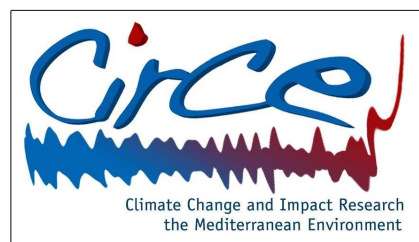




Institute for Sustainable
Development and
International Relations



Circe first stakeholder meeting Paris, 18-19 October 2007

CONTEXT AND OBJECTIVES

Circe¹, an EC-funded 4-year research project, aims at developing for the first time a comprehensive assessment of climate change impacts in the Mediterranean area. Launched in April 2007, its objectives are:

- To predict and to quantify physical impacts of climate change in the Mediterranean area;
- To evaluate the consequences of climate change for the society and the economy of the populations located in the Mediterranean area;
- To develop an integrated approach to understand combined effects of climate change in a context of other drivers of change;
- To identify adaptation strategies in collaboration with regional stakeholders.

The Paris stakeholder meeting has several objectives:

- To contribute communicating and disseminating information about Circe;
- To get early stakeholders feedback about the project activities and objectives;
- To jointly consider the large-scale socio-economic trends involved, potential transitions, opportunities and threats, etc.
- To explore how Circe could make a greater difference in fulfilling stakeholders information needs and supporting decision-making.

METHODOLOGY AND ISSUES DISCUSSED

This meeting was designed as a high-level, focused stakeholder dialogue among a small group of selected participants.

It was articulated around two questions: (1) Business models, sector-wide transitions and socio-economic irreversibilities: is there room for manoeuvre? (2) Succeeding where we failed: can the climate challenge be turned into an opportunity? These questions were examined with regard to three sectors (agriculture, energy and tourism) and two themes (ecosystems protection and urban & regional planning). The objective of this stakeholder meeting was not to have detailed technical discussions on each of these five key topics for Mediterranean sustainable development in the context of climate change: instead, it was designed to consider issues at a more general level and in a long term perspective, examining what is really at stake and how Circe can make a difference. Discussions were therefore driven by questions including:

¹ Climate change and impact research: the Mediterranean environment. www.circeproject.eu

- For each of the selected topics, who are the most relevant stakeholders?
- What opportunities do they truly have to adapt and reduce their vulnerability?
- How do different sectors perceive climate risks as of today, and what role does climate variability / climate change already play in their business?
- What is the nature of adaptation barriers/constraints?
- What do stakeholders need from research in this respect?
- How could Circe assist public authorities in supporting adaptation of private sectors and civil societies?
- What kind of information / knowledge is already available, and what is not?
- How can Circe make a difference in that regard?

Important cross-cutting issues for the Mediterranean such as water management, regional security, international migrations, etc., were dealt with in the discussions along the two days.

MEETING REPORT

INTRODUCTION

L. Tubiana welcomed participants and introduced the stakeholder meeting, its context, objectives and the format of the expected discussions. She insisted that it is crucial to keep in mind, throughout the discussions, that climate change is indeed a major driver of environmental and socio-economic change in the Mediterranean, but only one among a wide range of such drivers (including economic, sectoral, cultural, political, etc.). Several of these may well be far more determining for Mediterranean societies than climate change *per se* – depending on issues, contexts and time frames.

A. Navarra then presented an overview of the CIRCE project. In the same perspective as above, he highlighted that CIRCE's rationale does not take climate impacts as direct consequences of climate changes: the causal relationship is much more complex since a given climate change leads to very contrasted impacts according to existing policies as well as to socio-economic and political responses. **A. Navarra** also stressed the global lack of regional assessments and hence the major contribution CIRCE could represent to IPCC's work.

Agriculture and rural development

L. Tubiana introduced the discussion with a presentation on Agriculture and climate change in Mediterranean countries. She underlined the major economic sector and driver of land use and land management that agriculture still is. It also provides – and depends on – a number of ecological services, with water a central piece of the picture. Agriculture is obviously highly dependent on climate variations.

On the other hand, economic and political relations between the EU and other Mediterranean countries are major drivers of evolutions in agriculture, and will remain so in the future (e.g. agricultural specialization and exports). Those relations are characterised by the high degree of unity and collective organisation among EU member countries and, in contrast, the political and economic dispersion on the Eastern and Southern shores of the basin.

This context makes agriculture a perfect example of the relevance of the CIRCE approach as discussed in introduction, with agriculture probably being the most directly impacted sector with regard to climate change, while also a sector that is strongly dependant from non climatic driving forces such as the EU-Mediterranean regional market of agricultural products.

L. Tubiana then briefly drew attention to potential adaptation strategies, from short to long term endeavours, from collective strategies to specific, *ad hoc* initiatives, and from marginal changes in farm practices to comprehensive re-assessments of the current agricultural development model. She brought to light the importance of insurance mechanisms and incentive policies, of markets frameworks, of demographics and food needs/security. It is essential to start thinking about mainstreaming climate change in the future CAP reform and other European agricultural policies, as they may strongly constrain the scenarios for agriculture in Southern and Eastern Mediterranean countries. Such a process should include an in-depth reflection on production diversification (role of niche markets, food quality, etc.), and on the promises of further intensification in a climate change context.

The conclusion emphasised that the agricultural sector and rural societies around the Mediterranean have extensively demonstrated their adaptation capacities throughout history and especially over the last few decades, where changes in practices and contexts have happened at an unprecedented rate. **L. Tubiana** then invited participants to discuss whether climate change can be seen as an opportunity to redefine the agricultural development model – an evolution that is probably needed for other reasons anyway.

Discussion

A. Iglesias reminded that adaptation to climate change is a political process that reflects a society's economical and political views of the future. Climate change imposes much more variability, both of meteorological and economic nature, on agriculture than on other sectors. It re-emphasizes the need to link agriculture with environmental and natural resources management. In this sense, it is indeed an opportunity to redefine the agricultural development process, although the answer may differ significantly between Europe and S&E countries.

J. Racapé underlined the need for more elaborated assessments of climate change impacts on agriculture as a first step for action: policies will not be changed unless they can be informed by sufficient scientific knowledge. In addition, one should keep in mind that agricultural scenarios in the Mediterranean region are likely to be strongly influenced not only by adaptation policies, but also by future mitigation policies such as carbon sequestration in the soil or the development of bio fuels. In many instances adaptation and mitigation policies may be antagonistic. An example is if mitigation measures lead to grow corn in the South of France, where the water resource is under pressure and wetlands already have difficulties providing the ecosystem services they are supposed to.

For **M. Shechter**, agriculture is not only a Mediterranean but a world market: changes outside the region will also affect regional agriculture. In this context, could adaptation strategies help cope with climate change (*via* changes in practices, irrigation, inputs, etc.)? **M. Shechter** asserted that the impact of adaptation measures will be very small if any. As to whether climate change can be turned into an opportunity for long-needed sector-wide transitions, it has to be reminded that climate change will severely constrain local development.

The discussion with the floor underlined the key role played by water. Around the Mediterranean, 33% of water is used for agricultural purposes – up to 85% in some regions. Such allocation is favoured by current legislations and inappropriate financial mechanisms / incentives. However, it was noted that interactions are highly complex, with e.g. irrigated rice fields feeding migratory birds in Spain. What is more, studies have shown that the water necessary to grow similar agricultural products in the Mediterranean area may vary by a factor 2 or 3 depending of the production region. Therefore where water is a key vulnerability factor, the choice of cultures will have a strong impact on the actual vulnerability of the sector.

What are then the relative roles of market-driven and policy-driven adaptation? Market incentives may create a dynamic for marginal adaptation changes, whereas the more radical changes that may be necessary could be more efficiently induced by policies designed to address structural challenges.

The discussion then shifted to models and their role in policy design. Models do not tell us what to do or what will happen, but what the future could look like under a specific set of assumptions. Discussing policies on this basis could help avoid costly mistakes for the future. Climate change can then be seen as an opportunity in that there are already “stupid policies” and “absurd trends” that are obviously unsustainable, such as the ones captured by the “virtual water” concept². Changing such existing policies and reversing associated trends may be seen as a first, key step to climate change adaptation (although not sufficient). To some extent, adapting to future climate change implies to adapt first to current climate variability, and even more simply to current climate.

Energy

H. Allal introduced the discussion with a presentation on the energy sector in the Mediterranean region. She described the main energy consumption patterns and trends, and the respective importance of different energy sources. A key feature is the stabilization of energy consumption in the Northern Mediterranean, and the rapid growth of energy demand in Southern and Eastern Mediterranean countries. The latter is still – and increasingly – covered mainly by fossil fuels, in a generally low energy efficiency context. On current trends, the region is on course for an unstable, dirty and expensive energy future.

The regional high potential for energy efficiency could be better exploited. Electricity interconnections may also help, and renewable energies would have an important role to play. However, there is no single, one-size-fits-all solution at hand. Rather, a portfolio of technologies is required, including efficiency in buildings, industry and end-use products, energy efficiency in the transport sector, advanced power generation and grid, renewable energies, biomass, combined heat and power, CO₂ capture and storage. Such technological solutions must be tailored according to countries, resources, needs, markets, timing, and infrastructures. Whereas the regional and international context is favourable, many barriers still need to be removed, particularly:

- Institutional and legal barriers: in most of the countries, there is no institutional and regulatory framework specific to renewable energies;
- Competing resources: renewable energies are competing with conventional energies that are relatively abundant, widely deployed and subsidised in several countries of the region. However, renewable energies are most often already competitive in isolated rural areas.

On the whole, a sustainable energy future seems possible with a portfolio of clean and efficient technologies, including renewables. Implementing sustainable scenarios will require a sector-wide transition in the way power is generated, the way homes, offices and factories are built and use energy, and in the technologies used for transport. This task will take time and will require significant investments – but business as usual would undoubtedly cost more in the long run. It will also imply strong cooperation between North and South. Last, adapted institutional and legislative frameworks involving all stakeholders have to be set up.

There is a sense of urgency: such a transition must be carried out before a new generation of inefficient and carbon intensive infrastructure is locked into place, while building is currently exploding in Southern Mediterranean countries.

Discussion

M. Colombier wondered what the visions of a sustainable energy system would be. In climate terms, if we believe in the 2°C target, changes that have to be brought to the energy system

² Southern Mediterranean countries are net exporters of water to Northern Mediterranean if agricultural water inputs are taken into account.

are radical, on all shores of the Mediterranean. Nevertheless, current trends of investment in infrastructures are already locking countries into unsustainable trends.

As far as market is concerned, price is both a driver and a consequence of the energy system, so that it is not necessarily the only neither the best variable to guide the transition towards a sustainable energy future. People should also keep in mind that purchase power is key: in many cases, if people consume little energy, it is simply because they can not afford to consume more. The good news is that significant synergies do exist, and it can be noted that most of the interesting initiatives taken in Mediterranean countries are not climate-driven, but implemented for social reasons.

An important question in the climate change issue remains the future level of vulnerability of energy systems, and how today's policies can influence it. Indeed, what matters is the vulnerability of future – not today's – energy systems to climate change. In a +2°C hypothesis, these future systems will be strongly influenced by emissions mitigation requirements. That is where mitigation and adaptation interact: while for instance more energy-efficient buildings are likely to have reduced vulnerability, the case of renewables (solar, wind, etc.) is not obvious.

S. Quefelec came back to the price issue. If the importance of energy pricing should not be overlooked, it has to be linked to local consumption patterns. In the case of Syria, energy prices were significantly increased in 2002-2003 so as to try and improve energy efficiency. However, it led to a dramatic increase in illegal connections to the electricity network.

R. Roson underlined that energy is at the heart of the economic system. Any shock on the energy system induces shocks all over the economic system. He suggested a distinction between policy-induced changes and non-policy induced changes. The first include changes in energy / carbon prices related to taxes, efficiency standards and other incentives, while the latter cover:

- On the supply side, impacts of water availability on hydroelectricity and cooling of power plants, and impacts of extreme events;
- On the demand side: changes in temperature patterns that affect energy demand. Studies have shown that the relations are non-linear and may vary depending on energy sources.

Refocusing the debate on impacts rather than emission reductions, **R. Roson** then reminded that CIRCE Research Line 10 offers both assessments of climate change impacts on energy supply and demand, and cross-sectoral models.

B. Lebot insisted that the present situation as well as the projections are highly unsustainable: many countries are already suffering from high oil prices, such as Morocco that is importing 97% of its energy. But in a context of highly subsidised prices, making progress on energy efficiency and renewables is a challenge. So far we have not been able to speak as one voice and deliver consistent messages to decision makers to orient policy reforms. There is a need to focus on simple, efficient and effective best practices, be it for wind energy (we know what works and what does not) or for developing low carbon paths in general (e.g. decide that each building should be carbon neutral by 2020).

Participants then drew a parallel with the session on agriculture: are we talking about marginal changes or about major sector-wide transitions, challenging the way we even think about the future? It is useful to highlight that while awareness keeps improving, perspectives on energy are more pessimistic than they were 10 years ago – despite technological progress, new mechanisms set up by the Kyoto Protocol, etc. There is a lot of wishful thinking but CEOs and other decision makers are still to be convinced. Energy companies are not philanthropic, even though we talk about closely controlled markets led mainly by monopolies. Climate change needs to be turned into a business opportunity for adaptation and mitigation efforts to really take off. One risk is to decouple energy security from climate security, which would certainly lead to follow business-as-usual scenarios.

Tourism

J.-P. Céron, who could not attend the workshop, asked the organisers to deliver his presentation on his behalf. The presentation was based on a recent report commissioned to an international team of experts³ by the World Tourism Organization (UNWTO), the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO), in order to provide background information for the Second International Conference on Climate Change and Tourism⁴ (Davos, Switzerland, 1-3 October 2007). Whereas the report equally addresses the impact of tourism on climate change and the impact of climate change on tourism, the presentation focused on the latter, including vulnerability and adaptation issues.

It started by exploring the climate change impacts at tourism destinations, be they mountain regions, coastal zones and islands, or natural and cultural heritage sites. Four different types of impacts were distinguished:

- Direct climatic impacts (temperature and precipitation patterns, extreme events, ...);
- Indirect environmental change impacts (biodiversity loss, sea-level rise, diseases, ...);
- Impacts of mitigation policies on tourist mobility (travel cost and destination choice);
- Indirect societal change impacts (global / regional economic impacts, security, ...).

Identifying the Mediterranean as a tourism vulnerability “hotspot”, it was underlined that all tourism businesses and destinations will need to adapt. If several recent events worldwide have demonstrated that tourism has high adaptive capacity, it varies substantially between sub-sectors, destinations and businesses. We actually have little knowledge of the capacity of current adaptations to cope successfully with future climate change, and there is some evidence that tourism operators are over-estimating their adaptive capacity. In any case, actual “mainstreaming” of adaptation in the tourism sector remains years away, although the process needs to start now.

The response of tourists to the complexity of destination impacts will reshape demand patterns. Understanding the adaptive response of tourists remains a critical knowledge gap. Coming back to the four types of impacts above, possible implications can be framed as follows:

- Changes in climate resources for tourism will alter geographic and seasonal distribution of demand, but should not have major impacts on demand at a global scale.
- Similarly, indirect environmental changes will impact demand at destination-regional level, but not at a global scale;
- Emission reduction policies that are likely to be set in place will increase travel cost and, together with an increased environmental concern, impact long-haul and air travel.
- Indirect societal changes will impact demand at destination-regional level, and reduce demand at global scale if economic growth is adversely affected by climate change.

On the whole, while local/regional level impacts are expected to be significant, no evidence suggests any major impact at a global scale. However, climate, the natural environment, personal safety and travel costs are four primary factors in destination choice, and all of them will be affected by climate change and related mitigation efforts. Tourist perceptions of

³ From the eCLAT (Experts in Climate Change and Tourism) network: <http://www.icis.unimaas.nl/eclat/index.html>

⁴ <http://www.unwto.org/climate/davos/en/davos.php?op=1>

destinations and the way they evolve will play a crucial role in travel decision making. Obviously, information provided by the media will influence such perceptions. This confers them great responsibility in delivering accurate information and avoiding speculation and misinformation. Improved science on impacts requires collaboration from the tourism industry and is in their best interest.

The presentation briefly went through emissions reductions issues, essentially to demonstrate why and to what extent tourism would be affected by mitigation policies. Projections show that CO₂ emissions from tourism could more than double over the next 30 years, with air travel and accommodation the main emission sources.

As a conclusion, it was underlined that scientific evidence is clear: climate change is the greatest challenge to sustainable development and tourism in the 21st century. Tourism must show leadership as an agent for change, and the time for action is now. Actions we take today determine the future of the tourism sector.

Discussion

F. Triandafillidou invited to reconsider the role climate plays in tourists' destination choice. It is only one of the parameters, local cultural patterns for example being an important one as well. If people go to Egypt in summer, why would they not go to Athens in 2020? Development of mass cultural tourism could therefore be an interesting path towards sustainability in tourism. It should also be acknowledged that climate change could lead to the expansion of the tourism season in many places, e.g. the beach season in Greece. Therefore even if one month was to be lost to heat waves in summer, three or more could be gained yearly. It would help reduce saturation risks in Mediterranean coastal destinations at summer tourism peaks, with all the consequences they have (waste and water management, etc.). Last, F. Triandafillidou insisted that several tourism models already exist besides mass beach tourism, like food and wine tourism, golf or conference tourism.

E. Pauchant reminded that the tourism economy is today the first employer, the first trainer and first contributor in terms of tax revenues and in the balance of payment of Mediterranean countries. In 2006, out of a worldwide total of 800 million, the Mediterranean attracted over 274 million international travellers representing more than a third of world tourist arrivals – an increase of 4.5% over 2005. We expect to exceed 300 million of international tourism arrivals in Mediterranean next year. Among them, the share of expenses made by one traveller of less than 800 Euros per person will be probably up to 80%. In other words, the Mediterranean is above all a popular destination, for families and for middle and lower social classes. This so-called "mass tourism" is in reality merely a human need, and a peaceful activity shared by all the free nations, in which the liberty of travelling is being built up. The "right to travel", whatever the social condition is one of the main achievements of democracies, enabling their citizens to become "world citizens" during their holiday sequences.

META shares UNWTO's assertion that "tourism is a victim and a vector of climate change". But travellers themselves are urging tourism professionals to take emerging environmental and ethical obligations into account. This is mainly due to ageing. Today, and for the first time in Man's history, people aged 50 and over are becoming the biggest population in Western countries. These "new old travellers" experienced tourism when they were younger. Their behaviour changes according to the different age groups. The 50 year-olds and the over-50s are looking for more authenticity. When they find an offer which matches what they are looking for, they stay longer, pay more, and often come with a tribe made up of peers, children and grand children. Tourism professionals all around the Mediterranean are really fond of this clientele. They are ready to make the necessary investments to win them: site preservation, authentic architecture and high level of comfort, sound management of water, energy supplies and waste.

Interestingly, studies show that tourists choose first the activity they want to practice while on holidays, and then only the destination (depending on climate of course, but also prices, etc.).

Tourists will therefore, to a large extent, adapt by themselves to climate change, thanks to international competition among destinations offering a given activity.

Participants then reaffirmed the need to acknowledge, first and foremost, that globally the demand for tourism will continue to grow. Two thorny issues must be addressed in this context: (1) there will inevitably be “losers” and “winners” as the reshuffling of destinations takes place; (2) future CC impacts will have to be mainstreamed in investments decisions, in a context where those who bear the risks and those who make the investments are not always the same.

The discussion also highlighted that not only daily weather should be taken into account, but other factors like quantity and quality of water available for tourists' consumption, occurrence and intensity of extreme events and tourists' security, etc. Finally, participants insisted that a short term vision of adaptation may induce adverse and unexpected impacts that would jeopardize tourism sustainability in the long term.

Coastal and terrestrial ecosystems

M. Astrálaga started by reminding the key concerns associated to climate change in the Mediterranean (rising temperatures, rising sea-level, increased extreme events, and changed rain patterns, especially drought). She underlined the value of services provided by various terrestrial and coastal ecosystems around the Mediterranean, and therefore the importance of keeping them healthy and functioning. On the example of Mediterranean endemic fresh water fish, **M. Astrálaga** illustrated that places with the most ecological richness coincide to a large extent with places with the most species at risk. This means among other that for an area to have few threatened species does not mean it is sustainably managed, but rather that it has little biodiversity left.

Turning to water issues, **M. Astrálaga** highlighted a number of countries under heavy water stress, including four “water poor countries” (namely Jordan, Tunisia, Algeria and Egypt) where water availability is less than 1000 m³ / year / person. 30 million Mediterranean citizens have no access to potable water. Agriculture is the main user (63 % of water demand) and in some countries consumption overpasses renovation limits. This is of great concern with the population of the basin expected to grow by 42.5 million between 2000 and 2025, of which 40 million in Southern and Eastern countries.

M. Astrálaga then outlined adaptation paths, which could build on better valuation of ecosystem services, assessing and mapping the vulnerability of protected areas, and identifying and addressing species at greatest risk. Climate change also should incite to get prepared for natural disasters (increased resilience through coastal ecosystem restoration), to improve coral reef resilience, and to promote food security through sound ecosystem management.

She concluded by asserting that in most cases in the Mediterranean, threats on ecosystems are not direct consequences of climate change, but primarily of other heavy trends like water pollution and overexploitation. Climate change only reinforces present negative trends. It calls for better policy implementation (rather than new policies) to succeed where we largely failed so far: managing biodiversity and natural resources in a sustainable way.

Discussion

H. Hoff quoted IPCC's 2007 report which stated that Mediterranean ecosystems were among the most vulnerable of the world with regard to climate change. However, he joined **M. Astrálaga** to stress that climate change is only one of the many threats facing these ecosystems, land use change and resources overexploitation being often more determining. He pointed the concept of ecosystem services, as developed in the Millenium Ecosystem Assessment, as a useful framework to work on adaptation issues, since it highlights interactions between ecosystems and societies.

Regarding water issues, **H. Hoff** took the case of food production in developed countries being partially externalised to developing countries – yet another example of developed countries huge ecological footprint. Coming back to the figures provided by the presentation, he said an integrated water and land management (IWLM) approach would be needed to take into account rain water and therefore rain-fed agriculture. Furthermore, mainstreaming climate change into IWLM would show that carbon sequestration (aforestation and reforestation) and biofuels may not be sound options water-wise.

J. Jalbert agreed that many drivers explain present trends, and that climate change will undoubtedly interact with many of these drivers and trends. What new philosophy then has to be set up for ecosystem management in a context of climate change? The first thing to notice is that the high Mediterranean biodiversity is located in extremely fragmented ecosystems. Coastal ecosystems especially are not able to evolve and adapt any longer because they are too constrained by anthropisation. Four directions should then be further explored:

- Move away from “patchwork approaches” to a more global framework of connectivity. Natura 2000 for instance is not a network, but a patchwork.
- Design protected areas so as to allow ecosystem processes to happen. The combination of fixed boundaries for protected areas and shifts in climate patterns may make existing protected areas irrelevant, although no regional assessment has taken place yet.
- Develop case studies on ecosystem services in the Mediterranean region to recognize, assess and show the benefits. Economic valuation of wetlands for example should show that they are not competitors for water as often heard, but that they provide valuable quantifiable services.
- Mobilise scientific knowledge and data and transform them into relevant, usable information for managers.

C. Stein insisted on the need for pilot adaptation projects in the field, building especially on ecosystem services. Apart from that, he pointed out that there is nothing very new about what climate change brings in the Mediterranean ecosystems debate. For decades WWF has called for a comprehensive and integrated approach to biodiversity management, as opposed to fragmented PA-based policies. Therefore if climate change may indeed be a strategic opportunity to finally do what we should have done before, it does not deeply challenge WWF’s approach of conservation: the main question remains how to effectively mainstream environmental issues into development policies.

Participants then underlined the need to link the climate change discussion with desertification trends in the region, with 75% of Mediterranean countries already suffering from desertification according to Plan Bleu.

CIRCE researchers presented RL 10 as one that can answer some of the questions raised about economic valuation of ecosystems. However, some participants also expressed concerns about “all-economic approaches”, as for them there is much more to ecosystems and biodiversity than just “services”: philosophical and cultural needs, legitimate desires just to have healthy ecosystems around. This is by no means less important than economic utility.

Urban and regional planning

Presenting the Mediterranean as an invaluable natural and cultural heritage, **L. Chabason** used a selection of maps and figures to illustrate the heavy trend of coastal overdevelopment. Indeed, the number of coastal cities with a population of more than 10,000 inhabitants has almost doubled between 1950 and 1995, while the population in coastal cities is expected to grow from about 26 to 90 million between 1950 and 2025. Tourism obviously plays a critical role in many coastal areas’ overdevelopment, with 137 million more international and

domestic tourists by 2025 compared to 2000. Infrastructures have been developed accordingly and nowadays highly constrain coastal ecosystem: most Mediterranean coasts have a heavy traffic road at less than one km from the coastline. Last, aquaculture production has literally boomed since 1990, which has massive implications in terms of coastal land use.

Emphasis was then placed on erosion issues, with the Nile delta as an archetypal case. Projections of sea-level rise indicate that with a +1 meter scenario, up to one third of the delta could be lost to the sea, meaning 4,500 km² of croplands lost and 6.1 million displaced people.

A sustainable coastal management scenario is however possible. It should have as objectives to succeed in decoupling economic development from pressures on the environment, to relieve coastal areas of part of current pressures by revitalizing the hinterlands, and to regulating the tourism system. Conditions for this to open may be framed as follows:

- Developing knowledge;
- Disseminating information;
- Strengthening regional cooperation and coastal areas policies;
- Working at local scale:
 - ✓ Developing participative approaches mobilizing all actors;
 - ✓ Formulating projects for territories based on a common vision and on indicators;
 - ✓ Integrating the different logic of the environment with the development.

Discussion

C. Giannakopoulos highlighted urban areas and air pollution in the context of climate change. Fighting local urban air pollutions will be an important issue of adaptation and public health, and sound urban planning can take us a long way by for example allowing low buildings only in narrow streets, and higher buildings in wider streets. Lots of measures that should be adopted to fight air pollution in cities are actually good for climate change adaptation as well: energy saving, well isolated buildings; expansion of green areas and green roofs in cities, which have an impact on local micro-climate and help mitigate heat waves.

F. Yaker deplored major governance issues in Southern Mediterranean countries. First, ministries of environment as well as environmental NGOs are weak and usually lose the day-to-day battle for environment – although there are some exceptions like the mobilisation of civil society against the Casablanca-Tunis highway project (initially planned to go across a National park in Algeria). Second, there is an obvious lack of political willingness and law enforcement is too poor partly because of corruption. Decision-makers have little environmental awareness, especially at the local level, and the same goes for local populations who often have more urgent livelihoods preoccupations. Funding is also an issue in many cases: whereas e.g. water treatment shortfalls appear to take roots in management problems rather than in a lack of funding, big urban planning issues remain vastly underfinanced. **F. Yaker** therefore urged the European Investment Bank and the European Commission to reorient their assistance in the Maghreb towards more environmental projects, and to strengthen environmental conditionalities in mainstream development projects.

J. Hayward diagnosed a need for quantification tools regarding heating and energy in cities, which would provide local decision makers with a tool to quantify consequences of decisions. As to how private companies like Veolia, involved in water, transport, energy and waste, integrate water and climate forecasts in their strategic planning, he said his company is not ready yet for such long-term planning. However, he underlined Veolia's involvement in the European adaptation Green Book process, which addresses extensively climate change consequences. **J. Hayward** also stressed that many decisions are not in operators' hands, but

in the authorities': operators like Veolia can only offer technical and management solutions and advices.

The ensuing discussion raised the demographic issue – which IPCC does not really address because it is still taboo. Is population increase a “natural plague”? Should / can we explore other futures, with population control scenarios? It was however noted that demographic transition is already happening in the Maghreb, where the number of children per woman has fallen from 7 to 2 over a few decades only. Although this comes partly as a result of the urban housing problems (inducing later marriage and fewer kids per couple), it is expected to lead to a population stabilisation within the next 25 years (not before because of life expectancy increasing). This does not mean of course that there will not be any more population increase in cities, because of rural exodus.

Besides the demographic issue, it was underlined that much will depend on future consumption patterns, on how Mediterranean populations will evolve, on the development path they will take and the ecological footprint it will generate.

CONCLUSION

A. Allansdottir started by remarking the already enormous amount of data and expertise available on climate change and its impacts in the Mediterranean. It will be useful because communication towards the public will demand sound knowledge and a – relatively – unified voice. But adaptation is about societies, not about nature: it is therefore crucial to understand human reasoning, an empirical question if any. We have to remember that people basically just live their own life, which do not coincide with global concerns although climate change has massively been put on the agenda.

The good news is we are not starting from scratch: we can build on 30 years of research on public perception of risk, a field of its own in the social sciences. In that regard the nuclear experience is fascinating, where decision makers intensively tried throughout the seventies and beyond to convince people that nuclear energy was in their best interest. It largely failed and we witnessed a divorce between public opinion and technology – of the same kind we can observe now with Genetically Modified Organisms.

Research tells that different types of risks are perceived in different ways. For instance, people tend to overestimate the risk of dying from a terrorist attack compared to a heart attack. They also weigh more costs than benefits – a crucial information for climate change adaptation.

Climate change has become an enormous issue. The kind of message delivered by Al Gore in his movie is probably important to set the agenda, to raise awareness, but that is where its usefulness ends. The next step needs to be a reasoned social dialogue, with appropriate methodologies to engage people.

H. Marty-Gauquié started with an introduction on FEMIP⁵ and the environment. FEMIP has invested seven billions Euros since September 2002 in nine countries of the Mediterranean, including one billion for environment which catalysed another 2.5 billions. This is still disproportionate with the needs, which can be assessed at about 100 billions Euros of investments over the next 15 years for equipping cities with appropriate infrastructure. Three kinds of tools are available at the EIB for support to environmental management:

- Lawns, available for (1) water management and sanitation (cases of Morocco, Tunisia, Syria, Jordan, etc.); (2) industrial pollution abatement and energy efficiency in the industrial sector; (3) promotion of alternative energies (still minimal, e.g. mill farms); (4) development of collective transport systems.

⁵ Facility for Euro-Mediterranean Investment and Partnership.

- Technical assistance: a well-known example is the METAP⁶ (cofunded by UNDP, the World Bank, the European Commission, etc.).
- Sectoral studies: identifying best practices (e.g. the EIB commissioned a study on maritime pollution to the Blue Plan).

H. Marty-Gauquié then addressed the question of how the EIB could be more helpful. First, the EIB can help further raising awareness and facilitate dialogue with the industry, particularly in FEMIP meetings agenda. Second, the EIB can foster environmental standards dissemination through conditionalities, etc. However, despite being the main financier in the Mediterranean, EIB funding remains minimal compared to private business. Last, the EIB can help bring issues at the ministerial level in all partner countries.

Finally, **H. Marty-Gauquié** explored ways to go beyond the current situation, sharing what could be seen as “dreams” in the present Mediterranean political context. He noticed that the Mediterranean is under-represented in international environmental processes, like the climate negotiations and the Kyoto Protocol implementation. It has no common voice, and its concerns, problems, constraints are largely ignored. Hence there is a need for a better international representation of the Euro-Mediterranean zone. Furthermore, four missing policies were identified, the definition and implementation of which should take place at the regional level:

- Water sharing;
- Sea pollution (like it exists in the Baltic sea);
- Management of fragile coastal areas;
- Implementation of real energy efficiency.

Prerequisites for this dream to become reality are political and economic integration (North / South integration exists to some extent, but not South / South), improved governance, and better financial instruments.

H. Kieken started the stakeholder meeting’s conclusion on behalf of CIRCE researchers. Above all, he noticed that it is not that usual in research projects to organise a stakeholder meeting at such a preliminary stage. This probably has to do with the specificity of CIRCE as underlined by A. Navarra’s introduction. As the project is built around the idea that induced policies should not solely be derived from climate and impacts scenarios, but at the crossroads of climate-driven and non-climate-driven scenarios, this stakeholder meeting was foreseen as a way to explore the non-climatic drivers and issues of present and future development in the Mediterranean region. The discussions we had along these two days confirmed the relevance both of the CIRCE approach and of having such a preliminary stakeholder meeting.

However, these two days also highlighted the complexity of the issues we want to address within the CIRCE project. Depending on cases, the complexity is rather of economic, political, or social nature – often a mix of the three.

One of the difficulties of the exercise may be related to the fact that this discussion has taken place at a very early stage of the project, where little or no scientific knowledge has been produced yet. Most of us have personal experiences of the problems we have been discussing, but still we need to avoid what we call in French “une discussion de café du commerce”. It is a true challenge as none of these issues are disciplinary, and most of us have a strong interest in all of them. This raises the question of what *we*, as a research project, want to achieve. This means both:

⁶ Mediterranean Environmental Technical Assistance Programme.

- What kind of analyses, results, information can we add to the vast amount of scientific production that characterises many of the issues we discussed here (energy, biodiversity, ecosystem management, urban planning, etc.)?
- How can we make sure that CIRCE's contribution is relevant for public and private decision makers?

This meeting gave us some elements to further answer both questions.

1. What kind of approach is needed?

In many instances, existing situations or near-term future perspectives have been qualified as unsustainable. In most cases, the discussion highlighted the fact that climate change scenarios will probably reinforce these trends (whereas there was no intervention about climate trends easing such unsustainable situations). This seems to mean that progressing towards making present trends more sustainable would be a useful first adaptation step. In other cases, especially agriculture, it was suggested that we will not be able to cope with climate change without a radical shift in the development model, which means that there is already not much room for manoeuvre left in such sectors.

Both types of cases suggest we implement a research strategy based on:

- A better understanding of what makes present trends “unsustainable”;
- An analysis of the impact of climate change on these factors of unsustainability to better understand whether there is any room for manoeuvre.

Providing some answers to such challenges will be an important output of the CIRCE project, both in scientific terms and for its “societal relevance”. This leads to the second question mentioned above.

2. How to be relevant?

On several occasions the discussions pointed out that on some issues existing information and knowledge may be sufficient in pure “scientific” terms, but still do not percolate to the private or public decisions. In this context, many participants suggested that climate change may be seen as an opportunity to implement / achieve in these fields what we failed to implement / achieve over the last decades.

Here lies the beginning of an answer – not the only one – to the question of relevance. The long term vision that intrinsically characterises climate change can be used as both a tool and an excuse to reframe some questions and development issues.

A second entry point to answering the question is infrastructures, both man-made (for tourism, energy, transport, cities, etc.), and “natural infrastructures” such as wetlands, and the protected that have been set up to protect them. All are threatened by a potential lack of relevance in the long term if climate patterns move of a couple hundred kilometres e.g. Northward.

Thirdly, it can make sense for CIRCE to focus on the most vulnerable populations, activities and / or ecosystems. Tourism is a good illustration with the idea that global tourism demand may not change, but that destinations will be redistributed – which means there will be “losers and winners”, and “losers” may end up in alarming situations if they are heavily dependant on local tourism patterns, as is the case in several Mediterranean areas. One way of being relevant in such a case is to provide information that can be used to assess the long-term sustainability of current development / investment strategies and plans.

Last, there are crucial opportunities for CIRCE to contribute to European political processes like the development of a European White Paper on adaptation, which is underway. In this case, and given that CIRCE is still in its infancy, it has been decided that the project would not provide an “official” and comprehensive contribution, but rather work as a network of researchers to foster individual contributions based on past experiences and results.

C. Goodess brought to the discussion some precisions about CIRCE case studies, and raised the need to take case studies outputs up to a more general but level without generalising too much. There is a fine balance to find here for case studies to fully play their role. In addition, there is a time frame issue since all case studies may or may not work in the same time frame according to local needs and priorities.

Besides, **C. Goodess** remarked that differences between Northern and Mediterranean countries had become more obvious during the meeting. It reinforces the necessity to fully engage Southern partners within CIRCE and reduce the gap between what we would ideally like to do together and what we have actually started doing.

Having joined **H. Kieken** in the reflection on how CIRCE can best be relevant to decision-making, she concluded on the stakeholder meeting follow-up. Dialogue between CIRCE researchers and stakeholders will of course continue throughout the work of each team, but another milestone will be the next stakeholder meeting to be held in spring 2009. CIRCE will then have results and not only intentions to share, and a steering group will be set up to frame CIRCE's final report – the project's major output.

Closing the meeting, **L. Tubiana** called for regional organisations like Plan Bleu and other Regional Activities Centres of the Mediterranean Action Plan, the Mediterranean Commission on Sustainable Development, IUCN Centre for Mediterranean Cooperation, etc., to help build strong bridges between CIRCE and policy-makers.