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Climate Change in the Eastern Mediterranean: Challenges for Coastal Cities

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The Mediterranean in general and the Eastern Mediterranean region, in particular, are expected to experience climatic changes higher than the anticipated global means. This region is also known for a high degree of urbanization (>60%) and comprises a number of very large- and Megacities (Istanbul, Cairo). The population of the Mediterranean coastal regions grew from 95 million in 1979 to 143 million in 2000 and could reach 174 million by 2025 (UN/MAP/BP/RAC, 2005).

The “urban heat island effect” is a well-known phenomenon, which results in temperatures that lie a few degrees above those of the surrounding rural areas. Thus, global warming will be exacerbated in urban structures and will result in extended heat waves and summer temperatures significantly exceeding current conditions. This fact, in combination with low air qualities in most of the large Mediterranean urban centers, results in increased health risks for city inhabitants.

The population of the Mediterranean region is concentrated near the coasts and most of the larger Mediterranean cities are located close to the sea. Given a significant amount of sea level rise, exceeding 12 cm between 1993 to 2013 (GRID-Arendal), continued climate warming is expected to exacerbate the risks of seawater inundation in coastal cities and coastal regions of the Eastern Mediterranean. In addition, enhanced coastal erosion will reduce the amount of arable land, thus diminishing agricultural production and threatening food security of Eastern Mediterranean countries, Egypt and the Nile Delta being a particularly strong point in case.

Responding to these challenges requires integrated science and a close relationship between policymakers and stakeholders, a need that Future Earth (www.futureearth.org) has been designed to respond to. The Future Earth MENA Regional Center at the Cyprus Institute (FEMRC; http://www.futureearth.org/mena-centre) in Nicosia, Cyprus in cooperation with partners throughout the Eastern Mediterranean and the Middle East and North African Region (MENA Region) are aiming to devise effective mitigation and adaptation strategies that address the above-outlined risks and challenges. Particular emphasis is placed on an attempt to identify strategies that are of a more “generic” nature and are applicable to large urban structures throughout the region.

The present paper will briefly describe the major challenges to be considered and will report on first results of research undertaken by the FEMRC. While addressing the Mediterranean Basin as a whole, an emphasis is placed on the Eastern Mediterranean.