



## The CLUVA project: Climate-change scenarios and their impact on urban areas in Africa

Angela Di Ruocco (1), Guy Weets (1), Paolo Gasparini (1), Gertrud Jørgensen (2), Sarah Lindley (3), Stephan Pauleit (4), Anwar Vahed (5), Pasquale Schiano (6), Sigrun Kabisch (7), Trond Vedeld (8), Adrien Coly (9), Emmanuel Tonye (10), Hamidou Touré (11), Wilbard Kombe (12), Kumelachew Yeshitela (13), 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) School of Environment and Development, The University of Manchester, UK, (4) Technical University of Munich, Germany, (5) Center for Scientific and Industrial Research, South Africa, (6) Euro-Mediterranean Centre for Climate Change, Italy, (7) Helmholtz Centre for Environmental Research, Germany, (8) Norwegian Institute for Urban and Regional Research, Norway, (9) Gaston Berger University of Saint Louis, Senegal, (10) University of Yaoundé I, Cameroun, (11) University of Ouagadougou, Burkina Faso, (12) Ardhi University, Tanzania, (13) 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 main objective is the estimate of the impacts of climate changes in the next 40 years at urban scale in Africa.

The mission of CLUVA is to develop methods and knowledge to assess risks cascading from climate-changes. It downscale IPCC climate projections to evaluate threats to selected African test cities; mainly floods, sea-level rise, droughts, heat waves and desertification. The project evaluates and links: social vulnerability; vulnerability of in-town ecosystems and urban-rural interfaces; vulnerability of urban built environment and lifelines; and related institutional and governance dimensions of adaptation.

A multi-scale and multi-disciplinary quantitative, probabilistic, modelling is applied. CLUVA brings together climate experts, risk management experts, urban planners and social scientists with their African counterparts in an integrated research effort focusing on the improvement of the capacity of scientific institutions, local councils and civil society to cope with climate change.

The CLUVA approach was set-up in the first year of the project and developed as follows: an ensemble of eight global projections of climate changes is produced for east and west Africa until 2050 considering the new IPCC (International Panel on Climate Changes; <http://www.ipcc.ch/>) scenarios. These are then downscaled to urban level, where territorial modeling is required to compute hazard effects on the vulnerable physical system (urban ecosystems, informal settlements, lifelines such as transportation and sewer networks) as well as on the social context, in defined time frames, and risk analysis is then employed to assess expected consequences. An investigation of the existing urban planning and governance systems and its interface with climate risks is performed.

With the aid of the African partners, the developed approach is currently being applied to selected African case studies: Addis Ababa – Ethiopia; Dar es Salaam - Tanzania, Douala – Cameroun; Ouagadougou – Burkina Faso, St. Louis - Senegal.

The poster will illustrate the CLUVA's framework to assess climate-change-related risks at an urban scale in Africa, and will report on the progresses of selected case studies to demonstrate feasibility of a multi-scale and multi-risk quantitative approach for risk management.