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Health risk in the context of climate change and adaptation - Concept and mapping as an integrated approach

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Climate change has been stated as being one of the greatest challenges to global health in the current century. Climate change impacts on human health and the socio-economic and related poverty consequences are however still poorly understood. While epidemiological issues are strongly coupled with environmental and climatic parameters, the social and economic circumstances of populations might be of equal or even greater importance when trying to identify vulnerable populations and design appropriate and well-targeted adaptation measures. The inter-linkage between climate change, human health risk and socio-economic impacts remains an important - but largely outstanding - research field.

We present an overview on how risk is traditionally being conceptualised in the human health domain and reflect critically on integrated approaches as being currently used in the climate change context. The presentation will also review existing approaches, and how they can be integrated towards adaptation tools.

Following this review, an integrated risk concept is being presented, which has been currently adapted under the EC FP7 research project (HEALTHY FUTURES; http://www.healthyfutures.eu/). In this approach, health risk is not only defined through the disease itself (as hazard) but also by the inherent vulnerability of the system, population or region under study. It is in fact the interaction of environment and society that leads to the development of diseases and the subsequent risk of being negatively affected by it. In this conceptual framework vulnerability is being attributed to domains of lack of resilience as well as underlying preconditions determining susceptibilities. To fulfil a holistic picture vulnerability can be associated to social, economic, environmental, institutional, cultural and physical dimensions. The proposed framework also establishes the important nexus to adaptation and how different measures can be related to avoid disease outbreaks, reduce vulnerability in order to lower health risks and disease impacts.

The proposed framework explains the generic concepts of disease hazard, vulnerability, risk and its connections. It can be applied to many different diseases and implemented in different ways. Statistical or dynamic disease models integrating future climate projections can – for example – be combined with forecast models. These can be evaluated against different socio-economic development pathways and feed into decisions support systems with an ultimate aim of designing the most appropriate risk reduction strategies.

The paper will present first preliminary results on the mapping of vulnerability for the Eastern African region, including diseases such as Malaria, Schistosomiasis and Rift Valley Fever and conclude with current research challenges and how they will be addressed within the HEALTHY FUTURES project.