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Future water-related risks and management options in the Mediterranean basin

Marianela Fader¹, Carlo Giupponi², Selmin Burak³, Hamouda Dakhlaoui^{4,5}, Aristeidis Koutroulis⁶, Manfred A. Lange⁷, María Carmen Llasat⁸, David Pulido-Velazquez⁹, Alberto Sanz-Cobeña¹⁰, Manolis Grillakis¹¹, Rachid Mrabet¹², David Saurí¹³, Robert Savé¹⁴, Mladen Todorovic¹⁵, Yves Tramblay¹⁶, and Veronika Zwirgmaier¹⁷

¹International Centre for Water Resources and Global Change (UNESCO), hosted by the German Federal Institute of Hydrology, Koblenz, Germany (fader@bafg.de)

²Department of Economics, Ca' Foscari University Venice, Italy.

³Institute of Marine Sciences and Management, Istanbul University, Turkey.

⁴LMHE, Ecole Nationale d'Ingénieurs de Tunis, Université Tunis El Manar, Tunisia.

⁵Ecole Nationale d'Architecture et d'Urbanisme, Université de Carthage, Tunisia.

⁶School of Environmental Engineering, Technical university of Crete, Greece.

⁷The Cyprus Institute, Cyprus.

⁸Department of Applied Physics, University of Barcelona, Spain.

⁹Spanish Geological Survey, Spain.

¹⁰Research Center for the Management of Environmental and Agricultural Risks (CEIGRAM), Universidad Politécnica de Madrid, Ciudad Universitaria, Madrid 28040 (Spain). Universidad Politécnica de Madrid, Spain.

¹¹Institute for Mediterranean Studies – Foundation for Research and Technology Hellas, Rethymno, Greece.

¹²Department of Agronomy and Agricultural Machinery, Institut National de la Recherche Agronomique, Morocco.

¹³Departament de Geografia, Universitat Autònoma de Barcelona, Spain.

¹⁴Institute of Agrifood Research and Technology, Spain.

¹⁵Land and Water Management Department, Mediterranean Agronomic Institute of Bari, Italy.

¹⁶HydroSciences Montpellier, Univ. Montpellier, CNRS, IRD, France.

¹⁷Department für Geographie, Ludwig-Maximilians-Universität München, Germany.

The presentation will summarize the main findings of the chapter “Water”[1] of the report “Climate and Environmental Change in the Mediterranean Basin – Current Situation and Risks for the Future”. This report was published in November 2020 and prepared by 190 scientists from 25 countries, who belong to the scientific network “Mediterranean Experts on Climate and Environmental Change”.

Water resources in the Mediterranean are scarce, unevenly distributed and often mismatching human and environmental needs. Approx. 180 million people in the southern and eastern Mediterranean countries suffer from water scarcity (<1000 m³ capita⁻¹ yr⁻¹). The main water use is for agriculture, and more specifically on the southern and eastern rim. Water demand for both tourism and agriculture peak in summer, potentially enhancing conflicts in the future. Municipal water use is particularly constrained in the south and will likely be exacerbated in the future by

demographic and migration phenomena. Northern countries face additional risks in flood prone areas where urban settlements are rapidly increasing.

Climate change, in combination with demographic and socio-economic developments, has mainly negative consequences for the water cycle in the Mediterranean Basin, including reduced runoff and groundwater recharge, increased crop water requirements, increased conflicts among users, and increased risk of overexploitation and degradation. These impacts will be particularly severe for global warming higher than 2°C.

Adequate water supply and demand management offers some options to cope with risks. Technical solutions are available for improving water use efficiency and productivity, and increasing reuse. Seawater desalination is increasingly used as adaptation measure to reduce (potable) water scarcity in dry Mediterranean countries, despite known drawbacks in terms of environmental impacts and energy requirements. Promising solar technologies are under development, potentially reducing emissions and costs. Reuse of wastewater is a solution for agriculture and industrial activities but also recharge of aquifers. Inter-basin transfers may lead to controversies and conflicts. Construction of dams contributes to the reduction of water and energy scarcities, but with trade-offs in terms of social and environmental impacts.

Overall, water demand management, which increases water use efficiency and reduces water losses, is crucial for water governance for a sustainable development. Maintaining Mediterranean diet or coming back to it on the basis of locally produced foods and reducing food wastes may save water but also carbon emissions while having nutritional and health benefits.

[1] **Fader M.**, Giupponi C., Burak S., Dakhlaoui H., Koutroulis A., Lange M.A., Llasat M.C., Pulido-Velazquez D., Sanz-Cobeña A. (2020): Water. In: Climate and Environmental Change in the Mediterranean Basin – Current Situation and Risks for the Future. First Mediterranean Assessment Report [Cramer W, Guiot J, Marini K (eds.)] Union for the Mediterranean, Plan Bleu, UNEP/MAP, Marseille, France, 57pp, in press. Download