plant life at risk at ever-greater scales of destruction, how are populations going to be able to continue to live in these areas? Need we remind ourselves that the majority of displaced persons in the Mediterranean region come from arid rural areas and that, according to the UNCCD (the United Nations Convention to Combat Desertification), by 2020, 60 million people may migrate from degraded areas of Sub-Saharan Africa up to North Africa and Europe because of rising temperatures and desertification. The current crisis of refugees crossing the Mediterranean Sea, the full impact of which is still difficult to gauge (both in terms of the numbers of people and the length of their stay), should force us to reflect deeply on how to take into account the root causes of these forced migrations in order to try to find solutions for the three-fold issue of food security, rural development and adaptation to changed environmental conditions. There can be no peace without food security, there can be no food security without agricultural production and there can be no agriculture without schemes to develop rural areas. This is the message that CIHEAM sent at the 11th Ministerial Meeting of Member States, which took place in Tirana, Albania, on 22 September 2016.

With regard to these issues, mitigating and adapting to climate change has been one of CIHEAM's priority strategies for many years. These issues come up again in the different thematic actions in our new CIHEAM Strategic Agenda for 2025 (CSA 2025), which focuses on four action areas: protecting the planet "by combating triple waste" (waste of knowledge, of natural resources and of food); food security and nutrition "by boosting sustainable agriculture and food"; inclusive development "by investing in new generations and fragile territories"; and crises and resilience "by preventing risk and managing tensions". At the COP21 in Paris, CIHEAM was actively sought out, in particular through participation in and positive evaluation of the French "4 per 1000" initiative (carbon storage in soils), and is currently preparing for its participation at the COP22 in Marrakech, where we will be presenting on the numerous projects we carry out in these domains.



#### PROF MASUM BURAK

Prof Masum Burak has been President of the CIHEAM Governing Board since April 2015. He has a PhD from Uludağ University. He started his career as a researcher and professor, until 2005 when he was appointed as Deputy Director General of Agricultural Research and Policies at the Ministry of Food, Agriculture and Livestock, being promoted to Director General in October 2006. He became Adviser to the Ministry in February 2016.

Prof Burak participates in diverse international activities, such as being the Delegate of Turkey in the EU FP7 for Theme 2 (agriculture, food, fisheries and biotechnology). He has authored about 100 publications.



## The consequences of water scarcity on regional stability

– by Mr Munqeth Mehyar, Chairman and Jordanian Director of EcoPeace Middle East

The ephemeral generations of man are born and pass away in quick succession, driven by a blind and futile, yet powerful force which is the "survival instinct". One of the many different ways this instinct manifests itself is, ironically, through conflict. Perpetual war over natural resources has been evident throughout our history as homo sapiens.

Water, on the other hand, is essential to life and to the survival of our species. Wherever water flows on this planet, one can be sure to find life; hence NASA's motto in the search for extra-terrestrial life has been "follow the water".

It should be acknowledged that traditional wars waged over water are considered a rare phenomenon. However, water has been a major contributing factor in many conflicts that arose due to territorial disputes or as an attempt to gain strategic advantages.

### Water: A key factor behind MENA conflicts

The Middle East and North Africa are mainly arid and semi-arid areas, and are projected to experience further water shortages due to poor management, overuse, exponential population growth, economic growth and climate change. It is not unreasonable to predict that future wars in the region are more likely to be fought over water rather than oil.

In this dry region, fresh water is vital and unevenly distributed. The three major fresh waterways in the MENA region are: the Jordan River basin, the Nile drainage basin, and the Tigris-Euphrates River basin. Even though each of them is a likely source of conflict both between and within nations, the focus of this paper is on the Jordan River basin and the role EcoPeace Middle East has been playing to promote cooperation between riparians in order to turn conflicts over water into catalysts for peace.

The Arab-Israeli conflict is no less about water than it is about the land. Water diversion projects on the Jordan River were a major cause of the Six-Day War in 1967, which enabled Israel

to double its resources of fresh water by gaining exclusive control over the Sea of Galilee and the West Bank's mountain aquifer. Political tension over water continues to this day between Israel and Lebanon, and it is one of the factors that led to the failure of peace talks between Israel and Syria.

Even though Jordan signed a peace treaty with Israel in 1994, which settled their water disputes with Israel, water is still considered an existential threat. The kingdom is the third poorest country in the world in terms of water. Rapid population growth, aging water infrastructure, insufficient water planning and the influx of 1.4 million Syrian refugees are all deepening the water shortage in Jordan.

It is worth noting that the Syrian civil war itself and its dire regional consequences are partly caused by climate change. The severe drought that hit Syria between 2006 and 2011 was one of the major factors leading to the current unrest.

*The severe drought that hit Syria between 2006 and 2011 was one of the major factors leading to the current unrest.*

When it comes to water issues between Israel and Palestine, it could not get any more complicated because of the unresolved conflict between the two sides. Previous peace talks delayed water rights being dealt with in the permanent status talks, which were never concluded.

Environmental degradation in the Gaza strip is becoming catastrophic. The Coastal Aquifer basin is severely affected by over-extraction and pollution, which have degraded the quality of the water. Also, poor sewage treatment has resulted in millions of gallons of raw sewage pouring into the strip's beachfront and floating northward to Israel. According to a recent UN report, the strip will become uninhabitable by 2020, which could lead to another refugee crisis.

## A catalyst for cooperation

On the positive side, there is much evidence that water can and should be used as a catalyst for peace and cooperation rather than conflict, and this is exactly what EcoPeace Middle East has been trying to achieve since its establishment in 1994. By bringing together Jordanians, Palestinians and Israelis to work towards one common goal — to sustain their shared natural resources, especially water — EcoPeace is sowing the seeds of a brighter future for the region and its people.

### *Water can and should be used as a catalyst for peace and cooperation rather than conflict.*

The natural tendency of an average politician is to view his or her country in isolation from its surroundings, and challenging this mindset is far from easy. However, the genius of EcoPeace's approach lies in its capacity to create new facts on the ground and get the local communities from the three countries to work together. Using both a "top-down" (advocacy) approach coupled with a "bottom-up" (grass roots) strategy has proven to be very effective.

One of the surest marks of intelligence is the ability to manage conflicts constructively, and the best antidote to herd mentality is to create a state of interdependency. One of the key projects that EcoPeace is currently working on is the Water and Energy Nexus, which explores the potential for the creation of a state of interdependency between Israel, Jordan and Palestine. In this project, water is produced through desalination on the Israeli and Palestinian coasts and energy needs are met by investment in solar energy in Jordan.

If conflict results from a perceived opposition to one's desires and interests, the very same perception can be transformed by recognising that cost of conflict far exceeds that of cooperation. The Jordan Valley Master Plan is the first comprehensive study done by EcoPeace and its partners, which specified 127 interventions to sustainably develop the Jordan Valley and rehabilitate the Jordan River. This Master Plan involves numerous cooperative actions between governments and local communities from the three countries.

Abraham Lincoln had it right when he said, "You cannot escape the responsibility of tomorrow by evading it today". I would add that it is our responsibility to leave this planet in better shape than we found it, for the sake of future generations.



#### **MR MUNQETH MEHYAR**

Mr Munqeth Mehyar (born January 16, 1957) serves as Chairman and Jordanian Director of EcoPeace Middle East, which is a unique regional organisation that brings together Jordanian, Palestinian and Israeli environmentalists to promote sustainable development and advance regional peace efforts. The organisation has offices in Amman, Bethlehem and Tel Aviv, and employs over 40 paid staff and actively involves hundreds of volunteers.

## Challenges for stability and peace in the Mediterranean region

– by Mr Senén Florensa i Palau, President of the Executive Committee of the European Institute of the Mediterranean (IEMed)

Former President of the COP 21 Laurent Fabius was very assertive when he stated in New York in 2015, “If we do not act, or if we do not act fast enough, threats to peace and security will grow in number and intensity. That is the real aim of the Paris conference. Because at the end of the day, it has to be a turning point”. Whether the Paris climate agreement adopted that December will be a turning point or not will only be known in the years to come.

Climate change is already having multiple direct and indirect human and societal effects that imply multiple threats of destabilisation, and which could become more severe than any challenge or vulnerability the world has faced since the two World Wars and the pandemics of the last centuries. While in the last century and especially since 1945, the “security dilemma” has prevailed in the analysis of international relations, the latter has evolved by widening its scope to fully incorporate the concept of environmental security and by deepening its sense to fully embrace the concept of global security<sup>1</sup>.

### Climate change vulnerability in the Mediterranean region

The Mediterranean lies in a transition zone between the arid climate of North Africa and the temperate and rainy climate of Central Europe. Due to these circumstances, even relatively minor impacts as a consequence of the underlying factors causing the climate change can lead to substantial and drastic changes in the climate of the region. Therefore, projections at regional level estimate that the Mediterranean region will become one of the most prominent hot spots on earth<sup>2</sup>.

The EU strategy on adaptation to climate change adopted by the European Commission in 2013 following a communication on Climate Change, Environmental Degradation and Migration

already points out many relevant climate-induced impacts for the Mediterranean region, such as environmentally induced migration, degradation of freshwater resources, increase of flood disasters, and desertification. Additionally, the UfM Ministerial Meeting on Environment and Climate Change, held in Athens in May 2014, recalled evidence that the Mediterranean faces aggravating climate-related vulnerabilities and impacts on freshwater resources, water security, extreme weather events, farming systems and food security, human health and urban infrastructure, energy, tourism, and economic growth. These impacts are already affecting demography, water, food, and health in the Mediterranean, and constitute the starkest face of increasing climate-induced conflicts within the Mediterranean region. They will progressively shape the geostrategic and security paradigm of the region.

In the well-cited report of the German Advisory Council on Global Change (WBGU)<sup>3</sup> it is emphasised that climate change will certainly result in destabilisation and violence, jeopardising national, regional and international security. Moreover, the report argues that climate change amplifies mechanisms that lead to insecurity and violence, affecting specifically countries in transition, those with weak governance structures, and poor countries affected by resource scarcity (land, water, food), and often, high population growth. Moreover, these local or national conflicts may spill over and destabilise neighbouring countries through refugee flows, arms trafficking or combatant withdrawal.

### Four sources of climate change conflict

A quick look at the state of the region, in particular the Southern and Eastern Mediterranean part, reveals how fragile and exposed it is in relation to the patterns identified by the WBGU. In fact, to address the possible linkages between

<sup>1</sup> Brauch, Hans Günter et al., *Security and Environment in the Mediterranean*, Springer, 2002.

<sup>2</sup> Giorgi, Filippo, *Climate Change Hot-Spots*, GRL, 2006.

<sup>3</sup> WBGU, *World in Transition: Climate Change as a Security Risk*, 2008.



climate change and conflict, the WBGU identifies four conflict areas in which critical developments will speed up as a result of climate change, and which the central position of the Mediterranean region in between other more unstable regions might aggravate:

- **Climate-induced increase in migration.** With the region experiencing difficulties to effectively manage migration and refugee flows, this will probably become the main source of conflict and destabilisation in the region. The increase in drought, soil degradation and water scarcity, combined with high population growth, unstable or transition institutions, and lack of modernisation of the labour markets in some of the countries in the region mean that there is a very critical risk of environmental migration increasing by big numbers. This situation will be aggravated by the region's neighbouring countries.
- **Climate-induced degradation of water.** With a high degree of water scarcity and severe drought, the Mediterranean region faces constraints in the access to safe drinking water and water for agriculture. This may lead to distributional conflicts and poses major challenges to water management, particularly in those countries that already lack the political and institutional framework necessary for the adaptation of water and crisis management systems.
- **Climate-induced decline in food production.** With a steady decline of the self-sufficiency rate in food and especially cereals, according to the FAO, climate change will affect food security in all its dimensions. This may well trigger food crises and further undermine the economic performance of weak and unstable states, thereby encouraging destabilisation, the collapse of social systems and violent conflicts.
- **Climate-induced increase in droughts and floods.**

## An opportunity we cannot miss

Overall, in the Mediterranean, there is a broad acknowledgement that climate change is already one of the main challenges to tackle in the current century. Despite the political costs of some of the policy measures required, the existing working regulations and frameworks undertaken by the EU institutions and the Union for the Mediterranean in the area of climate change need to continue expanding and evolving. Furthermore, the Paris climate agreement provides a sound framework to build upon. That is the

reason why now more than ever before we have an excellent opportunity to move from commitments at the Paris COP21 to real actions in Marrakech at the COP22. The sole fact that the COP21 and the COP22 are taking place in the Euro-Mediterranean region is not a mere coincidence but an opportunity that we cannot miss.



**MR SENÉN FLORENSA I PALAU (Valls, 1950)**

On 27 December 2005, Mr Senén Florensa was appointed President of the Executive Committee of the European Institute of the Mediterranean (IEMed). A diplomat and ambassador, he holds a degree in Economic Science (1971) and in Law (1972) from the Universitat de Barcelona. He studied for his doctorate in Economics at the Université Paris I Panthéon-Sorbonne (1973-1974); as a Fulbright scholarship holder at New York University, Ph. D. Program (1974-1976); and at the Universidad Complutense de Madrid, where he presented his doctoral thesis in 1979. Diploma in International Studies from the Diplomatic School of the Spanish Ministry of Foreign Affairs and Cooperation.

## Climate change and development: same fight

– by Prof Jean-Paul Moatti, Chief Executive Officer of the French Research Institute for Development (IRD)



The Institut de Recherche pour le Développement (IRD, France's national Research Institute for Development), part of the French public research system, is dedicated entirely to scientific cooperation with developing countries. For 50 years it has been working with countries in the Mediterranean region and, thanks to its network of field offices, it carries out activities in eight Mediterranean countries in particular: Algeria, Egypt, Jordan, Lebanon, Libya, Morocco, Syria and Tunisia. In close partnership with national universities and research organisations, it conducts research on water resources, natural hazards and risks, inland and coastal

ecosystems, food security, emerging diseases and the living conditions and mobility of citizens. Together with the French National Centre for Scientific Research (CNRS), the Institute is joint director of the MISTRALS (Mediterranean Integrated Studies at Regional And Local Scales) meta-programme for interdisciplinary research and observations, which focuses on understanding how the Mediterranean basin's environment functions under pressure from global climate change, with a view to predicting future evolution. This programme brings together 13 different French public research bodies and scientists from 36 other countries<sup>1</sup>.

<sup>1</sup> <http://www.mistrals-home.org/>

**Three key messages can clearly be drawn from the results of the research into climate change in the Mediterranean.**

**The first message, taken directly from the 5th IPCC report<sup>2</sup>, identifies the Mediterranean region as one of the regions most vulnerable to the negative impacts of climate change.**

The report establishes that the average increase in temperature in the Mediterranean area is estimated to be between 2°C and 6.5°C by the end of the century if no measures are taken in mitigation, with this rise being slightly higher than the global forecast. The sea's thermal inertia is stronger than the air's, meaning that the rising temperatures in Mediterranean waters should be lower, of the order of 2°C to 4°C by the last quarter of the century, but it will be enough for significant changes in the dynamics of the lower atmosphere (depressions and anticyclones) and in the overall volume of water in the Mediterranean.

A second, undeniable change is the increase in extreme climate phenomena (torrential rains and periods of drought), with direct consequences for flooding, soil erosion and the availability of water resources.

The third undeniable fact is that the Mediterranean region's high level of biodiversity makes it particularly vulnerable to climate variations. Although the Mediterranean region represents just 1.5% of the Earth's surface, with 25,000 species of spermatophytes, it is home to almost 10% of the world's flora, more than half of which is endemic (in other words, it is not found anywhere else). As a semi-enclosed sea, the Mediterranean has unique oceanographical and biogeographical characteristics. Likewise, the acidification caused by the growth of CO<sub>2</sub> concentrations, coupled with other biochemical balance alterations brought about by climate change, are a matter of great concern for the fauna, particularly for the hard-shelled mollusc population that are a vital link in the marine ecosystem since they connect primary production to the higher trophic levels.

There are multiple other potentially catastrophic consequences of the rising average temperatures but they remain shrouded in uncertainty. The rising sea levels gets

the most media attention and the Mediterranean could rise by around 15cm by the end of the century, which would be enough to have major consequences in terms of coastal erosion and the flooding of more than 46,000 kilometres of coastline that is home to a unique natural and cultural heritage. Nevertheless, because of the considerable uncertainty as to the pace at which the glaciers are melting and the water mass of the seas is expanding, which are the main causes of rising sea levels, there is no clear overall estimate for the Mediterranean, and even less so for the subregional differences, with a rise that is already more marked in the western than in the eastern part of the basin.

The uncertainties that remain in our understanding of the impact of climate change, in particular in a region where, more than any other, anthropisation takes many forms and affects all our social and environmental systems, not just the climate, and where biophysical and human factors and their reciprocal feedback loops are entirely interlinked, must not serve as a pretext for prevarication. Regardless of which part of this phenomenon is directly attributable to climate change, the remarkable work done by Plan Bleu<sup>3</sup> has shown that the Mediterranean basin is subject to intense hydrological stress, both on its surface and subterranean waters, with 180 million inhabitants that have access to fewer than 1,000m<sup>3</sup> per year, 80 million of whom are already experiencing shortages (fewer than 500m<sup>3</sup> per year). Sixty per cent of the world's so-called 'water poor' population lives in the Mediterranean: that is 250 million people who face the threat of water poverty by 2050.

**The second message arising from the research is that we need to better link the agenda of mitigation and adaptation to climate change to other development agendas.**

This is consistent with the review of the Mediterranean Strategy for Sustainable Development (MSSD)<sup>4</sup> for the period 2016-2025, which was ratified in February 2016 by the Parties to the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (known as the Barcelona Convention), which squarely positions the region's fight against climate change at the heart of sustainable development issues.

<sup>2</sup> <https://www.ipcc.ch/report/ar5/index.shtml>

<sup>3</sup> <http://planbleu.org/sites/default/files/upload/files/smdd.pdf>

<sup>4</sup> <http://planbleu.org/sites/default/files/upload/files/smdd.pdf>

Reference:

"*Changement climatique – Quels défis pour le Sud?*" [Climate change – What are the challenges for the South?], IRD Editions, 2015.

By basing their research on the MSSD, the IRD researchers have created an alternative water usage scenario based on realistic progress in efficiency in water distribution in networks and application to irrigated agricultural land that could, by 2050, stabilise total water abstraction in the Mediterranean basin and even reduce it by a third in some areas of the northern shore. This involves recognising the limitations of current technological solutions (dams, exploitation of fossil waters, desalination, inter-zonal water transfers, artificial recharge of groundwater) and adjusting the supply to meet rising demand through integrated resource management, primarily of agricultural water, and combining this supply with crop changes, education and economic incentives, including public regulation and tax incentives.

Another example: the research and action programme “4 per 1000” proposed by the French authorities and scientists at COP21, broadly taken up at the international level, aims to propose and develop multiple social and technological innovations that would bring about a win-win scenario in reducing CO<sub>2</sub> emissions by increasing the organic carbon content of soils while also improving agricultural productivity and respecting the balance of ecosystems.

### The third message is that we must invest more into regional scientific coordination in the Mediterranean.

The MSSD explicitly emphasises that one of the major obstacles to progressing towards a green region, that has low carbon emissions and is resilient to the climate, lies in the absence of, or difficulty in obtaining, scientific data and information concerning sustainable development issues. The establishment of a permanent regional mechanism for scientific cooperation is urgently required in order to contribute to proposals for innovative solutions that can overcome these obstacles while taking into account the specifics of the environmental and social context of the region. This scientific cooperation must be founded on coordinated systems of observation and long-term monitoring of climate variations in the different physical environments and the impact of global changes on people and their behaviours (including migration); on the construction of regional information exchange platforms; on the creation of a Mediterranean climate technology initiative; and, lastly, on the implementation of a regional “decision sciences” interface mechanism, including social and behavioural sciences.

The next annual Conference of Parties to the United Nations Framework Convention on Climate Change (COP22) is being held in Morocco and should be an opportunity to provide significant advances in this domain, and the IRD will be working hard to make a contribution while ensuring that the scientific expertise present and active on both sides of the Mediterranean (north and south) is recognised.



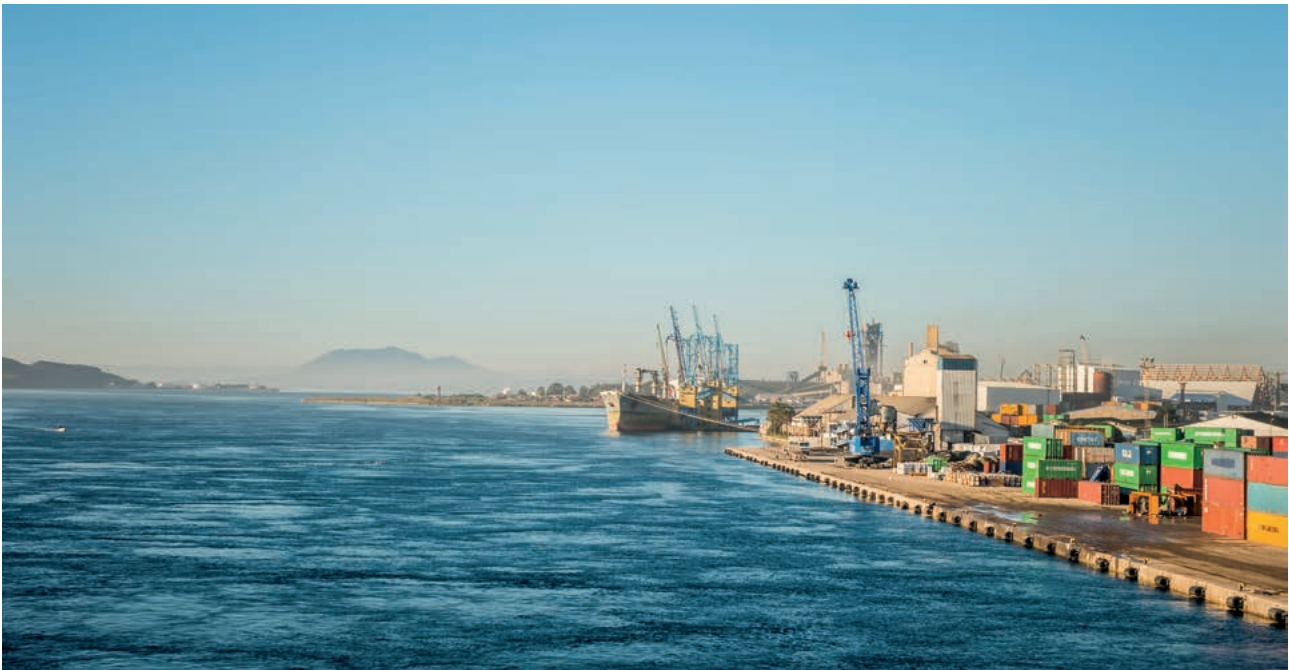
#### PROF JEAN-PAUL MOATTI

Prof Jean-Paul Moatti has been Chairman and CEO of the Institut de Recherche pour le Développement (France’s national Research Institute for Development) since March 2015.

With a background as a health economist, he focused his research on developing countries, through which he has contributed, in particular, towards fighting the HIV/AIDS and malaria pandemics, ensuring access to essential medication, strengthening healthcare systems and reducing social and health inequality. As a result of his research, he has held numerous positions in national scientific bodies such as the French National Alliance for Life Sciences and Health (AVIESAN), the French National Institute of Health and Medical Research (INSERM), the National Center for Scientific Research (CNRS), the National Institute for Prevention and Health Education (INPES), and the National Agency for HIV/AIDS and Viral Hepatitis Research (ANRS), as well as in international organisations such as the World Health Organization and the Joint United Nations Programme on HIV/AIDS.

# Impacts of climate change on Mediterranean coastal zones

– by Prof Maria Snoussi, Professor at the Mohammed V University, Rabat, Morocco



## Issues and challenges

The Mediterranean has unique marine and coastal features that make this region particularly vulnerable to climate change. Coastal communities and assets have been repeatedly threatened by the unpredictable sea conditions; and scientific evidence suggests that accelerated sea-level rising and more intense storm surges, related to climate change, are serious global threats for coastal areas and human society<sup>1</sup>.

Mediterranean coasts are already under substantial pressure from a range of non-climate stressors related to their multiple and sometimes conflicting uses, including urban development and the economic and recreational uses of coastal resources, notably for agriculture, fisheries and transport. More than a third of the population lives in coastal administrative units that cover less than 12% of the surface area of the Mediterranean countries, and nearly 40% of the coastline is artificialised.

<sup>1</sup> IPCC (2012). *Managing the risks of extreme events and disasters to advance climate change adaptation. Special report of working groups I and II of the Intergovernmental Panel on Climate Change*. In: Field, C.B., Barros, V., Stocker, T.F., Qin, D., Dokken, D.J., Ebi, K.L., Mastrandrea, M.D., Mach, K.J., Plattner, G.-K., Allen, S.K., Tignor, M., Midgley, P.M. (Eds.), Cambridge University Press, Cambridge, UK, and New York, NY, USA, 2012, p. 582.

Therefore, given the effects of current and future human encroachment on the coast, local authorities are faced with the increasingly complex task of balancing development and managing coastal risks, especially coastal erosion and flooding. Climate change is also already having an impact on the environment and this is likely to escalate swiftly, which will add to the existing pressures, compounding their impacts in complex and diverse ways.

### *Local authorities are faced with the increasingly complex task of balancing development and managing coastal risks.*

In particular, many coastal systems will experience increased levels of inundation and storm flooding; accelerated coastal erosion; seawater intrusion into fresh groundwater; encroachment of tidal waters into estuaries and river systems; elevated sea-surface and ground temperatures. Other impacts may include changes in chemical (ocean acidification) and physical characteristics (thermal stratification) of marine systems; increased harmful algal blooms; spread of invasive species; habitat loss (especially of coastal wetlands); species migrations; and changes in population dynamics among marine and coastal species. These bio-geophysical effects will, in turn, have direct and indirect socio-economic impacts<sup>2</sup> on tourism, human settlement, agriculture, freshwater supply and quality, fisheries, financial services, and human health in coastal zones<sup>3</sup>.

The consequences are already felt on many coasts, raising many questions about the resilience and sustainability of services provided by these vulnerable areas, and thus increasing the need and urgency to include the vulnerability assessment and adaptation of coastal areas as part of an integrated and effective coastal management. However, assessing current and future vulnerabilities and risks to coastal hazards is a challenging issue for both researchers and policymakers. Indeed, it is important to understand that the assessments remain inherently uncertain as they are derived from a process necessarily involving assumptions about a number of key factors, based on best available projections and expert judgement<sup>4</sup>.

## The need for cooperation and coordination

Investigating the role of climate and non-climate drivers on coastal zones is crucial to understand the underlying risks and identify appropriate and cost-efficient response measures. Key to success in addressing these trans-boundary issues is the mutual political commitment of all the countries bordering the Mediterranean. The need for cooperation and coordination has long been recognised and has resulted in almost 40 years of international efforts to protect this fragile and vulnerable region: the Mediterranean Action Plan (MAP); the Barcelona Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean and its Protocols; the Euro-Mediterranean Partnership (EUROMED); the Union for the Mediterranean (UfM); and more recently, the MedPartnership Programme. However, even if the political, legal, and institutional dimensions are probably the most critical elements in coping with climate variability and change in coastal management, considerable efforts have been devoted by international bodies to produce legal instruments and guiding policy documents that explicitly address climate change impacts on coastal management and cooperation in the Euro-Mediterranean region, amongst which are the EU strategy on adaptation to climate change; the European Climate Adaptation Platform; the Mediterranean Climate Change Initiative of the UfM; the Regional Adaptation Framework for Climate Change in the Mediterranean (UNEP/MAP); the Mediterranean Strategy for Sustainable Development (MSSD); and the Southern and Eastern European Neighbourhood Instrument.

## The ICZM: an appropriate process for adapting coastal zones to climate change

There is a widespread agreement that the "business as usual scenario" is no longer valid as an option to ensure the sustainability of Mediterranean coastal and marine resources in the context of climate change, and that there is a need to revise existing policies, laws and strategies at international, national and local levels in an integrated and participatory manner to be more climate change sensitive.

<sup>2</sup> Nicholls, R.J., Coastal: *Coastal flooding and wetland loss in the 21st century: changes under the SRES climate and socio-economic scenarios*. Glob. Environ. Chang., 2004, 14, 69-86.

<sup>3</sup> Nicholls, R.J., Cazenave, A., *Sea-level rise and its impact on coastal zones*, 2010, Science 328: 1517-1520. doi:10.1126/science.1185782.

<sup>4</sup> Markandya, A., Dale, N., Vafeidis, A., Hinkel, J., Lincke, D., Wolff, C., *Assessing the Socio-Economic Impacts and Adaptation Options for Climate Variability and Change in Mediterranean Coastal Zones*. UNEP/PAP/RAC Report, Split, 2016, p.67.

For decades, ICZM has been recognised and practised globally as a strategy for the sustainable development of the coastal zone. It is widely promoted as an appropriate policy framework to deal with current and long-term coastal challenges that cut across traditional departments<sup>5</sup>. In the Mediterranean, the ICZM Protocol is a key tool to facilitate mainstreaming coastal climate variability and to change adaptation in the region. This is the first regional ICZM legal instrument that deals extensively with the issue of climate change, both at strategic and local levels. Rochette et al. (2010)<sup>6</sup> have highlighted the many synergies between ICZM and climate change adaptation. Indeed, they have common fundamentals and share the same instruments. However, as the knowledge on climate change is changing all the time, policymakers must make decisions within a framework of uncertainty. It is therefore important that the ICZM process should be flexible and open to new information and feedback in terms of adaptation technologies.

### An opportunity for strategic development

Adapting to new conditions brought by climate change in the Mediterranean region will be challenging and demands strategic and creative thinking from planners. The Mediterranean communities have to reconsider their development patterns and bring out opportunities by seeking proactive solutions. It appears that ICZM is a relevant process for coastal adaptation to climate change and the use of specific ICZM tools, as stipulated in the ICZM Protocol, already allows enrolling in an adaptation process. Furthermore, climate risk management of the Mediterranean coasts is a key element of their sustainable development, in which identification and reduction can help to protect people, resources and property and thus help achieve development goals and economic security.



#### PROF MARIA SNOUSSI

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Among other things, she has been: member of the Scientific Committee, director of the Global Ocean Observing System (GOOS), committee president of "Coastal Systems" at the CIESM and member of the scientific directorate of MAB/UNESCO.

She has also participated in and led several national, European and international projects and is a consultant for the UNEP, IOC/UNESCO, IUCN and WWF.

<sup>5</sup> UNEP/MAP/PAP, *Guidelines for Adapting to Climate Variability and Change along the Mediterranean coast*. Split. Priority Actions Programme, 2015, p.70.

<sup>6</sup> Rochette J., Magnan, A., Billé, R., "*Gestion intégrée des zones côtières et adaptation au changement climatique en Méditerranée*", in Lazzeri, Y., Moustier, E. (Eds), *Le développement durable dans l'espace méditerranéen : enjeux et propositions*, L'Harmattan, 2010, pp.99-120.

# Climate change in the Mediterranean Sea

– by Mr Enrique Álvarez Fanjul, Spanish Ports Authority



The Mediterranean Sea, with a population of 150 million on its coasts and receiving 170 million tourists every year, is one of the most exposed regions in the world to climate change, due to its geographical situation between hot subtropical deserts and temperate mid-latitude regions (the latest comprehensive review on the Mediterranean climate - past, present and future - is by Lionello et al., 2012). Regarding climate change, the main expected changes in the area are those derived from sea-level rise and a higher SST. Sea-level rise will affect harbours and other coastal infrastructures, as well as wetlands and beaches (Nicholls and Cazenave, 2010; Sánchez-Arcilla et al., 2011). The increase in SST will mainly affect marine ecosystems (Fischlin et al., 2007; Coma et al., 2009; Marbà and Duarte, 2010). Altogether, these changes will have a severe impact on different economic sectors such as marine transport, tourism, fisheries, and coastal management.

## State of the art

### The observing system and its results

The Mediterranean MONGOOS observing system has several components of paramount importance to monitoring climate change in the region. Amongst others, tide gauge networks, moored stations, ARGO drifters, XBT and gliders are providing relevant data to monitor the phenomena (Alvarez Fanjul et al., 2015). Equally important are the data obtained from satellites in recent decades, especially those of SST, altimetry and, more recently, gravimetry (Le Traon, 2013; Calafat et al., 2010).

Regarding sea level, only a few records span back to the beginning of the 1900s. They correspond to tide gauges located at the northern coast of the Western Mediterranean (Marseille and Genoa) and at the northern coast of the Adriatic



Sea (Trieste). The sea-level trends computed from these stations are in the range of 1.1–1.3 mm/yr (Marcos and Tsimplis, 2008), and are lower than the values estimated for global mean sea-level rise during the 20th century, which is in the range of 1.8–2.0 mm/yr (Miller and Douglas, 2004). The main reason for the difference is the anomalously high atmospheric pressure observed over the region between the 1960s and the 1990s (Gomis et al., 2008). At present, Mediterranean mean sea level is recognised to participate mostly of the behaviour of the North-Eastern Atlantic (Calafat et al., 2012).

Regarding temperature and salinity, several points are not clear yet. On the one hand, the temperature and salinity in the deep layer has been reported to increase in both the EMED and WMED (Bethoux et al., 1990, 1998; Leaman and Schott, 1991; Rohling and Bryden, 1992; Zodiatis and Gasparini, 1996; Tsimplis and Baker, 2000). On the other hand, no conclusive results have been obtained for the upper (Vargas-Yáñez et al., 2009) or intermediate (Krahmann and Schott, 1998; Rixen et al., 2005) layers, which contribute to the deep layer formation. In addition, the upper layer of the WMED receives the surface AW, which has warmed during the second half of the 20th century (Levitus et al., 2009). As pointed out by Millot (2007), the Mediterranean could simply show the changes happening in the nearby Atlantic, with the local changes being of secondary order, as it has been reported for sea level.

### The modelling system

Climate modelling activity in the region has been active in the framework of several national and international projects and initiatives such as PRUDENCE (<http://prudence.dmi.dk/>), ENSEMBLES (<http://ensembles-eu.metoffice.com/>), CIRCE (Gualdi et al., 2013; <http://www.circeproject.eu/>) and VANIMEDAT (Gomis et al., 2012). These are based on the use of ocean circulation models, coupled or uncoupled with atmospheric models. Other models, such as WAM or HAMSOM, have been employed to tackle different variables such as storm surges or waves (Lionello and Sanna, 2005; Marcos et al., 2011; Jordà et al., 2012a, 2012b). Much of this activity (including both hindcasts and future projections) is today framed on Med-CORDEX (Dell'Aquila et al., 2016). A comprehensive list of simulations in the area can be found at <https://www.medcordex.eu/simulations.php>.

The existing marine climate projections for the Mediterranean Sea foresee a mean sea-level rise of 30–100cm by the end of

this century, with regional variations of up to 20cm (Lionello et al., 2012). An ensemble of 21st century scenarios (Adloff et al., 2015) shows, for the 2070–2099 period compared to 1961–1990, that the sea surface temperature anomalies range from +1.73 to +2.97°C and the SSS anomalies spread from +0.48 to +0.89.

## Gaps and challenges

### The observing system

The permanent observing system is limited and strongly north-south unbalanced. A good example of this can be found in the distribution of tide gauges in the basin. Furthermore, the MONGOOS observing system is based almost entirely on national programmes, and the survival in terms of these is strongly dependent on the evolution of the economy in the region. In fact, the system has been severely reduced in recent years due to the effect of the crisis. As a result of these limitations, inferring climatic variability and trends from past observations (recent decades) is a challenging task. This is especially true at depth, where observations are scarce. On the other hand, reconstructions (based on long-term *in situ* data and short-term but complete satellite data) are very valuable; but again this can work for sea level and other surface parameters, but it can hardly be attempted at depth.

### The modelling system

The wide range of values in the projections reflects the large uncertainty of the models due to several factors such as the evolution of greenhouse gas emissions and model uncertainties. These constitute serious handicaps when policymakers and stakeholders are to decide on adaptation strategies; and, therefore, obtaining a reliable range of uncertainty is a major concern.

Several processes are poorly known, and contribute significantly to this uncertainty. Amongst others, it is important to cite the continental ice melting in regard to sea-level rise, the evolution of the salinity of the Atlantic basin (Mediterranean salinity depends on the evolution of the incoming Atlantic waters) and surface fluxes (heat and fresh water).

## Way forward

### The observing system

The future strategy for the observing system in the Mediterranean should cope with two main major problems: reducing the gaps in the observing system and ensuring sustainability of the pieces already in place.

With respect to the gaps, some of them are obvious, such as the previously mentioned north-south imbalance in tide gauges. An initiative to deploy a network of tide gauges in the Southern Mediterranean has already been launched jointly by GOOS, MONGOOS and EuroGOOS: the MESCAT project (Mediterranean Sea-level Change and Tsunamis). If finally funded, this project will deploy tide gauges in the African countries and will be a significant contribution to filling the gaps in the capabilities of monitoring, diagnosing and forecasting sea level and its variability in the region. The way of filling other gaps, especially those related to the monitoring of deep waters, are less obvious, and a key issue for MONGOOS must be to determine the characteristics of the observational network required to capture the climate change signal (Llasses et al., 2015).

With respect to system sustainability, European-level initiatives such as the future MedOS (Mediterranean Observing System) and E0OS (European Ocean Observing System – <http://eurogoos.eu/eoos/>) are of paramount importance to provide a more stable framework. This has to be linked with a fully open data policy, something that, surprisingly, has not been fully achieved. A good example of the way forward is Euro-Argo. A good coordination of the national actors will lead finally to substantial EU support for observations. Coordination through EuroGOOS task teams on observing components, if effective, could lead in the future to similar solutions for other key components of the system.

### The modelling system

The main challenge of the modelling community is to reduce the uncertainty in the projections. Of course, this will always be limited by the fact that scenarios are dependent on future human activity, but there are several specific problems, mentioned in the previous section, that must be specifically tackled (ice melting, salinity of the Atlantic and surface fluxes). Additionally, the number of simulations has increased in order to gain confidence in the ensemble results.

For these works, the value of comparison initiatives such as Med-CORDEX is enormous; in fact, collaboration via this kind of organisation is probably the only way to progress.



#### MR ENRIQUE ÁLVAREZ FANJUL

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Amongst other activities, his team is responsible for the national numerical forecast systems of waves, storm surges and currents (MyOcean); for 15 deep-water complex oceanographic buoys (waves, winds, atmospheric pressure, currents, air temperature, salinity and SST), 10 simple oceanographic buoys, 36 tide gauges and 8 HF radars; as well as for a database and an information distribution system for disseminating the related products to society.

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## Gender and climate change: Why empowering women is the answer to resilience

– by Ms Phumzile Mlambo-Ngcuka, UN Under-Secretary-General and Executive Director of UN Women

Climate change impacts women and girls in many ways, from loss of life and livelihood when weather patterns alter, raising destructive cyclones, floods or crop-withering desertification, to new health vulnerabilities when disease vectors like zika-carrying mosquitos move into populations without previous exposure. Similarly, changing water sources force women and young girls to walk further to carry supplies back to their households, increasing their vulnerability and eating into their time for study, play or other activities. Yet successful responses to these challenges have one thing in common: their ability to generate resilience in women and girls through new resources and capacities.

In the past decade, 87% of disasters have been climate-related and this number is expected to grow. Women and girls are disproportionately affected in disaster and post-disaster situations: more than 70% of the fatalities from the 2004 Asian tsunami were women and the death rate of women aged 18 to 60 was double that of men when Cyclone Nargis hit the Ayeyarwady Delta in Myanmar in 2008. Training to respond to disasters and equal participation by women and men in disaster risk management has a direct positive effect on the community's ability to respond rapidly and evacuate safely, as was seen in La Masica, Honduras, when Hurricane Mitch caused no reported fatalities.

The Sendai Framework for Disaster Risk Reduction 2015-2030 specifically focuses on alleviating the gender inequality of risks in a changing climate with measures that include closing the financing gap for gender-responsive disaster risk management; and strengthening women's capacity to prevent, prepare for, and recover from natural hazards. Similarly, the vital role of women is increasingly being reflected in climate action, as demonstrated by the

United Nations Framework Convention on Climate Change (UNFCCC) Lima Work Programme on Gender (2014) and the gender-equality considerations in the recent UNFCCC Paris Agreement (2015).

In agricultural settings, women make up 43% of the workforce and play a critical role in supporting household and community food security. Yet women farmers are often excluded from decision-making in areas that impact on their livelihoods, and are denied equal access to land tenure, agricultural inputs, financing, water and energy, appropriate infrastructure, technologies, and extension services. These kinds of discriminatory policy frameworks and harmful social norms create structural, legal and cultural barriers and perpetuate cycles of poverty. These disadvantages are reinforced for marginalised populations like indigenous peoples, whose weak land and water rights and geographic isolation make them frequent targets.

With the right access and resources, women are highly successful farmers, sensitive to changing needs and sustainable land-use and water practices. According to some estimates, providing equal access to land and other assets could increase agricultural outputs by up to 20% in Africa and will be increasingly important as the effects of rainfall variability bite harder. It would help minimise any potential trade-offs between food security and carbon neutral farming practices by enabling women and men farmers to adopt climate-smart agricultural approaches at the same rate, increasing productivity overall. In essence, eliminating the gender gap can provide a triple dividend of gender equality, food security and climate management, offering a cost-effective and transformative approach in pursuit of the Sustainable Development Goals.

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United Nations (2014). *World Survey on the Role of Women in Development: Gender Equality and Sustainable Development*, New York.

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Building on recent work by UN Women in the Mediterranean region, including providing support for women farmers in Palestine on agro-biodiversity in the context of climate change and equipping women seed growers in Morocco to produce climate-resilient seeds, UN Women has developed a new flagship programme, which includes resilience-building elements like increasing women's access to finance so that they can invest in climate-resilient and time-saving assets, as well as increasing their access to information on how to do so.

As the primary household energy managers in most developing countries, women can be powerful agents of change and accelerate a transition to clean, sustainable energy. Currently, 1.3 billion people worldwide have no electricity and 2.6 billion have no access to modern cooking facilities. Based on current trends it will take until 2080 to achieve universal access to electricity, and until the mid-22nd century for access to non-polluting energy for cooking.

Women are under-represented in the sustainable energy field due to limited access to technical skills training and long-term affordable financing. Women entrepreneurs have enormous potential to create affordable distribution and service networks in rural areas, yet this potential is vastly under-utilised.

Efforts to support women's entry into the sustainable energy sector range from global efforts like the programme implemented by UN Women and UNEP to promote women energy entrepreneurs' use of sustainable energy, particularly in agriculture and micro-enterprises, to small training courses with the capacity for replication to drive their local green economies. At the other extreme of innovative technology, this summer, in a pilot programme, 5,000 women farmers will be trained in Rwanda on climate-resilient agro-technologies. They will be linked through a cloud-based system to global supply chains, providers of goods and services, as well as to information and financing.

The effect of climate change is one of the most pressing issues the world faces today. However, applying a gendered lens to these challenges reveals solutions to seemingly intractable problems and is one of the most effective ways we can build the resilience of families, communities and nations.

UN Women (2015). *Progress of the World's Women 2015-2016. Transforming economies, realizing rights*, New York.

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UN WomenWatch (2009). *Fact Sheet: Women, Gender Equality and Climate Change*.

Global Witness (2016). *On Dangerous Ground*.

UN Women, with its partners, is committed to putting gender equality concerns and women's voices and agencies at the centre of adaptation, mitigation and disaster risk management efforts. These solutions will create virtuous cycles that can simultaneously achieve multiple Sustainable Development Goals on poverty, agriculture, gender and water, improve the lives and resilience of women and men everywhere, and make climate-resilient economies and societies a reality.

Women and girls are not passive and helpless victims of climate change. First and foremost, they are solution-makers; an army of game changers that the world is yet to fully engage.



#### MS PHUMZILE MLAMBO-NGCUKA

Ms Phumzile Mlambo-Ngcuka is United Nations Under-Secretary-General and Executive Director of UN Women, sworn into office on 19 August 2013. She has worked in government, private sector and civil society and was actively involved in the struggle to end apartheid in her home country of South Africa. She was a member of South Africa's first democratic government and served as Deputy President from 2005 to 2008, overseeing programmes to combat poverty and bring the advantages of a growing economy to the poor.

Ms Mlambo-Ngcuka began her career as a teacher and gained international experience as a coordinator at the World YWCA in Geneva, where she established a global programme for young women. She is the founder of the Umlambo Foundation, which supports leadership and education.

## Sustainable urban development for addressing climate change challenges in the Mediterranean region

– by **Dr Joan Clos**, Executive Director of UN-Habitat and Secretary-General of Habitat III

Well-planned urbanisation has become a global trend for the sustainability of our planet. Achieving sustainable urban development is inconceivable without relating it to climate change. To devise an effective and collective response to climate change, we have no option but to place the fight in the hands of both cities and national governments. Cities today, especially in the developed world, contribute around 70% of the greenhouse emissions. Many coastal areas in the world are victims of major disasters caused by the immediate or related effects of climate change.

The Mediterranean region is already witnessing the worst migration crisis in its history, fuelled by the tragic consequences of the conflicts in Syria and Libya. Conflicts in the region have changed the lives of many people and triggered significant migration movements to Europe or neighbouring countries in the MENA region. Population and economic growth, industrial development, urbanisation and rising standards of living accompanied with changes in consumption patterns in the MENA region, together with heavy reliance on oil and gas, has led to growing greenhouse gas emissions in the region.

If current emission levels of greenhouse gases continue to rise, there will be catastrophic consequences, such as water shortages and scarcity, droughts, food crises and instability in the region and on both sides of the Mediterranean. We cannot forget that between 2006 and 2011, a critical drought caused a massive migration of Syrian farmers from rural areas to the cities, and contributed to the instability and unrest already caused by the civil war. Food riots, intimately related to unemployment, price increases, desperation, land issues and climate change, drove youth in Tunisia to launch a revolution that had consequences across the region and on both sides of the Mediterranean.

*Cities today, especially in the developed world, contribute around 70% of the greenhouse emissions.*

### Climate change: a key driver of urban revolution

Overall, the Arab Spring was an urban revolution of desperate youth looking for a decent quality of life. Therefore, good urbanisation and the fight against climate change are also important contributors to peace and stability.

The Arab region is home to 357 million people and is one of the most urbanised regions in the world, with 56% of its residents living in cities. In many cases, cities have become refuges to many people escaping from war, seeking stability and safety. This trend is likely to grow as cities will host 70% of the population in the coming years. Urbanisation in the Arab states will continue to be one of the most significant economic and social transformations for millions of people looking for a better urban future.

*The Arab region is home to 357 million people and is one of the most urbanised regions in the world, with 56% of its residents living in cities.*

These critical issues have been debated in two important regional meetings co-hosted by UN-Habitat, the leading United Nations agency on human settlements and sustainable urban development. In December 2015, the Government of Egypt and the League of Arab States hosted the First Arab Ministerial Forum for Housing and Urban Development; and in May 2016, the Moroccan government hosted the First African Forum for Housing and Sustainable Development, with a specific focus on climate change, taking into account that Marrakech will host the COP22 in November this year. In both regional meetings, and for the first time, Arab and African leaders are assessing urbanisation from a positive perspective that identifies urbanisation as a source of development and an engine for growth and prosperity, therefore contributing to the increased chances of peace in the region. These discussions hold deep significance as, over the last fifty years, policy experts have normally focused more attention on the negative aspects of urbanisation than its capacities to generate wealth and employment.



## An optimistic view on climate change

This vision is endorsed by the 2030 Agenda for Sustainable Development, which opens a new stage in the history of urbanisation and international development. Goal 11 of the new global development agenda calls for making cities inclusive, safe, resilient and sustainable. However, the dominating urbanisation model of the last fifty years has proven to be successful by contributing to more than 70% of world GDP. The model practised demonstrated to be efficient in generating jobs and economic prosperity but failed in generating the transformative power of well-designed urbanisation in social and environmental aspects. This failure has resulted in wide levels of inequality and an absolute increase in the number of people living in slums, many of whom lack access to clean water, sanitation, and other essential services.

It is for this reason that our goal in Habitat III, the UN Conference on Housing and Sustainable Urban Development in Quito in October, holds historical transcendence. The objective in Quito is to encourage a political and social debate that substantially improves sustainable urbanisation in

*The region is working very closely with UN-Habitat in a number of key strategic aspects that will contribute to urbanisation as a source of prosperity and environmental sustainability.*

its three dimensions: environmental, social and economic. The outcome of this conference, the New Urban Agenda, is expected to offer a set of pragmatic strategies that will guide the urbanisation of the future.

The Arab countries have shown great commitment to the New Urban Agenda and in implementing Goal 11 of the 2030 Agenda for Sustainable Development. In order to achieve the targets laid out at SDG 11, the League of Arab States, supported by UN-Habitat has facilitated the preparation of a Regional Strategy for Housing and Sustainable Urban Development (2015-30), endorsed by its 22 Member States in December 2015, just months after the launch of the 2030 Development Agenda. Under the vision of achieving

“integrated and sustainable human settlements that are resilient, competitive, and providing better quality of life in the Arab region”, the strategy reflects how SDG 11 will be implemented within the specific context of the Arab region. To achieve this vision, it is clear that Member States will need to strengthen urban legislation, planning and finance systems.

The region is working very closely with UN-Habitat in a number of key strategic aspects that will contribute to urbanisation as a source of prosperity and environmental sustainability. Let me share with you some of the key areas of cooperation.

### Actions towards the objective

The region is already investing in appropriate legislation, through the elaboration of National Urban Policies. The establishment of a clear set of rules and regulations that guide an effective urbanisation process is fundamental as it will help to improve the lives of the people sharing common services. Six countries in the region have already elaborated or are in the process of elaborating their National Urban Policy.

The region has also advanced in key areas of effective urbanisation that relate to spatial planning and design. Investing in planning and design is needed to ensure appropriate levels of density that induce urban economic productivity and affordability of public services costs. The

current analysis of urbanisation shows that in some places there is insufficient allocation of land for common spaces and services, or poor design of the street pattern. This factor can undermine the economic value of buildable plots and contributes highly to the issue of urban traffic congestion.

*Algeria is a good example example of a country where urbanisation has been specifically associated to the objective of reducing unemployment.*

A third important element intimately linked with effective urbanisation is a sound financial strategy. Municipal financial plans are fundamental to sustain the proper functionality of the city and cope with the current costs of a well-kept city. In this regard, we urge stronger policies to support urban productivity and to share the value generated in order to sustain the costs of urban services. Morocco has an unprecedented cement tax, which is allocated for social housing.

We also see evidence in the region of urbanisation accompanied with the reduction of unemployment. Algeria is a good example of a country where urbanisation has been specifically associated to the objective of reducing unemployment.





In addition to the three key components towards sustainable urban development, I would like to share an innovative reflection that I introduced for the first time during my intervention in the Ministerial Dialogue at the United Nations Environment Assembly (UNEA II) in Nairobi. Mayors and local authorities have played a significant role in combatting climate change without financial resources. However, what is needed now is a qualitative step in which local governments and cities aspire to play a greater role by becoming owners of their utilities of power generation. Cities may recover the legal capacity to own power generation utilities, as already experienced in several countries, generating energy with solid waste, wind and solar sources.

### A crucial effort – within and between nations

Urbanised parts of the Mediterranean region present challenges both in terms of reducing greenhouse gas emissions and adapting to climate change. Risks associated with climate change and natural hazards in cities need to be better understood. Measures to increase resilience to the impacts of climate change and reduce disaster risks will be essential, and will necessitate cooperation between states on certain issues. Improved enforcement of building codes and disaster-resilient construction methods and strengthened institutional capacity to do so is also very much needed.

The recent Memorandum of Understanding (MoU) signed between UN-Habitat and the Union for the Mediterranean (UfM) in April 2016 is an excellent platform to undertake joint actions for an integrated approach to socially and environmentally sustainable urban development.

While urbanisation leads to higher energy and resource consumption, our recommendation to the Mediterranean region is to invest in compact and integrated urban patterns that can significantly reduce per capita levels of energy and resource use.



#### DR JOAN CLOS

Dr Joan Clos, UN Under-Secretary-General and Executive Director UN-Habitat/Secretary-General of Habitat III.

Born in Barcelona, Dr Joan Clos is a medical doctor, with a distinguished career in public service and diplomacy. He was twice elected Mayor of Barcelona during the years 1997-2006. He was also the Minister of Industry, Tourism and Trade of Spain from 2006-2008. Prior to joining the United Nations in 2010, he served as Spanish ambassador to Turkey and Azerbaijan.

# Confronting climate change in the Eastern Mediterranean: public health approach

– by **Dr A. Basel Al-Yousfi**, Director of the World Health Organization (WHO) Regional Centre for Environmental Health Action (CEHA), **Dr Hamid Bakir**, Coordinator, Environmental Health Interventions, CEHA and **Dr Maria Neira**, Director, Public Health, Environmental and Social Determinants, WHO

The effects of climate change are being increasingly felt today and forecasts represent potentially disastrous risk to human health in the future. Policy responses are therefore imperative in countries in order to ensure the protection of the people's health.

"Climate change could be the biggest global health threat of the 21st century", the *Lancet* warned in May 2009<sup>1</sup>. Yet in current climate debates, health is still being treated as a peripheral matter. The WHO Conference on Health and Climate in August 2014 reviewed the strong scientific evidence of the grave impact of climate change on health. Notwithstanding extreme weather disasters, the WHO estimates that climate change will cause an additional 250,000 deaths per year between 2030 and 2050. Most will likely perish from malaria, diarrhoea, heat exposure and under-nutrition<sup>2</sup>. Children and the elderly will be among the most vulnerable. Areas with weak health infrastructures will be least able to cope, and developing countries will be hardest hit. The health gaps we have been trying hard to close may grow even wider.

## A global health opportunity

On the brighter side, the latest message from the *Lancet* report of June 2015 articulated, "Tackling climate change could be the greatest global health opportunity of the 21st century"<sup>3</sup>. In addition, the 21st United Nations Climate Change

Conference (COP21) held in Paris, France from 30 November to 11 December 2015 aimed to achieve a new and universal climate change agreement from all the nations of the world. COP21 offered the world an important opportunity to not only reach a strong international climate agreement but also to save lives and protect the health of current and future generations of humankind (and co-inhabitant species). As such, the WHO considers the Paris treaty a significant public health treaty.

## Building resilience

Although historically Member States of the WHO Eastern Mediterranean Region (EMR) have contributed relatively little to the greenhouse gas (GHG) emissions and thus to the onset of climate change, the EMR is the second worst impacted region after Africa in terms of health consequences<sup>4</sup>. A systematic review of research evidence from EMR countries<sup>5</sup> documents and predicts adverse climate impacts on health, such as increases in waterborne diseases, under-nutrition, drowning, mortality and morbidity during heatwaves, mortality due to cardiovascular and respiratory illnesses, the spread of vector-borne diseases (dengue, malaria, schistosomiasis and zoonotic cutaneous leishmaniasis), and mental health and allergic reactions as well as pulmonary diseases across the region due to dust storms. A systematic review of published research on climate change and health in the

<sup>1</sup> Costello, A., Abbas, M., Allen, A., Ball, S., Bell, S., Bellamy, R. et al., *Managing the health effects of climate change*, Lancet and University College London Institute for Global Health Commission, Lancet, 2009 May 16;373(9676):1693–733. doi: 10.1016/S0140-6736(09)60935-1.

<sup>2</sup> Hales, S., Kovats, S., Lloyd, S., Campbell-Lendrum, D. *Quantitative risk assessment of the effects of climate change on selected causes of death, 2030s and 2050s*, Geneva: World Health Organization, 2014.

<sup>3</sup> Watts, N., Adger, W.N., Agnolucci, P., Blackstock, J., Byrnes, P., Cai, W. et al., *Health and climate change: policy responses to protect public health*, Lancet, 2015 Jun 24, doi: 10.1016/S0140-6736(15)60854-6. [Epub ahead of print].

<sup>4</sup> Patz, J., Campbell-Lendrum, D., Gibbs, H., Woodruff, R., *Health Impact Assessment of Global Climate Change: Expanding on Comparative Risk Assessment Approaches for Policy Making*, Annu Rev Public Health, 2008;29:27–39, doi: 10.1146/annurev.publhealth.29.020907.090750.

<sup>5</sup> Khader, Y.S., Abdelrahman, M., Abdo N., Al-Sharif, M., Elbetieha, A., Bakir, H. et al., *Climate change and health in the Eastern Mediterranean countries: a systematic review*, Rev Environ Health, 2015, Aug;30(3):163–81, doi: 10.1515/reveh-2015-0013.

EMR<sup>6</sup>, however, found that research on the links between climate change and health is still quite limited, and there are many gaps in our awareness and understanding of these links that may limit mitigation and adaptation activities.

The WHO Regional Centre for Environmental Health Action (CEHA) has been providing capacity building and technical support to all EMR Member States to support their public health response to climate change and improve the resilience of their health systems. In that regard, Jordan has developed its national health and climate adaptation action plan and integrated climate change considerations within its national health policy. The health ministries in several countries have developed their National Framework for Action on Health and Climate Change and contributed to the health and climate change chapters of the National Communication to the United Nations Framework Convention on Climate Change (UNFCCC).

However, EMR Member States still need to take further steps to:

- Raise awareness and advocate for protecting health from climate change
- Undertake assessment of health vulnerability to climate change
- Develop early warning systems and adaptation and mitigation action plans for health protection and resilience from climate change
- Support health-promoting climate change policies, and participate in the UNFCCC processes as leaders on health
- Identify the health benefits associated with reducing emissions of greenhouse gases and other climate pollutants.

## A proactive public health response

This may not only require a broad public health approach, including not only the preventive and curative functions under direct control of the formal health sector, but also appropriate leadership, guidance and regulatory functions with regard to health-determining sectors, such as water and sanitation, or disaster risk reduction. Given the climate change threats to health and the potential health co-benefits that result from mitigation and adaptation actions to confront climate change, Member States need a proactive public health response to support such actions and enhance the resilience of health systems<sup>7</sup>. This win-win public health approach will enable mitigation of climate change and reduction in environmental pollution, thus lowering the burden and cost of ill health and generating cost savings that can be re-allocated to strengthen the public health budget in areas such as healthy living promotion and disease prevention and control.

# 250,000

DEATHS CAUSED BY CLIMATE CHANGE  
PER YEAR BETWEEN 2030 AND 2050

<sup>6</sup> *Climate change and health in the EMR – a systematic review of published research*, Amman: WHO Regional Office for the Eastern Mediterranean, Regional Centre for Environmental Health Action (in press).

<sup>7</sup> *Towards a public health response to climate change and air pollution in the Eastern Mediterranean region*. Paper presented at the 61st Session of the World Health Organization Regional Committee for the Eastern Mediterranean, Tunis, Tunisia, 19–22 October 2014 ([http://applications.emro.who.int/docs/Technical\\_Meeting\\_Climate\\_Change\\_Air\\_Pollution\\_2014.pdf](http://applications.emro.who.int/docs/Technical_Meeting_Climate_Change_Air_Pollution_2014.pdf), accessed 30 November 2015).

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## The mobilisation of actors

Building a low-carbon society requires collective action. States, local authorities, civil society, businesses, international and intergovernmental organisations, we must all mobilise to meet the challenges ahead. Addressing this global challenge effectively calls for deepened regional cooperation in the Mediterranean.



# Mobilising the private sector for climate change in the Mediterranean

– by Mr Mohamed Choucair, President of ASCAME

Climate change is gradually being perceived as a global opportunity rather than a global concern. Multinational agreements, technological advancements, citizen education and mobilisation show the commitments of actors worldwide in changing the way they produce and consume goods and services in harmony with the environment.

In the Mediterranean basin countries, the private sector is quick to adapt to the changing business environment and meet climate change challenges. As an example, in the Paris COP21 context, Tunisia submitted in its INDC the intention to target a rate of 30% renewable energies in its total power generation, and the private sector is expected to contribute 80% of this target.

## What are the incentives for green investment?

As investment in green projects has grown considerably over recent years, one could question the incentives for the final user to invest in green projects. Indeed, if considered in a narrow perspective, green investments would not always lead to positive rates of return for the investors. For example, an industrialist could argue that reshuffling the way the industry consumes and produces in order to help protect the environment adds to the costs of the company without translating into significantly higher sales.

However, when considered in a broader long-term perspective, sustainable consumption and production is a fundamental and indispensable change in the way societies produce and consume for achieving global sustainable development. A study undertaken by the Ministry of Environment and the United Nations Development Programme analysed the potential economic costs that households, businesses, and governments might incur over the next decades in Lebanon if they and their counterparts around the world continue to behave in a business-as-usual manner, so that the emissions of carbon dioxide and other greenhouse gases continue to grow at rates similar to those seen in recent years. With the current trend, the total estimated costs due to direct-damage and forgone GDP is \$80.7 billion by 2040, representing an

average cost per household of \$57,300 and a share of \$25.8 billion for the government. If meaningful actions are taken to reduce global emissions, the estimated costs would amount to \$30.9 billion, a potential saving of 62%.

These figures lead us to better assess the importance of taking actions for lowering the potential impacts of global greenhouse gas emissions. On the one hand, actions could be oriented towards diminishing a particular type of risk to a specific asset. On the other hand, education should provide information on appropriate individual and collective actions for reducing the vulnerability of households, businesses, and communities.

## De-risking renewable energy investment

Recent developments in research and innovation have led to a significant fall in the price of clean technology. As such, PV module prices have declined by 80% since 2008. The increased demand for renewable energies, supported by various subsidy schemes, has added to pressure to lower the prices.

However, renewable energy projects are penalised by high financing costs in developing countries. The cost of capital is indeed driven up by a range of technical, regulatory, financial and informational barriers and their associated investment risks. As shown by an analysis developed by the UNDP, the levelised cost of electricity for wind generation in a developing country is 40% higher than the same cost in a developed country.

Therefore, one approach to attract more investment in renewable energies is to de-risk these investments. In this regard, improving policy should be the starting point, especially in developing countries. This can be achieved by setting up a suitable policy and regulatory framework for renewable energies and removing underlying barriers such as grid integration problems or complex processes for the permitting process. Besides, suitable financial mechanisms aimed at transferring the risk to a third party are effective financial de-risking instruments. In Lebanon, subsidised loans and guarantee schemes have proven to effectively help

scale up the renewable energy and energy efficiency sectors. On the international level, the success of the green bonds market, with most issues being oversubscribed, has proven that green asset-backed securities can be an attractive investment. The newly launched Climate Aggregation Platform, which aims to increase the availability of funding for small-scale, low-carbon energy investments, shows how aggregation concepts can be put into practice for climate investments in emerging economies.

The second approach to tackle high financing costs is to give incentives in order to compensate for the risk taken. Renewable energy subsidies have helped the market grow worldwide. However, while paying direct financial incentives is a good way to kick-start a market, it is estimated that reducing risks is a more interesting tool for supporting the market on a long-term basis.

### Cooperation and creation of value

Cooperation in the domain of climate change has gained tremendous momentum in the Mediterranean basin during recent years. Collaborative approaches for a shared vision help address challenges in a more effective way, facilitating the way for cooperation in sensitive issues such as research or technology transfer. Cross-border cooperation projects in this region have benefitted largely from the support of the European

ENPI CBC-Med programme in recent years, and we expect this support to continue with the upcoming ENI programme.

As a result, a number of actions were carried out towards the protection of the environment and the use of renewable sources for energy. Integrated approaches were proposed for sound waste management systems, including prevention, recycling and re-use, with the active participation of the private sector. Youth education was targeted by the Green Med Initiative (GMI) project, led by the Chamber of Commerce and Industry of Beirut. The GMI achieved an integrated and environmentally sound waste management system through exploitation of innovative technologies and sustainable methods for waste treatment and recycling with the support of an awareness and education programme.

Water, our blue gold, is a key topic as an increasing portion of water demand is met via non-sustainable water production: an estimated 66% originates from abstraction of fossil water and 34% from over-exploitation of renewable resources. Rainfall is projected to decrease in the coming decades, leading to substantial detrimental effects in a number of areas.

Concerns for sustainable development and climate change are also a driving force for renewable energy. Solar technologies have a special relevance to the Mediterranean region, characterised by excellent solar conditions. A number of small-scale demonstration projects, implemented as a



result of cross-border technology transfer initiatives, are expected to set the groundwork for future developments in this regard. Innovative building-integrated solar technologies, for example, were promoted to all actors including architects, engineers and installers, through the FOSTER in MED project.

Beyond their positive impact on the environment, these projects have produced positive and sustainable results at the socio-economic level. The SHAAMS project, aimed at promoting the use of solar energy, helped improve technical capabilities on the green jobs market: capacity-building actions were oriented towards the creation of a sustainable system through the integration of the topics addressed in professional training curricula. The project led also to the signature of 24 compromise agreements in the region, moving policymakers to act for the growth of solar energy.

Furthermore, sustainable tourism projects helped match the optimal use of environmental resources, which constitutes a key element in tourism development, with respect to the socio-cultural authenticity of host communities. These projects resulted in viable, long-term economic plans for both the public and private sectors, providing socio-economic benefits that are fairly distributed across all stakeholders.



#### **MR MOHAMED CHOUCAIR**

Mr Mohamed Choucair was born in Beirut in 1968, and studied international business in Paris before becoming the CEO of his family's trade business. He has held various positions contributing to entrepreneurship and economic development in the Mediterranean region. In 2010, Mr Choucair was elected Chairman of the CCIA Beirut & Mount Lebanon; and in 2011, Chairman of the Federation of the Chambers of Commerce, Industry and Agriculture of Lebanon. In April 2012, he became Chairman of the Association of the Mediterranean Chambers of Commerce and Industry (ASCAME), grouping 220 chambers around the Mediterranean. Mr Choucair appears regularly in the media as an expert on the economic situation in Lebanon and in the Mediterranean.

# Energy Charter Treaty: global rules towards energy transition

– by **Dr Urban Rusnák**, Secretary General of the Energy Charter Secretariat

The 2015 Paris Agreement responded to the climate change challenge discussed at the UNFCCC Conference (COP21) with the firm commitment to transition to a low carbon economy in order to bring the global temperature to 2°C below pre-industrial levels.

Current energy production and use account for around two thirds of greenhouse gas (GHG) emissions. The International Energy Agency (IEA) estimates that the 66% of all global emission reductions by 2030 necessary to achieve the 2°C scenario could be obtained by investments in energy efficiency (49%) and renewable energy (17%). As a result, investment needs to be scaled up rapidly to ensure a reliable and sustainable supply of energy in the future – global investment in energy efficiency needs to increase eight times, and the renewable energy investment needs to double by 2040<sup>1</sup>.

The current sustainable energy investment flows are insufficient: in 2014, public and private investors spent approximately \$270bn on renewable energy and \$360bn on energy efficiency<sup>2</sup>, with the effect of increasing renewable energy's share of global generation by about 0.6%<sup>3</sup>. These investments fall short of the best estimates of global annual investment in renewable energy, amounting to \$500bn annually<sup>4</sup>. Investors confirm that existing energy policies fail to sufficiently mobilise investment in energy technologies for the future<sup>5</sup>.

## Getting more from sustainable energy investment

To gain the full benefits from energy efficiency investments, such as increased energy security, reduced dependence on imported energy resources, increased employment opportunities, increased industrial competitiveness, and lower emissions, policymakers should scale up the available public and private energy efficiency and renewable energy investments. In 2014 alone, at least 190Mtoe of primary

energy imports were avoided in IEA countries, saving \$80bn in import bills because of energy efficiency improvements<sup>6</sup>.

Regulatory stability and market confidence are key to attracting clean energy investments. Renewable energies have high capital and low operating costs and often depend on public support. Standardisation is also a key driver for investments in energy efficiency, as identified by the EU Energy Efficiency Financial Group. Investors make their investment decisions based on the amount and the duration of public support available, and prove vulnerable to changes. Investors need, on the one hand, predictable and stable regulatory frameworks, and the rule of law at domestic and international level; and on the other hand, remedies against host states for breach of rule of law.

## The role of the Energy Charter Treaty

The 1994 Energy Charter Treaty is an international investment agreement between *inter alia* EU states, Japan, Central Asian and South Caucasus countries, proving a binding legal framework promoting clean energy investments, such as those involving renewable energy sources and those implementing energy efficiency measures and the transfer of low carbon technology. It also protects these investments against discriminatory and arbitrary treatment<sup>7</sup>.

The Treaty strengthens the domestic legal and policy framework providing public support and regulating the conditions for private investments, while it reduces discriminatory and arbitrary regulatory changes not linked to prevailing public interests. In addition, the Treaty provides a unique platform for multilateral and regional cooperation among governments for the promotion and protection of energy investments. The Energy Charter Secretariat assists governments by means of technical assistance and capacity building through country reports, policy recommendations, model agreements, seminars and training programmes, and private sector dialogue.

<sup>1</sup> IEA Energy and Climate Change.

<sup>2</sup> IEA Energy Efficiency Market Report.

<sup>3</sup> WEIO, 2014.

<sup>4</sup> IRENA.

<sup>5</sup> BEC, 2015.

<sup>6</sup> IEA Energy Efficiency Market Report.

<sup>7</sup> The ECT Articles 1(5), 8, 19 and 26.



International cooperation among the Contracting Parties of the Treaty supports the mobilisation of public and private clean energy investments required to achieve the goals of the Paris Agreement. This includes preparing the groundwork on removing pre-investment barriers to the establishment of clean energy investments, in-depth country energy investment reviews and recommendations, technical assistance by means of legal and policy analyses on improving the legal and regulatory climate for clean energy and for energy efficiency projects, capacity building and training programmes in the constituency and in outreach countries, and promoting regional energy cooperation and common transit rules.

In particular, the Energy Charter Protocol on Energy Efficiency and Related Environmental Aspects (PEEREA) has a proven record as a successful international instrument for the promotion of energy efficiency by providing a well-developed framework for peer reviews, exchange of information and dissemination of good practices – as suggested by 2015 G20 Energy Ministers in the Voluntary Energy Efficiency Investment Principles. Bilateral development cooperation and international organisations should join forces to facilitate the implementation of policies and to mobilise investments towards global clean energy transition, focusing on public finance as a catalyst as well as on effective investment strategies to mobilise private investors.

## Global adoption, global collaboration

In May 2015, energy producers, consumers and transit countries from all regions including the Mediterranean, Europe, MENA, Latin-America, Africa and Asia Pacific adopted the International Energy Charter. The International Energy Charter contains political commitments towards promoting investments in energy efficiency, renewable energy and low-emission technologies. The ultimate objective is to 'enhance energy security and contribute to sustainable economic growth', with a view to the accession to the Energy Charter Treaty. The umbrella of the International Energy Charter allows countries to reinforce their political commitment to creating the investment climate favourable to mobilising private investors towards the achievement of the Paris Agreement goals<sup>8</sup>.

Since all members of the Union for the Mediterranean are also involved in the Energy Charter Process, Observer countries are invited to further benefit from the Energy Charter Process' different instruments and tools by signing the International Energy Charter and ultimately to accede to the Energy Charter Treaty.

The International Energy Charter and the Energy Charter Treaty are integral parts of the post COP21 equation. Both support the domestic conditions that mobilise clean energy investments (energy efficiency and renewables) and contribute to the achievement of the national emission reduction goals.



### DR URBAN RUSNÁK

Dr Urban Rusnák became Secretary General of the Energy Charter Secretariat in January 2012. Prior to this appointment, Dr Rusnák worked at the Ministry of Foreign Affairs of the Slovak Republic and was Head of the Political Analysis Division.

Dr Rusnák was a lecturer at the Kiev Slavonic University and at the University of Economics in Bratislava. He is the author of several articles on international relations, energy security, development assistance and Caspian oil and gas issues. Since becoming Secretary General, Dr Rusnák has focused on modernising the Energy Charter Process. He received his PhD. from the Ankara University Institute of Social Sciences in 1998.

<sup>8</sup> Preamble, Title I (Objectives), Title II (Implementation).

## EBRD supports green economic development in the Mediterranean region

– by **Mr Josué Tanaka**, Managing Director, Energy Efficiency and Climate Change, European Bank for Reconstruction and Development

Environmental concerns have ranked high on the agenda of the European Bank for Reconstruction and Development (EBRD) ever since its creation in 1991 to foster the transition to market economies in the post-communist states of Central and Eastern Europe.

Since then, the EBRD has extended its geographic remit to embrace more of the Mediterranean region, beyond the Western Balkans. It began financing projects in Turkey in 2009 and then in Egypt, Jordan, Morocco and Tunisia in 2011 after the Arab uprising. More recently still, it has started investing in Cyprus and Greece. It has become an important actor across the entire Mediterranean region.

### Commitment to sustainable development

During this time, EBRD commitment to the sustainable development and efficient use of the planet's resources has only strengthened. Far from being an optional extra, the fight against climate change and a determination to forge a path towards low carbon economies is an integral part of the EBRD's transition mandate, core to all of its activities in each of the 36 countries where it operates.

The EBRD's climate finance activities have multiple benefits. Energy efficiency investments address the endemic problem of energy waste, both promoting energy security and reducing costs for individual companies and whole economies to make them more competitive on local and regional markets.

By reducing energy intensity and supporting the development of renewable energy sources, the Bank is also making an important contribution to the global fight against climate change.

Since the launch of its Sustainable Energy Initiative in 2006, the EBRD has invested over €20 billion, or 25% of its total investments, in over 1,100 climate finance projects. Before the COP21 Paris Agreement at the end of 2015, along with its partner development banks, the EBRD pledged to step up its climate finance. The Bank launched its Green Economy Transition (GET) approach, seeking to increase the volume of green financing to 40% of its annual

business investment by 2020, and doing even more to engage the private sector in the global climate response. Investments under the GET approach mitigate and/or build resilience to the effects of climate change and other forms of environmental degradation.

The Mediterranean region has emerged as a climate change hotspot, with multiple climate-related vulnerabilities that affect the underlying ecosystems and local economies. Jordan, Morocco and Tunisia are among the world's most water-stressed countries. Rising sea levels will affect river deltas and seaports, increasing the need for investment in climate resilience. The region also has a growing need to mitigate greenhouse gas emissions. For example, in Egypt and Turkey, the rate of increase in these emissions is among the fastest in the world.

To address a wide variety of challenges in the Mediterranean region, the EBRD is building on its successful business model to finance green projects, combining investment with technical assistance and policy dialogue. The EBRD is applying its specific expertise in using its own funding to catalyse the involvement of private sector finance.

The Mediterranean region offers enormous potential for the development of renewable energy sources – especially solar, wind and geothermal – to support the low carbon transition. The Bank has supported numerous programmes promoting renewable energy investments.

One outstanding example of its renewable energy work in this region is the Khalladi Wind Farm project in Morocco, the EBRD's first private sector renewable energy project in the country. Khalladi is also one of the first renewable energy projects developed in Morocco under a new law that allows private producers to sell electricity directly to their industrial sector clients. It is the first project under the EBRD's US\$250 million financing framework for private sector renewable energy generation in the Southern and Eastern Mediterranean (SEMED) region – a framework in which the Union for the Mediterranean (UfM) is a policy dialogue partner.

Another example of the EBRD's work is in technology transfer, an important element of the Paris Agreement. The EBRD has

established the Finance and Technology Transfer Centre for Climate Change (FINTECC), a leading programme sponsored by the Global Environment Facility, the EBRD Shareholder Special Fund, the EU, and the government of Spain. FINTECC sponsors the uptake of new technologies and provides capacity-building support in cooperation with partners such as the Climate Technology Centre and Network, the International Energy Agency, and the Food and Agriculture Organization. SEMED is a recipient region under this programme.

In addition to direct lending, the EBRD provides indirect financing extended through its Sustainable Energy Financing Facilities (SEFFs). This has turned out to be among the EBRD's most successful products – especially designed to encourage the financial industry to fund energy efficiency measures in the corporate, municipal and residential sectors. The facilities have attracted very strong demand in the Mediterranean region, where the EBRD has invested over €1.9 billion, and they are currently active in Turkey, Egypt and Morocco, as well as Croatia and the Western Balkans.

## Climate resilience

The Bank has moved quickly to develop innovative responses to the need for climate change resilience, a major issue around the Mediterranean basin. The EBRD provides technical support and carefully designed financing to help businesses and communities take practical steps towards climate resilience by adopting appropriate technologies and practices. These innovations include reducing water wastage in vulnerable supply networks, generating better data on how climate shifts will affect hydropower generation, and working with local financial institutions to make climate-resilient technologies affordable and accessible for small businesses.

We are supporting local development by sovereign investments for climate-resilient infrastructure. The most recent example was in Bosnia and Herzegovina for repair and upgrade of the country's road network. A specific project component, worth 42% of the total investment, has been dedicated to introduce climate change resilience measures into the road design.

The EBRD's activities are often complemented by support for policy reforms that help make the countries of operations more attractive for financing, including from other donors and institutions. For instance, the Bank is currently undertaking policy work, sponsored by Spain, on carbon markets for the SEMED region. This work will contribute to the development of new carbon instruments under the Paris Agreement, enabling the scaling-up of such programmes.

The Bank works closely with local and national authorities to help shape the legal and regulatory environment to be more conducive to sustainable resource investments. Via its policy dialogue initiatives, it has addressed market or regulatory barriers at all levels by supporting governments in developing adequate climate policies across all economic sectors.

## Innovative financial instruments

The EBRD has also developed a rich palette of financial instruments that are tailored to the countries and to the industries that it targets with climate activities. It taps into climate-specific finance such as the Clean Technology Fund, the Global Environment Facility and the Green Climate Fund.

In addition, the EBRD cooperates with the UfM to address climate change. One example is the UfM-labelled project supporting the adoption of sustainable consumption and production patterns across the countries in the Mediterranean region, with the aim of stimulating the development of climate-friendly industries and green entrepreneurship. The EBRD has made an important pledge to promote the fight against climate change across all of its countries of operations including a particularly strong focus on the Mediterranean region. It is strongly committed to working towards the realisation of this region's energy and climate goals.

### MR JOSUÉ TANAKA

Mr Josué Tanaka has led since 2006 the EBRD activities to scale up energy efficiency, renewable energy and adaptation financing in Central and Eastern Europe and in Southern and Eastern Mediterranean countries. Cumulative EBRD climate financing at the end of 2015 reached US\$21.2 billion in 1,080 projects for a total value of over US\$110 billion, of which two thirds were in the private sector.

Prior to the EBRD, Mr Tanaka was at the World Bank being Special Assistant to the President and working in different posts on strategic planning, tropical forest conservation and environmental financing matters.

## Mediterranean action for local authorities

– by Mr Markku Markkula, President of the European Committee of the Regions

The Mediterranean region has been labelled a climate change "hot spot" by experts who predict that by the 21st century the area will experience:

- air temperatures increasing between 2.2°C and 5.1°C compared to 1980-1999 (IPCC 2014);
- a significant decrease in rainfall of between 4% and 27% (IPCC 2014);
- sea levels rising as much as 35cm by the end of the century.

In the Euro-Mediterranean region local and regional authorities play a key role in mitigating and adapting to climate change, which is why they urgently need to be further mobilised to take action. In its contribution to finding local solutions, the Euro-Mediterranean Regional and Local Assembly (ARLEM) has adopted several reports and recommendations, which seek to raise awareness of the importance of climate action.

### ARLEM: interregional cooperation for climate action

ARLEM is the assembly of local and regional elected representatives from the European Union and its Mediterranean partners, building dialogue and promoting interregional cooperation. Launched in 2010 by the European Committee of the Regions (CoR), it represents the territorial dimension within the Union for the Mediterranean (UfM). ARLEM aims to promote local democracy, multi-level governance and decentralised cooperation to encourage dialogue between local and regional authorities and promote the exchange of best practices, knowledge and technical experience in the areas for which local and regional authorities are responsible.

In recent years, ARLEM has drawn up several reports linked to climate change and its causes. In its report on sustainable tourism in the Mediterranean (2013), ARLEM emphasises that promoting ecologically sustainable tourism is vital in this part of the world, which is experiencing increasing desertification, diminishing drinking water reserves and a loss of biodiversity as a direct consequence of climate change. ARLEM set out

a number of recommendations that seek to minimise the environmental impact of tourism and improve the management of resources and infrastructure.

In other reports on local water management (2011), renewable energies (2012), the link between desertification and climate change (2012), and waste management (2014), ARLEM argues that the main priority should be to promote good practice and develop financial instruments to be effectively implemented. The reports also identify the importance of the formation of international and inter-regional partnerships in the Mediterranean to develop climate mitigation and adaptation projects.

Energy and climate policy are ARLEM's priorities in 2016 and a report on these issues is currently being prepared by the rapporteur, Mr Mohamed Sadiki, Mayor of Rabat. This report will assess Euro-Mediterranean cooperation in this area, to be discussed during the ARLEM Commission for Sustainable Territorial Development in November in Marrakech, coinciding with the UNFCCC's climate conference (COP22).

The ARLEM Commission meeting will be preceded by a high level Conference on the Global Covenant of Mayors including one thematic session on the Mediterranean Covenant organized as part of the Second Climate Summit of Local Leaders (November 14 2016). Both offer an opportunity to discuss environmental objectives, methods and means of implementation, as well as the support provided by the Covenant, decentralised cooperation and other programmes.

### The Mediterranean Covenant of Mayors: a key initiative for combatting climate change

The CoR is committed to developing and supporting the Mediterranean Covenant of Mayors initiative in both the Northern and Southern Mediterranean countries. This EU initiative brings tangible, quantifiable results in reducing CO<sub>2</sub> emissions and is valuable in promoting local democracy, multi-level governance and decentralised cooperation between local and regional authorities. It also promotes the exchange of best practice, knowledge and technical experience in areas such as water use, renewables, energy-efficient technology, smart-street lighting, solar and wind

energy, and many other areas for which local and regional authorities are responsible. Joining this initiative can help cities and regions increase their capacity to provide access to sufficient, sustainable and safe energy-related services to urban and peri-urban populations. It can increase cities' planning capacity in urban design, mobility and energy and help to mobilise the investment and resources.

This is why the CoR has singled out the Covenant of Mayors as a way in which local authorities can deliver sustainable climate and energy policy. The CoR considers it necessary to make greater use of the Covenant as a possible means of implementing the Energy Union as well as EU energy targets for 2030. As part of its efforts, it has called on the other European institutions to increase their support for the Covenant of Mayors and extend it to 2030 in order to recruit new members. The CoR has repeatedly voiced its strong belief in the multi-level approach that has been successfully applied to the Covenant.

This European Committee of the Regions initiative forms part of the European policy developed and led by the European Commission's Directorate-General for Neighbourhood and Enlargement Negotiations (DG NEAR), and has been devised as a follow-up to the launch of the Covenant of Mayors at global level. The signing of the Covenant of Mayors by the Mediterranean region will be an integral part of this global approach and the Union for the Mediterranean can become the most relevant platform for implementing the Covenant of Mayors in the region. So far, only a few local authorities in Southern Mediterranean countries have signed up to the Covenant of Mayors.

The European Committee of the Regions, together with ARLEM, is urging the cities of Morocco, as hosts of the next United Nations climate change negotiations, to lead by example and inspire all local authorities in the Mediterranean region to commit to reducing greenhouse gas emissions and adapt to the harmful effects of climate change. It goes without saying that the European members of ARLEM from the European Committee of the Regions, drawing on the technical expertise provided by the European Commission, are willing to share their experience and know-how with their Moroccan partners regarding best practices.

The conference in Marrakech in conjunction with COP22 will be the right moment to encourage the ARLEM Mediterranean partners to sign up to the Covenant of Mayors, joining the 190 CoR members who have already committed themselves.

The 7,00 signatories of the Covenant represent cities and regions that vary in size from small villages and districts to major metropolitan areas and entire provinces. Within a year following their signature, Covenant signatories commit to implementing Sustainable Climate and Energy Action Plans on their territory, with the aim of cutting CO<sub>2</sub> emissions and adopting an integrated approach to tackling mitigation and adaptation to climate change.



#### MR MARKKU MARKKULA

Mr Markku Markkula was elected President of the European Committee of the Regions (CoR) in February 2015. He is currently a member of the Board of Helsinki Regional Council and Chairman of Espoo City Planning Board, and is a former member of the Finnish Parliament (1995-2003).

He also works at Aalto University as the Advisor to Aalto Presidents, where his focus is on European Union research, innovation and education policy affairs. He has held several important roles related to innovation ecosystems development in Finland, especially in the Helsinki region. For example, he is the initiator and orchestrator of the €20 million research programme "Energising Urban Ecosystems" and has been involved in initiatives related to the Espoo Innovation Garden and Aalto University.

Mr Markkula was born in Kolari (Finland), north of the Arctic Circle in 1950. He is married with one son and two daughters.

## Mobilising climate finance

– by **Mr Jonathan Taylor**, Vice-President of the European Investment Bank

The momentum generated by COP21 in Paris has done much to convince stakeholders that we really can achieve net-zero emissions in the second half of the century. Now, it is up to the international community to deliver on the commitments made. What we need, in particular, is ratification, implementation and increased ambition.

The Paris Agreement is an agreement – an agreement to do more. The nationally determined contributions submitted prior to COP21 remain largely insufficient to meet the target of limiting climate change to well below 2°C. They also need to be translated into specific investments on the ground. COP22 in Marrakech will be the opportunity to shift the climate debate from international politics to tangible local investments, from big ideas and commitments to concrete action plans and implementation. The transition to a low carbon society will transform our economies, creating new industries, business practices, and jobs, and ushering in an era of dynamic sustainable growth.

### Financing that makes a difference

In order to implement the Paris Agreement, it is imperative that we get climate finance right, and while public banks like the European Investment Bank (EIB) play an important role, much of the investment will need to be made by the private sector. Liquidity is not the issue at present. Instead, the challenge lies in identifying investments and lifting barriers to investment by mitigating risks that are currently holding back investors, and in providing innovative products and instruments that encourage and maintain private capital flows to climate-friendly projects.

And that is what the European Investment Bank does.

The Global Energy Efficiency and Renewable Energy Fund (GEEREF) is a recent example of the innovative instruments developed by the EIB. GEEREF is a fund-of-funds providing risk capital to unlock private investments in renewable energy and energy efficiency projects in developing countries.

But the EIB is determined to do more. Earlier this year, the EIB received its accreditation for the Green Climate Fund. This presents important opportunities to work in partnership with other bodies to develop successful and innovative climate finance.

The Renewable Energy Performance Platform is a prime example of the type of the approach we will be taking in future. It is a one-stop shop for private renewable energy developers developed by the EIB, together with UNEP and the UK Department of Energy & Climate Change, as part of the UN Sustainable Energy for All initiative. The aim is to help companies overcome barriers for small and medium-scale renewable energy projects and to support countries across Sub-Saharan Africa in delivering a portfolio of bankable renewable energy projects.

The first projects approved for support are two small hydro-power projects in Kenya where the REPP will provide technical assistance, financial structuring, and access to risk-mitigation instruments and long-term debt. These two small projects are expected to result in 10MW of new generation capacity, providing 8,500 people with improved access to clean energy and mitigating 23,000 tons of CO<sub>2</sub> equivalent. These are typical of the types of projects we aim to support in the future — small in scale and with a high impact on the ground, making a real difference to local communities and people's lives.

### The EIB's commitment to climate action

As the "EU Bank", the European Investment Bank is the world's largest multilateral financier for climate action. Looking at our climate finance activities in 2015 alone, the EIB lent a record of €20.7 billion to climate action projects. This represented 27% of our total lending, clearly exceeding our minimum target of at least 25% of total lending to climate action. In developing countries, this figure will rise to at least 35% by 2020. Overall, we currently expect to finance climate-friendly projects worth US\$100 billion by 2020.

These are ambitious targets and in order to achieve them, the EIB adopted a new Climate Strategy just before the Paris conference. This strategy will help implement the Paris Agreement both within and beyond the EU by focussing on: 1) a pipeline of high-impact projects, financial innovation, and developmental support for the Green Bond market; 2) operations that are more resilient to climate change, plus an increase in adaptation investments and the development of climate risk and vulnerability assessment tools; and 3) further mainstreaming climate change considerations through all the projects we finance.

These are our high-level strategic commitments. As the world prepares for the COP22 in Marrakech later this year, let's take a look at how our commitments translate into projects on the ground in the Mediterranean region.

Financing more climate action means supporting more high-impact and high-quality projects, like the Ouarzazate solar plant in Morocco, the biggest concentrated solar project in the world. The EIB partnered with a number of other institutions including the European Commission, KfW, and the World Bank to co-finance all three phases of the project and provided additional support through expert technical assistance.

### Ouarzazate and Cairo metro: success stories in the making

The impact of the project will be significant. Morocco currently imports over 97% of its energy. By harnessing its abundant sunshine, the country will free itself from volatile fuel costs and will create the potential to export green energy to neighbouring countries. Upon completion, Ouarzazate will provide electricity for more than 1 million people, contributing around 14% of the energy mix in Morocco's electricity supply. But that's not where the story ends. Ouarzazate will also reduce the country's fossil fuel dependence by the equivalent of 2.5 million tons of oil and cut carbon emissions by 760,000 tons per year, leading potentially to a reduction of 17.5 million tons of carbon emissions over 25 years.

Climate change affects all areas of economic activity, and the EIB endeavours to bridge the gap between high-level national determined contributions and concrete actions at a local level. In this way, the EIB ensures that climate finance is available to all actors in the economy. An EIB loan of €50 million to the Republic of Lebanon will help the country reach its target of a 5% minimum reduction of total energy demand and an increase of renewable energy to 12% by 2020. EIB funds are provided via intermediary banks to private companies, including SMEs, in the industrial, commercial and service sectors to help them carry out small-scale energy efficiency and renewable energy projects. This project will contribute to the reduction of carbon emissions and, by stimulating increased energy efficiency and renewable energy investments, will help relieve pressure on conventional sources of energy.

Urban transport is another area that can combine significant positive impacts on the environment, the economy and quality of life. The Egyptian capital Cairo, home to 20 million people, has long suffered from severe traffic congestion and high levels of air-borne pollution. The government of Egypt has made the expansion of the city's metro system into one of its highest priorities. Working in partnership with the AfD, and the EU Neighbourhood Investment Facility, the EIB

co-financed the third phase of Line 3 of the metro project. The metro expansion will contribute to a shift away from the use of cars and buses, decreasing emissions of greenhouse gases and other pollutants, while increasing labour productivity and enhancing quality of life for Cairo's citizens.

Whether it is helping to build the largest solar farm in the world, bringing sustainable transport to a megacity, or helping to implement small-scale energy-efficient and renewable energy projects in Kenya or Lebanon, the "EU Bank" has made support for climate-friendly projects one of its highest priorities. Through a combination of innovative financial instruments and loans, backed by strong international partnerships, the EIB plays a key role in implementing the Paris Agreement in the Mediterranean and around the world.



**MR JONATHAN TAYLOR**

Mr Jonathan Taylor has been Vice-President of the European Investment Bank since January 2013. He is a member of the EIB's Management Committee, oversees its day-to-day business, and takes collective responsibility for the Bank's performance.

Mr Taylor has particular responsibility for the Bank's activities in Greece, Cyprus, Ireland, the United Kingdom and Asia. He also leads on energy, climate action and other environmental lending policies. Internally, he is responsible for a range of control functions, including audit and compliance.

Mr Taylor was previously Director General of Financial Services and Stability at HM Treasury. He has held a range of posts in both the private and public sectors. He is a graduate of the University of Oxford, in Philosophy, Politics and Economics.

# Cooperation between cities: a driving force in the fight against climate change

– by Mr Mohamed Idaomar, Mayor of Tetouan and President of MedCities

The Mediterranean is one of the region's most vulnerable to climate change, which will exacerbate the water and environmental pressures already confronting Mediterranean countries. Desertification, loss of biodiversity and extreme weather are likely to result, as well as an increase in floods and droughts. According to data from the Plan Bleu, a temperature rise from 2 to 3°C is expected in the Mediterranean region by 2050, along with a 35% decrease of summer rainfall on the southern shore and a 25% decrease on the northern shore by the end of the century (Giorgi, 2007).

In this framework, the need for a regional response to address the global challenges of climate change becomes more than evident, and so does the importance of involving all relevant stakeholders, including local governments, citizens and the local stakeholders. However, cooperation between Mediterranean cities to tackle environmental challenges is nothing new. For more than two decades, Mediterranean cities have been cooperating in this area, within the framework of networks and regional initiatives like MedCities.

## Cities at the core of climate change strategy

Thus, exchanges between local authorities are not a recent phenomenon. What is new is that cooperation between cities is now at the core of regional strategies against climate change in the Mediterranean. The MEDCOP21 organised last year in Marseille, and the subsequent Paris conference on climate change, underlined the action and ambition of non-state actors, including cities, and paved the way for participation within their capacities. In a way, Paris established an inclusive framework of close collaboration at the Mediterranean level. This new context forces us to explore innovative formulas of multi-level governance, in order to ensure the complementarity of actions at national, regional and local scale.

In this context, cities can contribute with bottom-up actions, complementing national commitments through local public policies and bringing global challenges closer to citizens. Local governments can introduce interventions on urban practices and provide practical, effective, short-term impact solutions,

as long as they have the financial and technical resources to do so. Moreover, being the closest administration to citizens, local authorities have a very important role to play in order to ensure change in habits through public awareness. Without a behavioural change, future investments, even if absolutely necessary, will not be enough to ensure a change in the model for fighting climate change in the Mediterranean region.

*Cooperation between cities is now at the core of regional strategies against climate change in the Mediterranean.*

## Cooperation between cities to achieve essential objectives

Thus, cities become important partners in this stake, and they must be accountable and mobilised. Mediterranean cities are both compact and complex in terms of uses and activities. Therefore, cooperation among them becomes a basic tool in order to:

- create a Mediterranean model for tackling climate change, on the basis of the common characteristics of Mediterranean cities, while taking into consideration their different realities, needs and starting points. In this regard, sharing experiences and methodologies that are already being implemented elsewhere, such as those of the Covenant of Mayors, becomes necessary;
- promote pilot actions, which contribute to the greater challenges and at the same time play an important role in increasing public and private awareness;
- enrich the solutions, actions and local strategies shared with city stakeholders, especially taking into consideration the need for territorial environmental governance. This will facilitate the engagement of all stakeholders, national and non-state actors in this global challenge. The role of the municipalities should be to articulate the local stakeholders, within the context of 'a new local governance for the 21st century';



- take advantage of occasions such as the MEDCOP and the existence of formal and informal networks where similar exchanges can be produced, to move towards the creation of a regional approach, promote local actions and contribute to national commitments around global initiatives. The MEDCOP Climate proposal for drafting a Territorial Environmental Governance Charter in Tangier goes in this direction and MedCities welcomes the initiative;
- discuss and understand the role of stakeholders towards global challenges, with an acting capacity complementary to national strategies. Actions do not necessarily depend on huge investments.

## Cities' added value

Cities are, by their nature, actors that should be included and mobilised in the fight against climatic change, because:

- Local decision-makers are dynamic, innovative and ambitious.
- A strong ownership of climate change policies by the elected representatives contributes to higher involvement at a local level and has spillover effects to the citizens of the town.
- Cities have direct fields of action for the fight against climate change in the sphere of their competences and beyond. Low carbon public transport and sustainable mobility; energy efficiency and renewable energies in municipal facilities; street lighting; waste management; and education for sustainability are only some examples of municipal actions against climate change.
- Cities, due to their proximity to citizens, are essential actors in raising public awareness, thus contributing to a change of habits in energy consumption and environmental behaviours.
- Cities have the capacities for small-scale innovation and experimentation with low-cost solutions that mobilise local resources. In this sort of innovation, there are opportunities to generate solutions, transferring and capitalising on them at national and regional level.

MedCities network, chaired by the Commune Urbaine de Tétouan and gathering together around about 50 Mediterranean local governments, reaffirms its commitment to accompany its members in the development of public policies against climate change. Doing that, we aim at providing them with all relevant platforms for exchanging good practices and facilitating this framework of Mediterranean collaboration.



### MR MOHAMED IDAOMAR

Mr Mohamed Idaomar is Mayor of Tetouan and President of the MedCities network. He is also a Professor in Genetics and Molecular Biology at the Faculty of Tetouan, Abdelmalek Essaâdi University, and has held the Presidency of the Tetouan Urban Community since 2009. Active in issues of sustainable urban development, he is dedicated to promoting cooperation in the Mediterranean.

## Civil society mobilisation for climate action

– by Prof Michael Scoullas, MIO-ECSDE Chairman

Civil society organisations (CSOs) in the Mediterranean region and particularly those working since the 1970s for the protection of environmental and cultural heritage, and later on promoting sustainable development, were among the first ones to – together with some academics and researchers – raise the issue of climate change. Already in the 1990s, they drew the attention of political leaderships, IGOs, the authorities and the wider public on its direct links with the scarce water resources of the region and with energy, stressing simultaneously the potential of the region to become a renewable energy stronghold.

### The crucial role of CSOs

CSOs have always played a significant interface role between science and the public, by interpreting the results of scientific research and making it understandable. Already preparing for Rio (1992), the Mediterranean Information Office for Environment, Culture and Sustainable Development (MIO-ECSDE), at its first steps together with the European Environmental Bureau, proposed the establishment of a Mediterranean Community of Water and Energy to address the emerging climate change challenge, amongst other things. The proposal was afterwards “reshaped” as a Mediterranean Commission for Sustainable Development (MCSDE), with a significantly amended scope and agenda placed under the Barcelona Convention.

The MCSDE is the only formal body where the Mediterranean CSOs participate on (almost) equal footing with the regional governments. In this body, they have repeatedly called for a more coherent, ambitious, active and region-wide response to the climate challenges, which could be transformed to opportunities, for the region.

### CSOs as innovators against climate change

Mediterranean CSOs and in particular MIO-ECSDE, the most representative, all-inclusive federation of environmental, cultural and Development NGOs in the EuroMed area, are also very active in the Union for the Mediterranean (UfM) and all major regional and many global fora. They reflect the views of their wide membership, together with suggestions and constructive criticism but, most importantly, with innovative and progressive ideas and proposals.

Among them, MIO-ECSDE proposed during the preparation for the Paris COP21 a UfM approach for a maximum total carbon emission of the entire Euro-Mediterranean region (“Med CC Bubble”) to be met by a specific date. It would allow consideration of the varying development patterns and rates of the countries, particularly EU Mediterranean countries and non-EU Member States. This approach could also benefit from the EU Climate Change experience.

Regardless of how ambitious the target may be, such an approach could generate a specific setting, allowing for measurable progress to be monitored and reported. It could also create a Mediterranean “niche” in the global CC scene and an example for other North-South “interface” regions. This proposal was not taken to Paris as MIO-ECSDE suggested, but it is an innovative approach with a great potential for synergies to be taken to Marrakech.

### Important influencers in public policy

MIO-ECSDE and other CSOs and NGOs have been very active in presenting climate agenda issues at the Parliamentary Assembly of the UfM, the League of Arab States (LAS) and through their membership to National Parliaments. The dynamic interaction “upstream” to the negotiators among countries and “downstream” to the national level, with the involvement of the NGOs’ pool of experts, is a very important process during the negotiations. At the same time, feeds through press and public opinion exert “positive” pressure on the negotiators, counter-balancing powerful energy lobbies and encouraging hesitating political leaderships to act. This was the role played by CSOs in Paris, which is needed also in Marrakech. Thousands of civil society figures, many from the Mediterranean and including MIO-ECSDE, travelled to Paris to show their commitment and present their proposals for solutions.

Stakeholders in water resources have launched concerted management initiatives, involving hundreds of public and private actors under the Paris Pact on Water and Climate Change Adaptation, and also on related important issues (such as climate change impact on trans-boundary waters), amongst them the Global Water Partnership-Mediterranean (GWP-Med). Furthermore, some 235 major commitments of the NAZCA platform come from CSOs.



Paris was a significant achievement for multilateral diplomacy. In an increasingly multi-polar world (as we experience it in the Mediterranean), strong cooperative agreements have become far harder to achieve. However, the Paris Agreement shows that it is possible to agree international regimes to manage critical problems, in which CSOs play their own positive role.

## 21st century challenges and opportunities

The current phase is both important and difficult for CSOs. Paris raised many expectations and brought closer many groups of different stakeholders, also marking a turning point in building the low carbon economy. Implementation of INDCs implies that renewables will account for up to 78% of new power generation investment by 2030 in major economies. This is expected to significantly reduce the cost of renewable energy. However, delivering this will require major reforms to electricity markets, business and financing models, for which both governments and societies should be prepared and supportive.

CSOs have a major role to play on this front. The continuation of climate financing in the Paris Agreement beyond \$100bn, promised up to 2020, could provide support to certain countries to deliver important economic and governance reforms. Most importantly, we all know that the commitments made in Paris will not deliver 2°C or 1.5°C immediately. The Agreement commits to a process of increasing emission cuts every five years to meet that goal.

All of this will be difficult to achieve if CSOs do not mobilise public opinion accordingly. It is clear that the most difficult part for all stakeholders, including CSOs, starts now, because in Marrakech the emphasis should be shifted from negotiations to implementation, while many important provisions are not fully in place; and we all know that the "devil is present in the detail".

## Key actions for CSOs in the fight against climate change

Obviously, CSOs should continue their positive pressure in the coming years to:

- Ensure the entry into force of the Paris Agreement
- Support governments and productive sectors to give effect to nationally determined contributions
- Pursue collaborative initiatives as part of an intensified action agenda where CSOs should play an important role
- Strengthen action on mitigation and adaptation before 2020
- Mobilise and use capacity-building support
- Undertake well-coordinated education for SD programmes and awareness campaigns for the implementation of CC agreements and more sustainable lifestyles, also fully utilising the opportunities offered by the Action Plan of the Mediterranean Strategy on ESD, which is expected to be adopted in Cyprus in December 2016.

In conclusion, Mediterranean CSOs, with their combination of idealism, dynamism and commitment for a clean and thriving natural and cultural environment, are important actors and, in some cases, drivers for transforming the big climate challenge into an opportunity by making the Mediterranean region a pioneer in renewable energy production and by using the issue as a key common ground for peace and prosperity in a sustainable development framework.



**PROF MICHAEL J. SCULLOS**

Prof Michael J. Scoullos is an environmental chemist and oceanographer (PhD, University of Liverpool); he is also Professor Emeritus of Environmental Chemistry at the University of Athens (UoA). He is Director of the UNESCO Chair on "Management and Education for Sustainable Development in the Mediterranean" (UoA), and Chairman of the Mediterranean Information Office for Environment, Culture and Sustainable Development (MIO-ECSDE), the biggest NGO federation of the Mediterranean region.

Prof Scoullos has worked for years on a large spectrum of environmental issues, and is Team Leader of the EU programme "Horizon 2020: to Depollute the Mediterranean". He is author of many books and more than 400 scientific articles, and has organised many international conferences.



# Climate change and security in the Mediterranean region

– by **Amb Lamberto Zannier**, OSCE Secretary General

Climate change is one of the major threats to the stability of the Mediterranean region. Its impacts are increasingly visible within and across societies, leaving no country in the region unaffected. The Mediterranean has been particularly vulnerable to climate change for a number of reasons, including the region's unique geomorphology, a rapidly growing population in many parts, different degrees of development, and the overexploitation of natural resources. Climate change will further aggravate these vulnerabilities, increasing the risk of conflict or exacerbating existing ones. This could pose a significant threat to the region's peace and stability. At the same time, climate change cooperation and climate diplomacy can play an important role in contributing to preventing conflict and strengthening trust within and among countries.

## Environment and security

The Organization for Security and Co-operation in Europe (OSCE) has a comprehensive approach to security that embraces politico-military aspects, the economy and the environment, and human rights and fundamental freedoms. This unique concept, together with relevant OSCE political commitments related to the environment, climate change and sustainable development, provide a solid basis to address the security implications of climate change.

*Environmental challenges are a potential source of conflict while environmental cooperation is a tool for conflict prevention and confidence building.*

As the world's largest regional security organisation, the OSCE attaches great importance to the Mediterranean region. The close link between security in Europe and security in the Mediterranean region as a whole was underlined in the Helsinki Final Act, the OSCE's founding document adopted in 1975, and in many other OSCE decisions since then. The OSCE has established a Partnership for Co-operation with

six countries in the Southern Mediterranean region (Algeria, Egypt, Israel, Jordan, Morocco and Tunisia) to share best practices in many areas affecting cross-regional security, including the environment.

The OSCE recognises the close link between the environment and security, considering environmental challenges as a potential source of conflict while looking at environmental cooperation as a tool for conflict prevention and confidence building. Since 2007, the OSCE has been supporting the Valencia Follow-up Process, a multilateral dialogue process on environment and security issues with a focus on the Mediterranean region. It brings together national stakeholders to identify and analyse the links between the environment and security in the region, including climate change impacts, and to recommend concrete actions.

## Climate change and regional stability

In the Mediterranean region, the effects of climate change on water and food security are already being felt. The annual rate of rainfall is expected to continue decreasing, making droughts in the region more intense, more frequent and longer lasting. At the same time, an increasing water demand for agriculture and expanding cities, together with an unreliable supply, put pressure on existing water resources and water governance arrangements. Rising temperatures reduce land areas suitable for agriculture as well as crop yields, and periods of severe drought and crop failures can prompt farmers and pastoralists to move to urban areas. All of this has the potential to create or heighten social tensions, increase the risk of conflict within and between countries, and even lead to large-scale migration, as witnessed to some extent by the current refugee and migration crisis.

Water governance is a key aspect of the OSCE's comprehensive approach to security and environment. The OSCE supports trans-boundary initiatives for sustainable water management and promotes best practices on water governance through projects at regional, national and local levels. The OSCE has

also specialised in water diplomacy as a tool to increase regional security and stability, and the OSCE Security Days event on water and diplomacy held in 2014 offered the opportunity to showcase success stories and trigger active engagement, including with Mediterranean partner countries. A bilateral treaty and a trans-boundary climate change adaptation strategy for the Dniester River basin in Eastern Europe, developed and endorsed by the riparian countries with the facilitation of the OSCE and UNECE, could be a model for similar initiatives in the Mediterranean region.

### Regional organisations: key supporters for action in climate change

As the level of the Mediterranean Sea is rising due to climate change, millions of people living in coastal cities are increasingly at risk of flooding and large-scale losses in land, property, infrastructure and cultural assets. The OSCE continues supporting disaster risk reduction activities through awareness-raising and capacity building, implementing a Ministerial Council Decision on Enhancing Disaster Risk Reduction adopted by the OSCE in 2014 and contributing to the implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030. The OSCE Med Partners for Co-operation could draw inspiration from or even consider implementing on a voluntary basis the provisions of the OSCE decision. With cities more and more on the frontline in facing numerous global challenges, including climate change, I plan to convene an OSCE Security Day for mayors later this year, in spring 2017, to exchange best practices and develop new partnerships to build resilience and address this and other challenges to sustainable development.

As climate change and other regional and global challenges become more complex and intertwined, they pose a growing threat to security, peace and sustainable development that no single country can tackle alone. Regional organisations like the OSCE – under the framework of Chapter VIII of the UN Charter – have a key role to play in supporting countries and societies in addressing these challenges.

Building on the global political momentum following the adoption of the 2015 Paris Agreement, the OSCE will continue to analyse and raise awareness of the security implications of climate change, serving as an inclusive platform for dialogue and practical cooperation; assisting its participating states and partner countries in developing and implementing adaptation strategies, particularly in trans-boundary contexts; and contributing to the implementation of the 2030 Agenda for Sustainable Development.



#### AMB LAMBERTO ZANNIER

Ambassador Lamberto Zannier took up the post of OSCE Secretary General on 1 July 2011. He is an Italian career diplomat. From June 2008 to June 2011, he was UN Special Representative for Kosovo and Head of the United Nations Interim Administration Mission in Kosovo (UNMIK). From 2002 to 2006, he was the Director of the Conflict Prevention Centre of the OSCE.

Previous senior positions include Permanent Representative of Italy to the Executive Council of the Organisation for the Prohibition of Chemical Weapons in The Hague (2000-2002), chairperson of the negotiations on the adaptation of the Treaty on Conventional Armed Forces in Europe (1998-1999), and Head of Disarmament, Arms Control and Cooperative Security at NATO (1991-1997).

# Priorities for an accelerated renewable energies deployment in the Med region: a call for public–private partnership

– by **Mr Roberto Vigotti**, Secretary General RES4MED

The Mediterranean energy context has changed dramatically over the last five years. Southern Mediterranean countries (SMCs) are facing relevant political, economic and social challenges, such as political transition, rising population growth and energy demand, and unemployment. Rising energy demand in particular needs immediate solutions in the SMCs. The increased adoption of renewable energy solutions (RES) can create important development opportunities for growth in all SMCs. RES deployment can help address energy demand, while at the same time contribute to climate change mitigation efforts and lessen energy security concerns among energy import-dependent countries through diversification of supply sources. Moreover, the deployment of RES solutions can contribute to positive socio-economic effects, such as job and enterprise development, if accompanied with the right mix of cross-sectorial policies (e.g. education and training and SME support schemes).

## Public and private sector collaboration for RES

Despite ambitious targets and growth in renewable energy investment, the share of renewable energy in the Southern and Eastern Mediterranean countries' primary energy supply remains small and its adoption uneven. The key driver for advancing RES remains forward-thinking policy decisions and enabling frameworks as market forces alone are unlikely to scale up renewable energy adoption to the required levels, given existing economic and non-economic barriers. In this regard, the public and private sector together have a central role in shaping a supportive business environment for renewable energy.

While governments have a crucial part to play in levelling the playing field for renewables by providing an appropriate market-oriented framework, private sector intervention can be a powerful driver for renewable energy market expansion, and the private sector has been a major source of funding in the renewable energy field.

UfM Members have recognised that private investors' input regarding the key conditions necessary to drive future investment growth in the renewable energy sector will be necessary to close the current investment gap.

The private sector plays a key role in the implementation of national programmes for achieving renewable energy goals when enabling policy frameworks are in place. In this regard, it is suggested that the public and private sectors together contribute to shaping a supportive business environment for renewable energy. Increased involvement of private actors and the enhancement of the alignment between the public and private perspective is needed to drive further investment growth in the renewable energy sector.

## RES4MED key recommendations

For these reasons, RES4MED (Renewable Energy Solutions for the Mediterranean) recommends:

- encouraging the set-up of partnership formulas (e.g. business forum, industry board, etc.) aimed at providing decision-makers with the viewpoint of the private sector, which drives technology, investment and innovation in the renewable energy field;
- stimulating investment opportunities along the entire supply chain through networking activities among market operators, industry associations and other key stakeholders;
- promoting innovative business models and facilitating the implementation of demonstration and sustainable renewable energy projects.

The creation of a business-friendly environment is the prerequisite for RES deployment. In a growing number of Mediterranean countries, industrial policies have been the driver to support local economic growth, enhance local employment and accelerate technology innovation transfer. These efforts should be accompanied by concrete proposals



to improve the investment environment by removing regulatory barriers in the single markets. For these reasons, RES4MED considers it worthwhile:

- to encourage clear, consistent and visible long-term strategies that define the proper incentives for both producers and consumers and provide the necessary guarantees for investors;
- to promote the adoption of instruments aimed at assessing the socio-economic benefits generated by investments in renewable energy projects in terms of job creation and enhancement of local economy competitiveness;
- to promote supporting mechanisms – both institutional and financing – addressing job creation and training programmes.

RES deployment invariably creates a local manufacturing and services industry. This requires the involvement of the private sector along the whole value chain to generate positive employment effects: a market for renewables as well as investment in local manufacturing are both necessary. RES4MED therefore recommends:

- increasing project origination in Southern and Eastern Mediterranean countries by promoting the role of domestic developers and thereby contributing to capacity building;
- endorsing a Euro-Mediterranean partnership aimed at stimulating and enhancing the development of specific activities related to local supply chain and contributing to increase employment rates;
- promoting bidirectional flagship exchange programmes for tertiary education, vocational training, and private sector training to spread international best practice.

The must-haves described above can all be implemented in the short term, if politically supported. Significant amounts of public funding are not required to implement them. However, there is a difference between formally adopted and effectively applied regulations. Transparency and stability are crucial elements in gaining investors' confidence in existing regulations. Given that the power sectors in MENA countries are currently characterised by strong state domination, the long-term commitment of governments to promote RES investments will be crucial.



#### MR ROBERTO VIGOTTI

Mr Roberto Vigotti is the Secretary General of RES4Med, an association promoted by 21 international leading energy stakeholders to facilitate dialogue between the public and private sector to favour the deployment of a broad range of renewable energy solutions and their integration in the electricity market in the Mediterranean.

Mr Vigotti also works with the International Energy Agency (IEA) as Deputy Chair of the Renewable Energy Working Party, and from 1998 until 2010 he was Chairman of the group. He is also Coordinator of the RE Industry Advisory Board, formed by the 34 world-leading companies and associations, to support the IEA strategy and work programme. Mr Vigotti is a member of the international board of ISES.

Born 1946, Mr Vigotti graduated in 1971 from the University of Pisa in electrical engineering. In 1974, he joined Enel, the Italian National Power Board at the Research and Development Division. From 1982, he coordinated the research and demonstration programmes in the field of new renewable energies.

From 1974 to 1980, he was assistant professor of a course in power system analysis in the University of Pisa's Department of Electrical Engineering. From May 2001 until December 2005, he was Senior Strategy Advisor in the Business Development Unit of Enel Green Power and responsible for external relations in the International Department and Business Development of Enel. He was also Senior Advisor in the Electricity Division of Observatoire Méditerranéen de l'Énergie in Paris from 2008-2011.

# Mediterranean Action Plan and the Barcelona Convention: increasing the resilience to climate change of Mediterranean marine and coastal areas

– by **Mr Gaetano Leone**, Coordinator of the United Nations Environment Programme Mediterranean Action Plan

Adaptation to climate change is arguably one of the most critical challenges that mankind is facing. There is scientific consensus, most significantly demonstrated in the recent 5th Assessment Report of the Intergovernmental Panel on Climate Change (IPCC AR5), that unless urgent and drastic action is taken internationally, we risk severe, pervasive and irreversible impacts on human and natural systems, threatening ecosystems and biodiversity, slowing economic growth, eroding food security, harming human health and increasing inequality. Tackling climate change and fostering sustainable development are essentially two sides of the same coin, and forcing distinctions between them would be counterproductive and a missed opportunity, to say the least.

The Mediterranean region is no exception. The Mediterranean basin is very sensitive to global climate change and for years has been defined as a primary climate “hot-spot”<sup>1</sup>, being one of the two most responsive regions to climate change globally. Recently, the IPCC AR5 has considered it as “highly vulnerable to climate change”, also mentioning that it “will suffer multiple stresses and systemic failures due to climate changes”.

## UNEP: Global and regional climate actions

At the global level, the United Nations Environment Programme (UNEP) has almost 30 years of experience working on climate change, dating back to the establishment of the Intergovernmental Panel on Climate Change (IPCC) with the World Meteorological Organization in 1988 and the support of the negotiation of the UN Framework Convention on Climate Change (UNFCCC). Beyond its support for science and legal mechanisms, UNEP has been involved in efforts to both reduce emissions of greenhouse gases and to reduce the risks of and improve society’s resilience to climate change.

At the Mediterranean level, UNEP/MAP is a regional cooperative effort involving the 21 countries bordering the

Mediterranean Sea, as well as the European Union. The contracting parties to the Barcelona Convention and its protocols are determined to meet the challenges of protecting the marine and coastal environment while contributing to sustainable development. These ambitious goals have to be confronted with the additional threats presented by climate change in the region. UNEP/MAP has been supporting actions to assess climate change impacts in the Mediterranean marine and coastal zone, dating back to the publication in 1992 of “Climate change and the Mediterranean: environmental and societal impacts of climatic change and sea level rise in the Mediterranean region”<sup>2</sup>. One of the major observations of its studies has been the critical role that coastal zone planning has to play in climate adaptation policies. Over the years, climate change issues and particularly adaptation to climate change implications, have been reflected in several of the Barcelona Convention’s protocols and legal instruments. Most recently, the revised MSSD 2016–2025 adopted in February 2016 provides a strategic policy framework for securing a sustainable future for the Mediterranean region consistent with Sustainable Development Goals. The MSSD has climate change as one of its six focus areas and identifies adaptation to climate change as one of the main challenges in the region.

The Mediterranean countries need to identify and develop a regional approach to climate change adaptation, with common regional priorities, in order to increase the resilience of the region. This is the main purpose of the “Regional Climate Change Adaptation Framework for the Mediterranean Marine and Coastal Areas” (RCCAF), endorsed by the contracting parties to the Barcelona Convention at COP19 (February 2016). The RCCAF was developed by UNEP/MAP through a consultation and review process that involved the contracting parties and an *ad hoc* technical Advisory Panel involving key regional experts on climate adaptation. Moreover, the RCCAF was developed in close consultation with the Union for the Mediterranean (UfM) and the European Commission (EC).

<sup>1</sup> Giorgi, F. (2006). *Climate change hot-spots*, *Geophys. Res. Lett.*, 33, L08707.

<sup>2</sup> Jeftic, L., Milliman, J., Sestini, G. (Eds.), 1992. *Climatic Change and the Mediterranean: Environmental and Societal Impacts of Climatic Change and Sea-level Rise in the Mediterranean Region*, Vol. 1 (Eds.), Arnold Publ., p673.

## Achieving an ambitious vision

The Framework is guided by the following vision: "By 2025 the Marine and Coastal Areas of the Mediterranean countries and their communities have increased their resilience to the adverse impacts of climate variability and change, in the context of Sustainable Development. This is achieved through common objectives, cooperation, solidarity, equity and participatory governance". The RCCAF's main goal is to set a regional strategic approach to increase the resilience of the Mediterranean marine and coastal natural and socio-economic systems to the impacts of climate change, assisting policymakers and stakeholders at all levels across the Mediterranean in the development and implementation of coherent and effective policies and measures. The Framework identifies four Strategic Objectives:

- Appropriate institutional and policy frameworks, increased awareness and stakeholder engagement, and enhanced capacity building and cooperation;
- Development of best practices (including low-regret measures);
- Access to existing and emerging finance mechanisms, including international and domestic instruments;
- Better informed decision-making through research and scientific cooperation, and availability and use of reliable data, information and tools.

Each Strategic Objective presents several Strategic Directions, which identify relevant priorities for consideration, i.e. challenges and urgencies based on the status of science and inputs received by international experts, institutions, and countries, to tackle the climate change adverse effects in the marine and coastal areas of the Mediterranean.

In conclusion, building environmental and socio-economic resilience against climate change at the regional level is about pro-active, longer term and integrated planning that addresses existing aspects of unsustainable development as drivers of vulnerability and guides the economic development of the region in a more sustainable direction. As climate risks extend well past territorial boundaries, a cross-border collaborative and coordinated regional approach to adaptation is required, promoting synergies with other multilateral environmental agreements. The RCCAF contributes to this approach by assisting policymakers and stakeholders at all levels across the Mediterranean in the development and implementation of coherent and effective policies and measures. The Framework promotes integrated adaptation

approaches and a better understanding of impacts, and identifies the main priorities where action is needed to reduce anthropogenic pressure on coastal and marine areas. UNEP/MAP and the legal instruments provided by the Barcelona Convention are central to this process, in partnership with the actors who support the development of strategies based on the priorities identified by the Framework. These include other relevant instruments and processes in the region such as the EU strategy on adaptation to climate change, and the important work of the UfM Climate Change Expert Group.



**MR GAETANO LEONE**

Mr Gaetano Leone is the Coordinator of the UNEP Mediterranean Action Plan-Barcelona Convention Secretariat, based in Athens, Greece since June 2014. He has strong and diverse experience of political and interorganisational affairs, intergovernmental processes, leadership and management, and partnerships, especially in the field of sustainable development. An Italian national, Mr Leone graduated in political sciences and specialised in international relations. Since 1988 he has covered UN assignments of increasing responsibility in several African and European countries and in the USA. These include work for several UN agencies and programmes (United Nations Development Programme – UNDP, Unicef, UN-Habitat and, currently, United Nations Environment Programme – UNEP), and at the World Bank. From 2010-2014, he was Deputy Secretary of the United Nations Intergovernmental Panel on Climate Change (IPCC).







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