ACC DAR Adapting to Climate Change in Coastal Dar es Salaam

International Workshop

TOWARDS SCENARIOS FOR URBAN ADAPTATION PLANNING
Assessing seawater intrusion under climate and land cover changes in Dar es Salaam, Tanzania

Restricted Workshop Objectives and Program

Rome, 20 April 2013

SAPIENZA UNIVERSITÀ DI ROMA

ARDHI UNIVERSITY TANZANIA UTAFITI ELIMU USHAURI

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Proiect information

Title: Adapating to Climate Change in Coastal Dar es Salaam

Time: 3 years - from Feb 2011 to Jan 2014

Funding entity: European Commission, DEVCO (grant)

Applicant: Sapienza University of Rome

Partner: ARDHI University, Dar es Salaam

Associate: DCC - Dar es Salaam City Council

The project involves around **20 researchers (seniors & juniors)**.

As such, it represents a golden opportunuty for junior training in both partner universities and for establishing relations with other universities.

Project **results** available for downloading at **www.planning4adaptation.eu**

Project OBJECTIVES

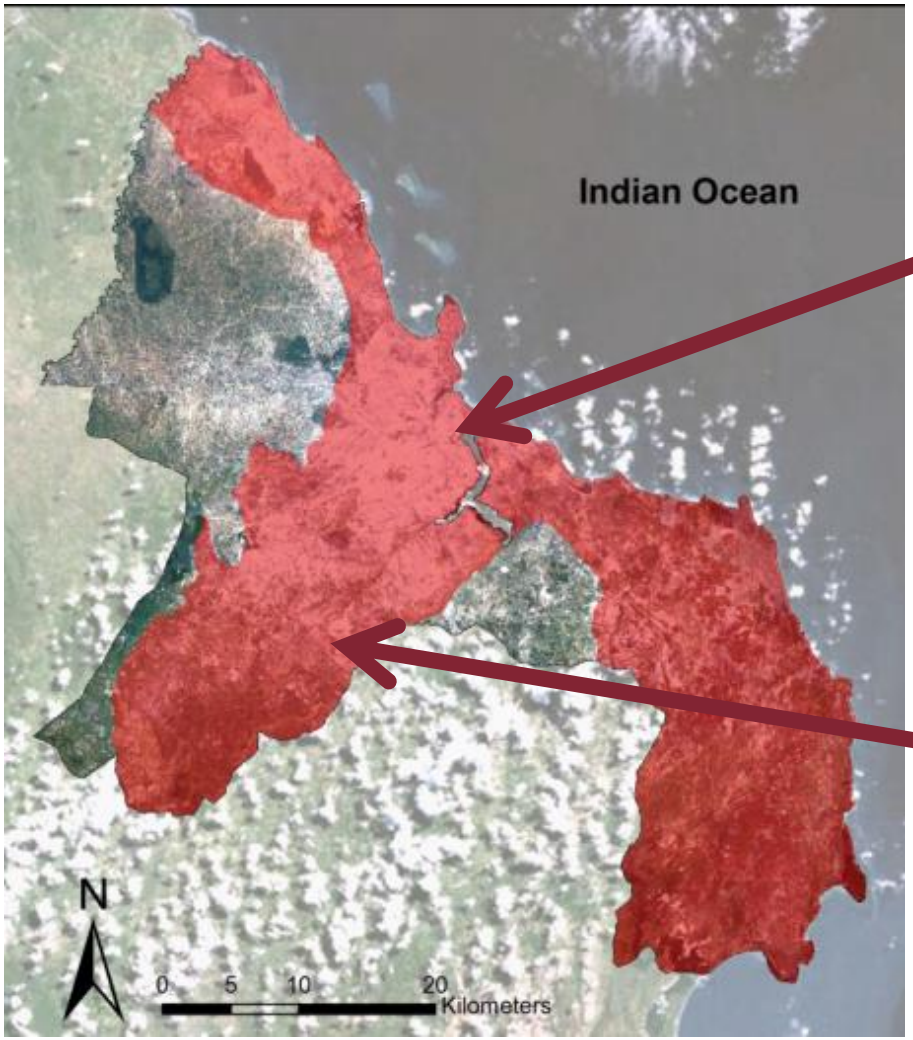
Overall objective:

to contribute to implementation of the National Adaptation Programme of Action of the United Republic of Tanzania (Priority sectors: human settlements, coastal and marine resources).

Specific objective:

to enhance the capacity of Dar LGAs to support peri-urban population in their effort to cope with environmental changes.

Dar es Salaam Coastal Plain



Rationale

- Groundwater salinization is a major concern for households living in peri-urban neighbourhoods within the coastal plain.
- Most of them depend heavily on boreholes for access to water for domestic and productive (mostly agriculture-related) purposes.
- Such dependence is absolute for households living in under-serviced areas with no alternative water sources
- But all peri-urban households are affected to a certain extent, as piped water service is intermittent and water sold by private vendors is expensive.

Rationale

- Notwithstanding the social importance of groundwater availability, the studies on seawater intrusion in the coastal shallow aquifer are scarce and none have developed future scenarios under climatic and non-climatic changes, to our knowledge.
- The ACC DAR has hence taken on the duty of contributing to closing this knowledge gap and of bringing the seawater intrusion phenomenon to the attention of Local Authorities as a major issue for adaptation planning.

Rationale

Accordingly, the Project team has undertaken several research studies to

- assessing changes in past recharge and pumping rates, and develop a hydrogeological balance
- exploring the complex interplay between urban sprawl and climate change adaptation, since land cover change might be the most important non-climatic factor that influences future groundwater availability
- downscaling global climate change predictions to the regional level

Workshop Objectives; restricted session (20/04)

- to draw together a small group of academics from Italy and Tanzania engaged in the development of scenarios of groundwater availability in coastal peri-urban areas under conditions of continuous urban sprawl and climate change.

We will discuss and evaluate the results from the studies conducted in Dar es Salaam, Tanzania, as well as explore options for mainstreaming seawater intrusion concerns into existing local plans and programmes in the fields of urban development and environmental management.

Workshop Objectives: public event (22/04)

- to introduce the Project to a broader audience of academics and practitioners, thus raising awareness of urban issues related to local planning for climate change adaptation.

The seawater intrusion phenomenon will provide insights into natural-human interplay in coastal areas, thus facilitating the understanding of land cover/use as a factor that will exacerbate climate change impacts, especially for people living in peri-urban fringes.

Participants

Invitees:

- Ibrahimu C. MJEMAH, Sokoine University of Agricolture, Tanzania
- Elifuraha MTALO, Bagamoyo University, Tanzania
- Maria Dolores FIDELIBUS, Bari Polytechnic, Italy
- Enrico FONTANARI, IUAV, Italy
- Maurizio TIEPOLO, Turin Polytechnic, Italy
- Sarah BRACCIO, Turin Polytechnic, Italy
- Madhav GIRI, Turin Polytechnic, Italy

ARDHI University team:

- Gabriel KASSENGA, local coordinator
- Jonas G. BALENGAYABO, junior researcher
- Fredrick A. LIGATE, junior researcher
- Edward F. RUHINDA, junior researcher

Dar City Council:

- Rachel KADUMA, GIS unit

Participants

SAPIENZA University team:

- Silvia MACCHI, project coordinator
- Laura FANTINI, project manager
- Liana RICCI, junior researcher
- Alessandra Nguyen Xuan, junior researcher

- Giuseppe SAPPA, senior researcher
- Maria Teresa COVIELLO, junior researcher
- Giuseppe FALDI, PhD student
- Stefania VITALE, junior researcher

- Michele MUNAFO', senior researcher (ISPRA)
- Luca CONGEDO, junior researcher

- Francesco CIOFFI, senior researcher
- Alessandro MONTI, junior researcher

20/04 Program – all day

10.00	Session 1. Presentation of results from the Activity 2.2 (Exploring Climate Change vulnerability scenarios to seawater intrusion) Chair: Elifuraha MTALO, Bagamoyo University
11.20	Coffee Break
11.50	Session 2. Presentation of results from the Activity 2.1 (Monitoring Land Cover changes in peri-urban settlements) Chair: Rachel KADUMA, Dar City Council
12.30	Session 3. Presentation of a methodology for the regional downscaling of Climate Change global predictions. Chair: Giuseppe SAPPA, Sapienza University
13.00	Lunch
14.30	Working groups and development of a list of recommendations
16.20	Coffee Break
16.50	Presentation of Results, Discussion and Adoption of Recommendations

20/04 Program – session 1

10.00	Session 1. Presentation of results from the Activity 2.2 (Exploring Climate Change vulnerability scenarios to seawater intrusion) Chair: Gabriel KASSENGA, Ardhi University
	ANALYSIS OF THE SENSITIVITY TO SEAWATER INTRUSION OF DAR ES SALAAM'S COASTAL AQUIFER WITH REGARD TO CLIMATE CHANGE Authors: MARIA TERESA COVIELLO, GIUSEPPE FALDI, MATTEO ROSSI, GIUSEPPE SAPPA, ANTONIO TROTTA, STEFANIA VITALE Speaker: GIUSEPPE SAPPA, Sapienza University (20 minutes)
	MONITORING SEAWATER INTRUSION IN THE COASTAL AQUIFER OF DAR ES SALAAM Authors: Gabriel KASSENGA, Stephen MBULIGWE Speaker: Stephen MBULIGWE, Ardhi University (20 minutes)
	Discussant: Maria Dolores FIDELIBUS, Bari Polytechnic (20 minutes) Questions (20 minutes)
11.20	Coffee Break

20/04 Program – session 2 and 3

11.50	Session 2. Presentation of results from the Activity 2.1 (Monitoring Land Cover changes in peri-urban settlements) Chair: Rachel KADUMA, Dar City Council
	INVESTIGATING THE RELATIONSHIP BETWEEN LAND COVER AND VULNERABILITY TO CLIMATE CHANGE IN DAR ES SALAAM Authors: Luca CONGEDO, Michele MUNAFO', Silvia MACCHI Speaker: Luca CONGEDO, Sapienza University (20 minutes)
	Discussant: Elifuraha MTALO, Bagamoyo University (10 minutes) Questions (10 minutes)
12.30	Session 3. Presentation of a methodology for the regional downscaling of Climate Change global predictions. Chair: Giuseppe SAPPA, Sapienza University
	STOCHASTIC DOWNSCALING OF DAILY RAINFALL: HOMOGENEOUS & NONHOMOGENEOUS HIDDEN MARKOV MODEL FOR PROJECTING HYDRO-CLIMATE CHANGES IN TANZANIA Authors: Francesco CIOFFI, Alessandro MONTI Speaker: Francesco CIOFFI, Sapienza University (20 minutes)
	Questions (10 minutes)
13.00	Lunch

20/04 Program – working group

14.30	Working groups and development of a list of recommendations
	WORKING METHOD, FORMATION OF GROUPS AND IDENTIFICATION OF RAPPORTEURS Liana Ricci, Sapienza University (20 minutes)
	WORKING GROUP SESSIONS (90 minutes)
16.20	Coffee Break
16.50	PRESENTATION OF RESULTS FROM WORKING GROUPS by the Rapporteurs (60 minutes)
	DISCUSSION AND ADOPTION OF RECOMMENDATIONS Silvia MACCHI, Sapienza University (30 minutes)