MedECC - 1st scientific assessment report about climate and environmental change in the Mediterranean

Summary for the press – 10 October 2019

As one of the main climate change hotspots in the world, the Mediterranean region needs, more than ever, strong collective action to address the challenge posed by climate and environmental change. Yet, currently, the lack of comprehensive and accurate information is delaying the process. Despite many scientific studies, there is so far no coherent synthesis even if assessments of risk have been undertaken at a regional level. The development of an assessment report that gathers all available knowledge is expected to enable the development and implementation of effective policies based on a holistic understanding of the problems.

Since 2015, a network of over 80 scientists from across the Euro-Med region (Medecc network) has been elaborating a major and ground-breaking report which will be the largest scientific assessment of climate and environmental change at regional level in the Mediterranean.

The Secretariat of the Union for the Mediterranean, in cooperation with Plan Bleu (UNEP/MAP Regional Activity Center), supports the MedECC scientific assessment of climate and environmental change impacts on the Mediterranean basin, following the call by UfM Environment Ministers in 2014 to establish a regional science-based consensus on climate impacts in the Mediterranean. MedECC contributes to the implementation of the Mediterranean Strategy for Sustainable Development (MSSD) 2016-2025 of the MAP Barcelona Convention system.

Preliminary conclusions of the report will be publicly presented on 10 October at the 4th UfM Regional Forum. The final report will be presented in 2020 in a meeting of Environment Ministers from UfM Member States.

Why this report?

- Provide the best scientific information on risks from climate and environmental change for the Mediterranean region: being made up of three continents, the region's areas are often unhelpfully treated as separate entities in official reports.
- Facilitate decision-making and help achieve the Nationally-Determined Contributions under the Paris Agreement, National Adaptation Plans and other policies such as rural development, health, biodiversity and others.
- Foster regional and concerted cooperation in all fields relevant to climate and environmental change.

30 Key findings from the Report:

Climate

1. The Mediterranean basin is one of the most prominent hotspots of climate and environmental change. It is home to 500 million people.
2. The Mediterranean region has warmed approx. 1.5°C since pre-industrial times, 20% faster than the global average.
3. Without additional mitigation measures, regional temperature will increase 2.2°C by 2040, possibly exceeding 3.8°C in some sub-regions by 2100.
4. Rising temperatures imply more significant and longer lasting heat waves. For most of the large cities in the MENA Region, the coldest summer month in the future will be warmer than today's hottest month resulting in extensive periods of extremely and damaging heat.
5. Extreme droughts will become more frequent throughout the Med basin, causing significant impacts on many systems.

Sea Level

6. Sea-level rise, although estimated at lower levels so far, may exceed 1m by 2100, impacting one third of the region's population in coastal areas and jeopardising the livelihoods of at least 37 million people in North Africa alone.
7. By 2050, Mediterranean cities will account for half of the 20 global cities with the highest annual damages from sea level rises. These costs will put strain on the already strained resources of many urban areas in the region.
8. Agricultural productivity in coastal areas is at risk due to loss of inundated land and groundwater salinization from seawater intrusion.

Water resources

9. Freshwater availability is likely to decrease by up to 15% in coming decades, causing severe constraints for agriculture and human use in an area already suffering from water scarcity.
10. Over 250 million people will be considered "water poor" within 20 years. There will likely numerous knock-on effects of this on human livelihoods, including potentially increased conflict potential between peoples and enhancing mass migration.
11. Droughts have occurred with increasing frequency since 1950s. Even if global warming is kept under 2°C, people inhabiting river basins in the Middle East and Near East will be exposed to heavy water scarcity.

Ecosystems

12. The Mediterranean Basin is one of the world's biodiversity hotspots, but many ecosystems are under threat due to climate change, land use change, pollution and overexploitation.
13. Seawater acidification and increased sea temperatures have already caused a loss of 41% of top predators including marine mammals. 34% of fish species are lost due to overfishing.
14. On land, biodiversity changes in the Mediterranean include forest degradation and wetland loss, but also loss of open habitats due to the abandonment of agropastoralism. Agricultural landscapes are losing many species of plants, birds and other animals due to intensification. Climate change and unsustainable land use will exacerbate these trends.

15. Over the last several decades, the extent and intensity of jellyfish outbreaks have been helped by increasing water temperature rises turning them into a pest-like species as they are found in uncommon numbers and disrupt other finely balanced ecosystems.
16. The invasion of tiger mosquitos (*Aedes albopictus*) is enhanced by changes in climate and the environment.
17. More than 700 non-indigenous marine plant and animal species indicate warmer conditions (often arriving from the Red Sea). Some alien predators such as the lion fish can give them advantages over native species, causing regional extinction or loss of habitat.
18. Mega fires due to climate change, caused by hot and dry conditions but also landscape changes have destroyed record areas of forest in recent years, damaging biodiversity and also their capacity to absorb CO_2. The future burnt area could increase by up to 40% just with a 1.5°C warming scenario.
19. Inundation and the intrusion of salt water will affect many delicately balanced coastal wetlands.

Food security

20. Food demand is set to increase due to population growth, and shortages will arise when crops, fish and livestock yields decline. 90% of commercial fish stocks are already overfished in the Mediterranean, with the average maximum body weight of fish expected to shrink by up to 49% by 2050.
21. The quality of several crops will also decline following warming as the phenological cycle becomes shorter (for example grapevines).
22. Regional imbalances in food security will likely increase, associated with higher dependence on food imports.

Human health

23. Human health is also at risk: heat-related illnesses and fatalities are expected to become more frequent, especially in cities due to the urban heat-island effect and for vulnerable population groups such as the elderly, youth and the poorest.
24. Climate change enhances the emergence of vector- and water-borne diseases.
25. Air, soil and water quality deterioration impact human health through respiratory and cardio-vascular diseases as well as reduced access to healthy food.

Human security

26. Coastal risks from flooding and storm damage cause significant risks for infrastructure and human livelihoods.
27. As heatwaves become stronger and more frequent, social support systems for elderly and disfavoured populations become more strained and enhance societal imbalances.
28. Through their impact on agriculture and food security, intensive droughts have played a significant role in the current regional crisis.
29. Southern and eastern Mediterranean countries are generally more vulnerable due to limited socio-economic capacities to adapt to environmental change.
30. Conflicts concerning limited resources (land, water, food etc.) may increase large-scale human migrations.