

Session 1:

Identifying climate change impacts on water resources in the SWIM countries

1. Goal

Providing an overview of the regional climate change context and raising the awareness on the potential impacts of climate change on water resources and management

2. Learning Objectives

- Get an understanding of the actual and future climate change trends and dynamics in the SWIM region
- Identify the nature and magnitude of impacts on water resources
- Understand the main drivers of vulnerability in the PCs

3. Key messages

- The Mediterranean and Middle-East region is a global “hotspot” of climate change, meaning that change in climate and hydrology will be amongst the most severe across the globe
- Water and its availability and quality will be the main pressures on, and issues for, societies and the environment under climate change
- Temperature in the region will increase by 2°C as early as 2040 and potentially by 5°C during summer at the end of the century
- Regional decrease in rainfall by 20-30% by 2100, with some countries being more severely impacted (Maghreb)
- Rise in Sea-level is comprised between 20 and 60 cm by 2100 across the region
- Extreme weather events (droughts and floods) will become more frequent and intense with a reduction in return-period of the most damaging events
- Increasing temperature and evapotranspiration combined with reduced and more variable precipitations will diminish the regional water availability (quantity, quality, timing, ...) by at least 10% in 2050 and increase demand especially in the agricultural sector
- Climate change impacts on water resources should not be viewed in isolation of other non-climatic drivers of vulnerability and stress, such as rapid demographic growth, exponential urbanization, change in life styles and living standards, industrialization, development of irrigated agriculture, etc
- The water sector is already faced with critical impediments and challenges that further limit its capacity to adapt to a changing hydrology and render it even more exposed to additional stresses (escalating demands, over-abstraction, pollution and salinization of major water reserves, ecosystem degradation, increasing exposure to droughts and floods, water governance deficits, etc.)
- The combined effect of climate impacts and growing sectoral vulnerabilities will intensify the current water crisis and will worsen the regional gap between

available resources and demands (CC is likely to contribute to 25% of the gap projected in 2050)

- Increasing scarcity and hazardous conditions make even more urgent the need for sector and economy-wide adjustments in water management to reconcile water demands with available supply and prevent mounting water-related risks on people and goods.

4. References

- AFED, 2009. Impact of climate change on Arab countries. <http://www.afedonline.org/afedreport09/Full%20English%20Report.pdf>
- Blue Plan, EIB, Climate Change and Energy in the Mediterranean. 2008. http://www.planbleu.org/publications/changement_clim_energie_med_EN.pdf
- Blue Plan, 2009. *The Mediterranean has to take up three major challenges to ensure sustainable management of its endangered water resources.* http://www.planbleu.org/publications/4p_eau_11_2009Uk.pdf
- Dilay and al. 2005. Natural disaster hotspots: a global risk analysis. <http://sedac.ciesin.columbia.edu/hazards/hotspots/synthesisreport.pdf>
- ENSEMBLES Project. Final Report. 2009. http://ensembles-eu.metoffice.com/docs/Ensembles_final_report_Nov09.pdf
- Giorgi G. 2006. *Climate Change Hotspots.* Geophysical Research Letters, Vol. 33, L08707, 4 PP., <http://www.agu.org/pubs/crossref/2006/2006GL025734.shtml>
- IPCC. 2008. *Technical Paper on Water and Climate Change.* <http://www.ipcc.ch/pdf/technical-papers/climate-change-water-en.pdf>
- IPCC, 2012. Special Report : *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX).* http://www.ipcc-wg2.gov/SREX/images/uploads/SREX-SPMbrochure_FINAL.pdf
- UNFCCC. 2011. *Water and climate change impacts and adaptation strategies.* Technical paper. 33 pages. www.unfccc.int/resource/docs/2011/tp/05.pdf
- World Bank. 2011. *Adaptation to a Changing Climate in the Arab Countries.* 289 pages. http://siteresources.worldbank.org/INTMENA/Resources/Adaptation_to_a_Changing_Climate_in_the_Arab_Countries_Draft_for_comments.pdf