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Climate Change Scenarios and Possible Impacts for the MENA Region: Hazards, Migration and Conflicts?

This presentation addresses the relationship among the environment, security, migration and conflict, especially between global environmental and climate change and its societal outcomes. It starts from the premise that climate change will affect the Mediterranean more than Central and Northern Europe and it argues that the MENA will get much hotter, precipitation will decline, the sea level will rise and affect some coastlines and that weather related hazards will rise: heat waves, droughts, forest fires, flash floods, land slides and the yield of many crops will decline. However, the public awareness, social vulnerability and the coping capacity differ between Europe and the MENA region. None of these new environmental security dangers can be solved militarily; they require a Euro-MENA climate and energy partnership.

The talk is structured in ten parts. After a brief introduction, the second part addresses the twofold links between the environment and conflicts: a) the environment as a victim of conflicts, and b) global environmental change as a potential cause of extreme outcomes where only the latter will be discussed. Since the late 1980's, global environmental change (GEC) and climate change have gradually evolved as new areas of research and policy. GEC is the object of four research programmes: IGBP, IHDP, WCRP and Diversitas that all form the *Earth System Science Partnership* (III). The linkages of the interactions between the environment and humankind are discussed with the PEISOR model that distinguishes: P: *Pressure*, E: *Effect*: environmental stress; I: *Impact*: hazards, SO: *Societal Outcomes*: disaster, migration, crisis, conflict and R: *Response* by the state, society, business using multiple knowledge to enhance coping capacity (IV). It then reviews the topical knowledge of the IPCC AR4 and UNEP Geo 4 (2007) on global climate scenarios and its probable impacts on the MENA Region (V).

The sixth part discusses environmental and social impacts of climate change for the Mediterranean and the MEDA region in the 21st century (VI) while part seven presents global data on the environmental impacts of climate related natural hazards (VII), especially drought and heat waves and the impacts on food security (self-sufficiency in cereals and decline in crop yields). The next part offers data on selected social causes (population growth) and impacts (migration) for the MENA until 2050 when both climate change and desertification will force many people to leave their rural livelihoods (VIII). Part nine argues for a shift from ignoring or downgrading GEC and climate change, to the preparation of national response and coping strategies and to proactive activities that will be in the long-run most cost effective and promising in coping with climate change impacts (IX). The last section offers several policy proposals for the MENA for coping with GEC impacts (X) by drawing conclusions from the European experience in overcoming the vicious cycle of centuries of wars and hate with a perspective of active integration. Based on ongoing regional research activities on renewables in Syria, Jordan and Lebanon the paper suggests setting up a regional research centre on GEC research where scholars from all countries in the region participate.

It concludes with a vision from Beirut for environmental peacemaking in addressing GEC and climate change that both pose different challenges to human and environmental security. Climate change will seriously affect agriculture and rural people in Lebanon and force them to give up their livelihood or to adapt and mitigate. This requires for Lebanon major adaptation measures for agriculture and the energy sector by shifting from fossil fuels to renewables. The paper calls for a shift in the thinking on security from a power-centred military security towards human, environmental, energy, food, water, health and gender security.