Geophysical Research Abstracts
Vol. 15, EGU2013-9457, 2013
EGU General Assembly 2013

Climate change induced risk analysis of Addis Ababa city (Ethiopia)

Fatemeh Jalayer (1), Lise Herslund (2), Gina Cavan (3,4), Andreas Printz (5), Ingo Simonis (6), Edoardo Bucchignani (7), Nathalie Jean-Baptiste (8), Siri Hellevik (9), Rebka Fekade (10), Alemu Nebebe (10), Tekle Woldegerima (10), Liku Workalemahu (10), Abraham Workneh (10), Nebyou Yonas (10), Essete Abebe Bekele (10), Kumelachew Yeshitela (10), and the CLUVA Team

(1) AMRA S.c.a r.l., Napoli – Italy, (2) Danish Centre for Forest, Landscape, and Planning, University of Copenhagen, Denmark, (3) Division of Geography & Environmental Management, Manchester Metropolitan University, UK, (4) School of Environment and Development, The University of Manchester, UK, (5) Technical University of Münich, Germany, (6) Center for Scientific and Industrial Research, South Africa, (7) Euro-Mediterranean Centre for Climate Change, Italy, (8) Helmholtz Centre for Environmental Research, Germany, (9) Norwegian Institute for Urban and Regional Research, Norway, (10) Ethiopian Institute of Architecture, Building Construction and City Development, Ethiopia

CLUVA (CLimate change and Urban Vulnerability in Africa; http://www.cluva.eu/) is a 3 years project, funded by the European Commission in 2010. Its objective is to develop context-centered methods to assess vulnerability and increase knowledge on managing climate related risks and to estimate the impacts of climate changes in the next 40 years at urban scale in Africa. The project downscales IPCC climate projections to evaluate threats to selected African test cities; mainly floods, sea-level rise, droughts, heat waves, desertification. It also evaluates and links: social vulnerability; urban green structures and ecosystem services; urban-rural interfaces; vulnerability of urban built environment and lifelines; and related institutional and governance dimensions of adaptation. CLUVA combines assessment approaches to investigate how cities, communities and households can resist and cope with, as well as recover from climate induced hazards.

This multi-scale and multi-disciplinary qualitative, quantitative and probabilistic approach of CLUVA is currently being applied to selected African test cities (Addis Ababa – Ethiopia; Dar es Salaam – Tanzania; Douala – Cameroun; Ouagadougou – Burkina Faso; St. Louis – Senegal). In particular, the poster will report on the progresses of the Addis Ababa case study.

Addis Ababa, the largest city in Ethiopia, is exposed to heat waves, drought, and, more recently, to flash floods. Due to undulating topography, poor waste management and the absence of sustainable storm water management, Addis Ababa is prone to severe flood events during the rainy seasons. Metropolitan Addis Ababa is crossed by several small watercourses. Torrential rains, very common during the rainy season, cause a sudden rise in the flow of these water courses, inundating and damaging the settlements along their banks and affecting the livelihood of the local population. The combination of climate change and development pressures are expected to exacerbate the current situation.

The CLUVA research team - composed of climate and environmental scientists, engineers, risk management experts, urban planners and social scientists from both European and African institutions - has started to produce research outputs suitable for use in evidence-based planning activities in the case study cities. Indeed, climate change projections at 8 km resolution are ready for regions containing each of the case study cities; a preliminary hazard assessment for floods, drought and heat waves has already been performed, based on historical data; urban morphology and related green structures have been characterized; preliminary findings in social vulnerability have been achieved; a GIS based identification of Urban Residential hotspots to flooding is completed; and the vulnerability of informal settlements to flooding has been evaluated for one of the hotspots identified (Little Akaki case study area). Furthermore, a set of indicators relevant for Addis Ababa has been selected by local stakeholders to identify especially vulnerable, high risk areas and communities and an investigation of existing urban planning and governance systems and its interface with climate risks and vulnerability is ongoing. Evidence from the CLUVA project is being used to develop the next Master Plan for the Addis Ababa metropolitan area.