

COP21 Objectives - Key figures on climate in the Mediterranean

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Observation #1: Even though Southern and Eastern Mediterranean countries emit little greenhouse gas, they are facing an increasing growth of their carbon footprint

In 1992, the Rio Declaration on Environment and Development, the integral text of which is available [here](#), acknowledged that *"In view of the different contributions to global environmental degradation, States have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command"* (Principle 7). These principles are reiterated in the Kyoto Protocol adopted in 1997 and in force since 2005, when *"not less than 55 Parties to the UNFCCC, incorporating Parties included in Annex I which accounted in 1990 for at least 55 % of the total carbon dioxide emissions of this group, have deposited their instruments of ratification, acceptance, approval or accession."*¹

Rich countries hosting 15% of the world's population are responsible for 64% of CO₂ emissions since 1850, while developing countries host 65% of the world's population and account for 34 % of emissions².

At a more precise scale, the **United States emit twice more CO₂ (in metric tons per inhabitants) than the Euro Zone and 10 times more than Morocco**. The table below shows a growing trend regarding the emissions of Southern and Eastern Mediterranean countries, especially in Lebanon.

Table 1 - Trend of CO₂ emissions (metric tons per inhabitant)

Country	CO2 emissions 2006	CO2 emissions 2011
Euro zone	8.2	7.1
OECD member countries	10.9	9.9
China	4.9	6.7
India	1.3	1.7
United States	18.9	16.7
France	6	5
Greece	8.7	7.5
Algeria	3	3.4
Egypt	2.3	2.6
Lebanon	3.6	4.7
Libya	9.2	6.2
Morocco	1.5	1.7
Tunisia	2.3	2.4
Turkey	3.8	4.4

Source: World Bank, Development indicators

¹http://unfccc.int/portal/francophone/essential_background/kyoto_protocol/status_of_ratification/items/3346.php

²Atlas Climatique de l'Humanité, October 2015, p.13

Observation #2: Environmentally sensitive, the Mediterranean region is particularly vulnerable to climate change

In 2009, Stéphane Hallegatte, Samuel Somot and Hypatie Nassopoulos noticed, from IPCC reports, that the Mediterranean basin is one of the world's regions where models converge the most on the impacts of climate change (IPEMED, 2009). This observation was confirmed by more recent reports identifying the MENA region as a "hot spot" of climate change because of its vulnerability to the consequences of an average increase in temperatures by 2100 (+2°C in the most optimistic scenarios).

And yet, the risks induced by climate change will be even higher since the region is already facing a certain number of structural issues based on the current economic situation, such as water shortage, basic food products shortage, uncontrolled urban sprawl along coasts, diffuse pollution, etc.

Indeed, **SEMCs are characterised by a water stress situation**. North Africa only gathers 0.1% of the world's renewable natural water resources and the Middle East 1.1%, for a total population of 280 million inhabitants, or about 4% of the world's population. The area hosts about 60% of the world's population who does not have much access to water, that is to say having access to 1,000m³ of water/inhabitant/year³. Yet, in 2025 water demand could increase by 25% in the South and in the East, with a particularly high growth in Turkey.

This observation has consequences on the agri-food sector since irrigation accounts for 65% of water demand in the Mediterranean basin. Besides, SEMCs also face structural food insecurity. Even though in forty years farm employment fell by 74%, agriculture still employs nearly 25% of the total population (43% of rural population) in the South and in the East in 2014. The agricultural sector accounts for 16% of the Moroccan GDP in added value, for 10% of the Algerian GDP, 9% of the Tunisian GDP and 24% of the Mauritanian GDP.⁴

*The current tension among the different water uses in the Mediterranean, as well as the challenges summed up above, highlight the importance of reaching an integrated management of water demand as well as a mobilisation of non-conventional resources, anticipating the necessary adaptation to climate change.*⁵

³ *Financing access to water and sanitation in the Mediterranean. Is innovative funding a solution or an illusion?*, Caroline Orjebin-Yousfaoui, IPEMED, 2014

⁴ Cartography "Agriculture and sustainable development" World Bank

⁵ Ibid

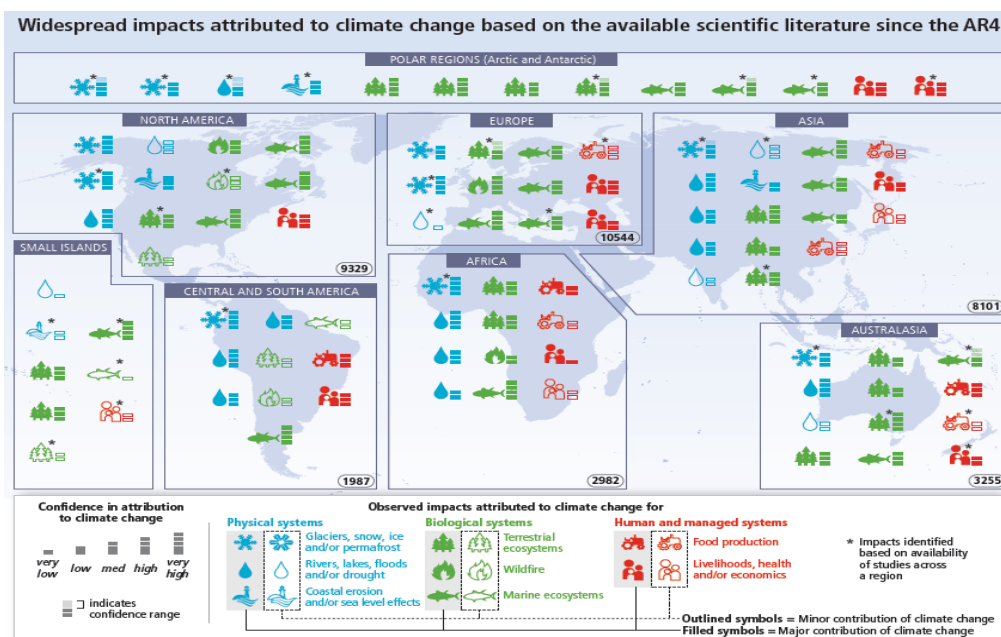
Observation #3: Emergency situation in the Mediterranean region, especially in water and agri-food sectors.

“Climate change will amplify existing risks and create new risks for natural and human systems. Risks are unevenly distributed and are generally greater for disadvantaged people and communities in countries at all levels of development” - Summary for Policymakers, Intergovernmental Panel on Climate Change (IPCC), {2.3}

The 2014 IPCC report⁶ warns us of the observed effects of climate change and especially on oceans global warming, melting ice and rising sea levels. The period ranging from 1983 to 2012 is considered as the warmest in the northern hemisphere.

The impacts anticipated at a global scale will be more significant in the southern hemisphere, and especially in the Mediterranean region - a geographic zone that does not draw the attention of the IPCC.

Graph 1 - Allocated impacts attributed to climate change based on the scientific literature available since the AR4



Source: “Widespread impacts attributed to climate change based on the available scientific literature since the AR4”, Climate Change 2014, Synthesis Report, Summary for Policymakers

⁶ Observed changes in the climate system p2-3, Climate Change 2014, Synthesis Report, Summary for Policymaker

What are the risks linked to the 2°C rise scenario?

The WWF study⁷ is based on the 2031-2060 period with the hypothesis of reaching 2°C more than in the pre-industrial era. The analysis shows that a 2°C global rise of temperatures will lead to a warming ranging between 1 to 3°C in the Mediterranean⁸. A decrease in rainfall is expected in the whole basin, while the North of the Mediterranean rain will be more abundant especially in winter. However, rainfalls will significantly decrease in the summer, both in the North and in the South of the region. Most countries of the MENA region will see their water resources decrease throughout the 21st century⁹. Experts estimate losses superior to 15% for 2°C more, but they could reach 45% if temperature increases by 4°C. The decrease in overall rainfalls is estimated between 4 and 27%.¹⁰ The rise of sea levels will be another effect of climate change. At a global scale, the ICPP plans an increase ranging between 23 and 47 cm by the end of the century.

In the light of these scenarios, the water issue is essential in the Mediterranean region: **Water scarcity was already an issue before the materialisation of the impacts of climate change, but they exacerbate inequalities in the repartition of water resources.** The global increase in temperatures in the 20th century, along with a constant increase in nutrition “needs”, jeopardize food safety. Besides, a decrease in water resources in most subtropical dry regions must be expected, thus intensifying the competition of some sectors for water.

For example, in North Africa, agriculture accounts for nearly 85% of total water resources. It will undergo a decrease in farming productivity in 2050 ranging from -30% to +5% for vegetables and an increase in water needs for spring cultures (from 2 to 4% for corn and from 6 to 10% for apples¹¹).

⁷ *Climate change impacts in the Mediterranean resulting from a 2°C global temperature rise*, WWF

⁸ Mediterranean region located between Europe and Africa. Rectangle going from 30°N to 48°N and from 10°W to 38°E, comprising 22 countries and territories.

⁹ *Adaptation to a Changing Climate in the Arab Countries*, World Bank

¹⁰ *Région méditerranéenne et changement climatique : Une nécessaire anticipation*, [Climate change in the Mediterranean region - A necessary anticipation], IPEMED, 2009

¹¹ Ibid, contribution of Audsley et al; Giannokopoulos et al.

Observation #4: “Climate change in the Mediterranean, a necessary adaptation”

What are the objectives for 2030?

In order to tackle these issues, the main target of the 21st Conference of the Parties (COP21) is to limit the world’s average increase in temperature to 2°C in relation to the pre-industrial era. The main actions recommended by the IPCC to face the “2°C limit” are the following¹²:

- The accumulated amount of CO₂ emissions of human origin does not exceed 800 gigatons of carbon;
- Maintaining the level of atmospheric concentration around 450ppm by the end of the 21st century;
- Multiplying by 3 or 4 the share of low-carbon energies in energy production by 2050;
- Limiting annual global emissions from 30 to 50 billion tons CO₂Eq (CO₂ equivalent) by 2030.

The challenge is to reduce greenhouse gas emissions while adapting to current and future changes in order to reduce societies’ vulnerability. A study by Bindi et Moriondo¹³ highlighted **in particular the decrease in production in the agricultural sector and recommended to adopt adaptation strategies, such as slow-growing crops.**

In view of the COP21, one must underline the mobilisation of Mediterranean countries which have submitted, in most cases, their “*Intended Nationally Determined Contributions*” (INDC)¹⁴. In order to reach the objectives set for 2030, these countries boast significant assets as long as their efforts are supported by international financial and technical assistance. Indeed, the southern shore has a large reservoir of renewable energies and can bring solutions to a low-carbon development model.

The Rio Declaration (1992) asserted the following principle: “*States should cooperate to promote a supportive and open international economic system that would lead to economic growth and sustainable development in all countries, to better address the problems of environmental degradation*”. In this spirit, IPEMED promotes the regionalisation of climate issues at the Mediterranean scale, as well as an integrated approach based on the reinforcement of cooperation between the northern and southern shores of the Mediterranean and on shared sectoral solutions.

¹² IPCC 5th report on climate changes and their future evolutions, Part 3: Mitigation of climate change, 3rd subsection: Strategies to reduce emissions by activity sector, <http://leclimatchange.fr/attenuations-des-changements/>

¹³ Région méditerranéenne et changement climatique : Une nécessaire anticipation, [Climate change in the Mediterranean region - A necessary anticipation], p38, IPEMED

¹⁴ See synthesis by Kelly ROBIN, IPEMED, 11/23/2015