



# ACC DAR Adapting to Climate Change in Coastal Dar es Salaam



## MAINSTREAMING ADAPTATION INTO EXISTING URBAN DEVELOPMENT AND ENVIRONMENTAL MANAGEMENT PLANS



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## Outline

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## Introduction

- The ACC Dar project aims to improve the effectiveness of municipal council's initiatives in Dar es Salaam for supporting the efforts of coastal peri-urban dwellers depending on natural resources to adapt to climate change;
- This paper provides the final results of the project activities conducted to develop and test a methodology for the participatory design of LGAs' adaptation initiatives;
- The aim is to contribute to effective integration of CC concerns and related adaptation objectives into the plans and programs which currently shape the daily responsibilities at Dar es Salaam's local government departments;
- The design methodology was developed in parallel to two other project activities that provided essential indications for formulating amendments to existing planning provisions.



## Objectives

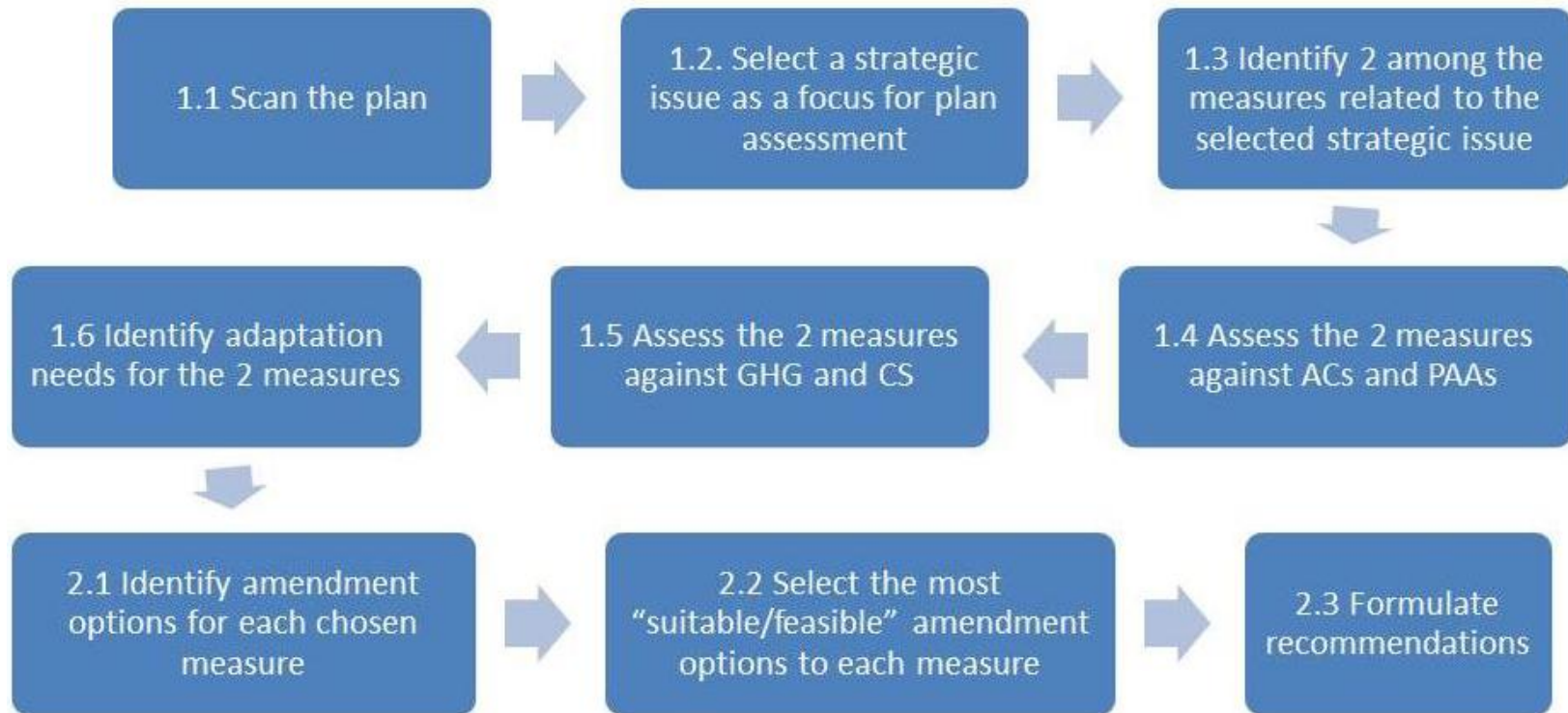
- **General Objective :**
  - The main objective of this working paper is to contribute in the advancement of methods for climate change mainstreaming into urban development environmental management plans at the local level
- **Specific Objectives:**
  - To analyse various plans that are addressing climate change adaptation in the peri-urban coastal areas, and
  - To formulate amendment options for a number of planning measure or provisions for better addressing adaptation needs in the identified plans.

## Why this paper?

- Climate change has had a lot of negative impacts in the coastal areas of Dar es Salaam;
- Addressing climate change induced impacts need multifaceted approaches;
- Most of the approaches will only be applicable in a situation that there are policies, strategies, programs and plans that are supportive;
- Mainstreaming of such adaptation in the plans and budgeting systems requires identification of the existing gaps in these important documents;
- Identification of these gaps/needs is seen as an entry point to mainstream the adaptation as it has highlighted the negative effects if the adaptation are not included in these plans and also if the same are not budgeted for.



# Methodology



## Plans and strategies assessed

- **At the municipal level:**
  - (i) Temeke Medium Term Expenditure Framework for years 2010/2011 - 2012/2013, and
  - (ii) Temeke Municipal Council's Strategic Plan for Years 2010/2011 - 2012/2013.
  
- **At the city level:**
  - (iii) Strategic Water Supply Plan for Dar es Salaam, and
  - (iv) the new Dar es Salaam Master Plan.



## *Measures under Temeke Medium Term Expenditure Framework for years 2010/2011 - 2012/2013*

- **Ensuring forest conservation is increased from 2100 ha to 25,000 ha by 2013 (through tree and flower planting and drilling and drilling of one water well)**
  - Negative impacts
    - *over pumping of groundwater hence the possibility of salt water intrusion is increased*
    - *increased rate of migration to the area where water is more available*
  - Possible amendments
    - *Ensure monitoring of groundwater table levels*
    - *taping benefits from conservation measures as part of income generating activities*
    - *Need for formalization of the informal properties*



***Measures under Temeke Medium Term Expenditure Framework  
for years 2010/2011 - 2012/2013***

- ***Construction of demonstration toilets and sanitation facilities in 11 wards by June 2013***
  - Negative impacts
    - increased salinization levels due to contamination of groundwater
  - Possible amendments
    - Proper treating of the contents of the pit latrines to reduce the salinization of the ground water

## *Measures under Temeke Municipal Council's Strategic Plan for Years 2010/2011 - 2012/2013*

- ***Protection of environment and reserve areas in 4 wards enhanced by 2013***
  - Negative impacts
    - Increasing costs for households to access water
    - Reduced capability of households to access water at all, or at times
  - Possible amendments
    - set-up of a water monitoring system for natural sources located within the reserved areas
    - Establishing a functional local water committee to be delegated to guarantee equitable access to and distribution from natural water sources
    - provide for enabling residents to access a variety of water sources at least equal to the current one after the intervention



## *Measures under Temeke Municipal Council's Strategic Plan for Years 2010/2011 - 2012/2013*

- **Total of 1,500,000 trees in 175 mitaa planted by 2013**
  - Negative impacts
    - Indigenous species and natural habitats may be affected by inappropriate selection of the species of trees to be planted and choice of planting locations;
    - Measure may result in propping up timber harvesting especially in areas where local economy depends on natural resources;
    - More charcoal production and thus making other options for income generation less attractive.
  - Possible amendments
    - Tree species most suitable to present and future groundwater availability shall be identified as a priority for tree nurseries
    - Complement the measure with provisions for awareness raising among residents of the multiple value of trees
    - Enhancing resident's understanding of benefits associated with the use of low-carbon energy sources

## *Measures under Strategic Water Supply Plan for Dar es Salaam*

- **Improve surface water sources from 276,000m<sup>3</sup>/d to 576,000m<sup>3</sup>/d ultimate capacity by 2032**
  - Negative impacts
    - reducing groundwater recharge the river basin.
    - reduction of the level of ground water and hence result into saltwater intrusion.
    - Reduction in the river discharge as a result of excessive abstraction may negatively affect ecology integrity downstream.
    - increased cost of access to water by residents particularly to those who depend on free water sources; and
    - demolishing some of the business premises to allow installation of the main water pipeline and also to secure areas for constructing water reservoirs.
  - Possible amendments
    - use the revenue collected through the sales of water to various consumers downstream are used to invest in the conservation of upper catchment
    - establish environmental flow of the river for ensuring that abstraction for water supply does not affect aquatic systems downstream.
    - ensure that those who are relocated are compensated properly and timely.



## *Measures under Strategic Water Supply Plan for Dar es Salaam*

- ***Installation of 20 deep wells with a minimum depth of 600 m in Kimbiji and Mpera***
  - Negative impacts
    - over pumping of ground water to attain the required capacity per day, with potential consequences of salinization and local land subsidence.
    - increased costs of ground water treatment due to salinization.
  - Possible amendments
    - ensuring that there is a limited inflow/immigration of people to this area to reduce environmental degradation and pollution.
    - improving the monitoring of groundwater.

## *Measures under New Dar es Salaam Master Plan*

- **Article 6 – Areas in the Consolidation process**

- Negative impacts

- The risk of deterioration of the shallow aquifer in areas where building expansion and densification will not be accompanied with development of adequate water supply and sanitation systems
- increase in water costs for the population living in areas under consolidation process as the use of boreholes will be limited
- risk to some of the economic activities on which households currently depend leading to reduced opportunities for livelihood diversification

- Possible amendments

- installation of a monitoring system for groundwater contamination and level is required to inform decision-making about new development or densification
- land use plans secure the conservation of vegetated space to limit soil sealing, and provide for the protection of river banks which is crucial for controlling pollution caused by runoff
- setting up a local committee responsible for conservation of green spaces, the protection and maintenance of water supply and sanitation infrastructure



## *Measures under New Dar es Salaam Master Plan*

- **Article 18 – Peri-urban areas / urban agriculture zone**
  - Negative impacts
    - Contamination of water source and soil pollution due to increased use of fertilizers and pesticides
    - growing demand of water for farming uses that will raise the rate of water withdrawal from the shallow aquifer
  - Possible amendments
    - require the existence of adequate water supply and sanitation infrastructure and solid waste management as a condition for issuing any new building permit in existing settlements
    - to include the development of pilot projects on sustainable cultivation techniques, including organic (chemical free) farming and water saving techniques (i.e. micro-irrigation and net-houses)



## Conclusions and Recommendations

### • *Conclusions*

- UDEM plans and strategies have addressed various climate change adaptation issues to a certain extent ;
- Implementation of these measures have both positive and negative impacts;
- The methodology proposed is definitely valid although it would require some revision in order to simplify the assessment process;
- The formulation of amendment options is largely based on the experience and intuition of persons involved., and
- The results would be more balanced if developed through a focus groups gathering experts from different disciplines, stakeholders and policy makers





## Conclusions and Recommendations

### • **Recommendations**

- ***For the enhancement of the forest conservation the following amendment to the existing measures are recommended:***
  - Proper selection of tree species suitable to present and future groundwater availability ;
  - Awareness raising among residents of the multiple value of trees ;
  - Promote among residents the use of low GHG emission fuel for cooking as an alternative to charcoal; and
  - Proper conservation of water catchment upstream
- ***For a sustainable exploitation of water sources the following are recommended as amendments to the existing measures:***
  - Setting-up of a water level monitoring system ;
  - Establishment of water user associations ; and
  - Awareness raising among residents about groundwater degradation

## Conclusions and Recommendations

- **Recommendations**
  - ***Under the consolidation process proposed in the New Dar es Salaam Master plan the following are recommended:***
    - no building permit should be issued without a prior assessment of its impact on the shallow aquifer ;
    - Ensure the existence of prescribed that land use plans secure the conservation of vegetated spaces ; and
    - Involvement of residents in planning decision-making .
  - ***For a transition towards sustainable farming in urban and peri-urban areas***
    - Pilot projects shall be developed for innovating farming practices; and
    - Awareness raising on health and economic risks associated with uncontrolled discharge or improper reuse of wastewater





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THANK YOU



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