

# Climate Change Impacts on Ecosystem Services and Food Security in Eastern Africa (CHIESA) - Increasing Knowledge, Building Capacity and Developing Adaptation Strategies

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Africa is one of the regions that are likely to be especially affected by climate change because of low adaptive capacity, multiple stresses and wide range of projected climate change impacts [1]. There is a general lack of information on the impacts of climate change in Africa on its ecosystems and on their services, especially with regard to agriculture and food security. This knowledge gap reflects an overall deficit of on-the-ground capacity in Africa to address climate change research and development. Remote sensing is acknowledged to be the primary data source for mapping the extent and condition of ecosystem services [2].

The overall objective of the CHIESA project is to fill critical gaps in knowledge related to climate and land change impacts on ecosystem services and develop adaptation strategies towards it by building the capacity of local research and administrative organisations by research, training and dissemination. The project covers three countries in Eastern Africa, and specifically selected transect sites situated in Jimma (Ethiopia), Taita Hills (Kenya) and Pangani river basin (Tanzania). They are all situated in the Eastern Afrotropical Biodiversity Hotspot (EABH), with exceptionally high levels of biodiversity, endemism, and ecosystem service values, thus critical for both food security and human well-being.

CHIESA tackles the project objectives through 8 work packages (WP): 1) Coordination and management, 2) Land use and biogeophysical information, 3) Valuation of ecosystem services, 4) Assessment of impacts on biodiversity and habitats, 5) Assessment of ecosystem pest management and pollination, 6) Assessment of impacts on water provision, 7) Elaboration of adaptation strategies, and 8) Dissemination of the main results and their application.

WP 2 is coordinated by University of Helsinki, and its main outputs are (1) to acquire and produce key geospatial (topography, hydrology, climate, etc.) and remote sensing (land use/land cover, change detection and modeling future LU/LC scenarios) datasets covering the area of interest, (2) establish a web-GIS platform accessible to all stakeholders for data and metadata sharing and dissemination of results, and (3) capacity building of African partners to acquire, process and analyse geospatial and remote sensing data and to apply these data for modelling.

The baseline data created by WP 2 will serve as inputs for modeling ecosystem services in the other WPs, e.g. pollination and pest management, biodiversity and habitats and water resources. LU/LC maps and alternative future LU/LC scenarios will similarly be used for assessing the value of ecosystems for human well-being, and to evaluate tradeoffs between alternative scenarios of ecosystem management practices.

## References

- [1] IPCC, *Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, IPCC, Geneva, Switzerland, 104 pp, 2007.
- [2] MA (Millennium Ecosystem Assessment) (2005). *Ecosystems and Human Well-being: Current State and Trends, Volume 1. Findings of the Condition and Trends Working Group of the Millennium Ecosystem Assessment*. Island Press, Washington D.C.