



# THE USE OF BACKCASTING SCENARIO FOR PLANNING ADAPTATION TO CLIMATE CHANGE IN SUB-SAHARAN URBAN AREAS

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# CLIMATE CHANGE ADAPTATION

## Adaptation

“Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities” (IPCC, 2001: 21)



## Assumption

Planning for Climate Change (CC) Adaptation in urban context should be aimed :

*not exclusively at..*

→ reducing the direct and indirect potential impacts of CC

*but also at ..*

→ identifying transformative societal projects oriented to sustainability



# FUTURE UNCERTAINTY IN ADAPTATION PLANNING

## Background

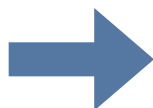
*How can adaptation planning face the issue of future uncertainty?*

Uncertainty closely related to:

- Increasing levels of future complexity and dynamicity of socio-economic and environmental systems, which are intrinsically unpredictable
- Difficulty in predicting climate effects at the regional/local level

In sub-Saharan cities:

- Uncertainty in future climatic conditions at the local level and shortage of climatic and environmental historical data
- Lack of planning instruments (or inadequacy of the existing ones) for reading and governing the dynamic processes in place (high rates of urban growth, direct use of natural resources, complexity of the urban-rural system)



## FOCUS ON SCENARIO ANALYSIS

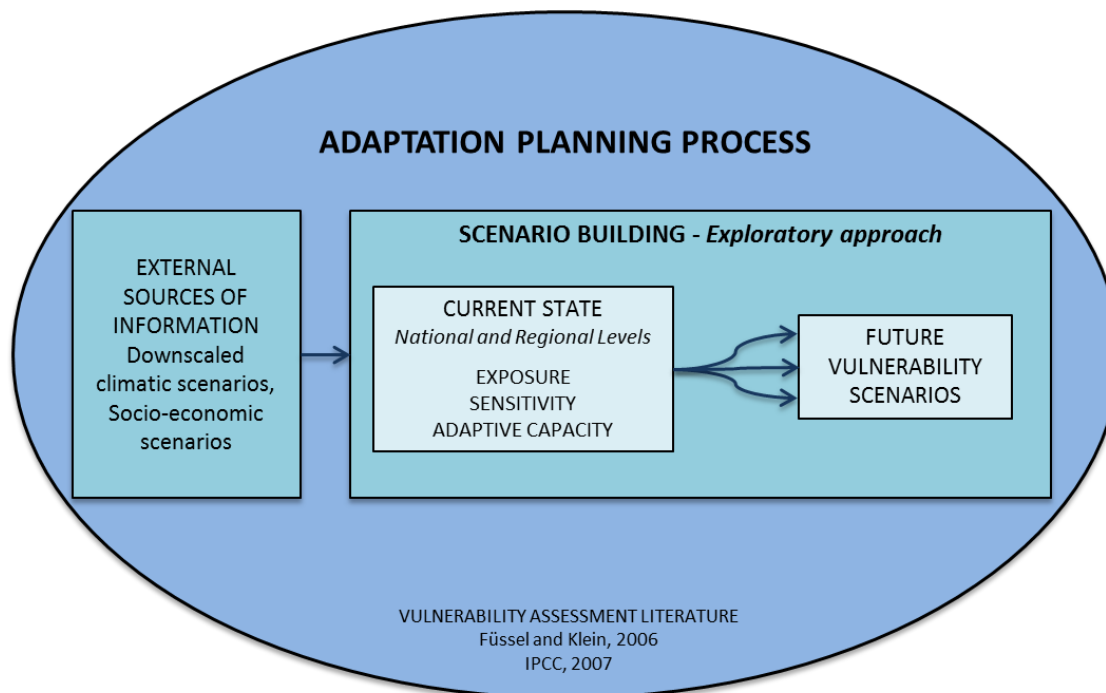
## Research Question

How can scenario analysis contribute to adaptation planning in the sub-Saharan urban context and promote systemic societal transition to sustainability targets?



# FORECASTING APPROACH

## CONCEPTUAL FRAMEWORK FOR ADAPTATION PLANNING



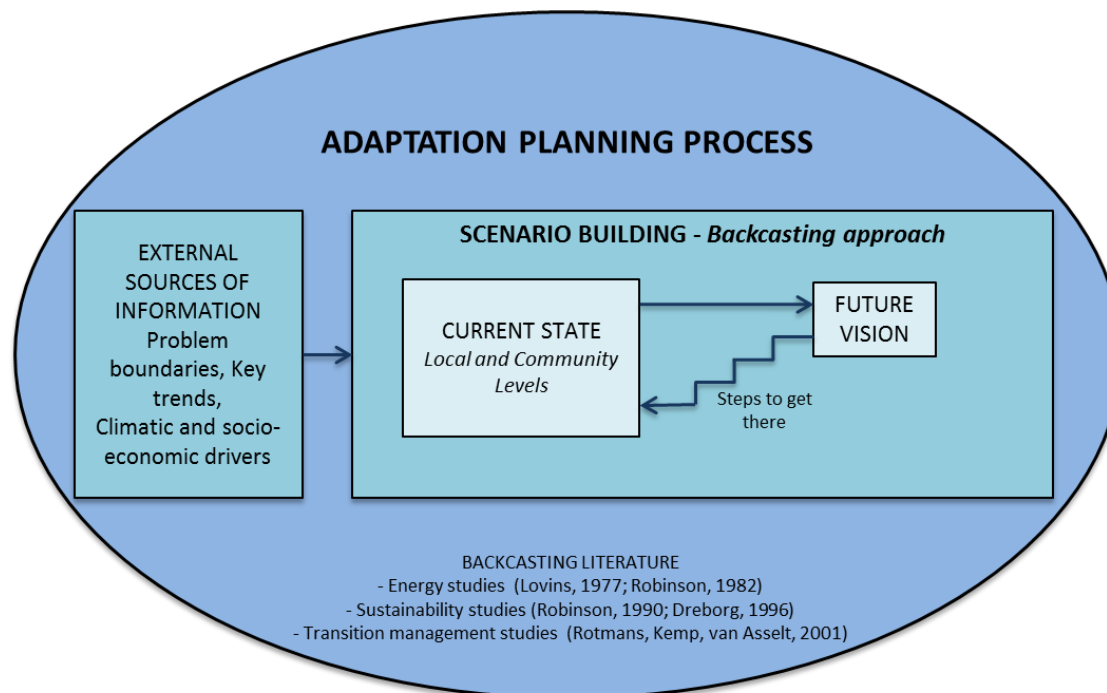
### EXPLORATORY SCENARIO (*What could happen?*)

- Dominant role in informing CC impact and vulnerability assessment, especially at the national/regional level
- Articulate different plausible societal developments
- Explore present-future pathways and possible societal consequences
- Understand problem boundaries, key trends and drivers



# BACKCASTING APPROACH

## CONCEPTUAL FRAMEWORK FOR ADAPTATION PLANNING



### NORMATIVE SCENARIO (*How can a specific target be reached?*)

- Its use in adaptation planning has not yet been widely experimented
- Generate desirable future visions
- Explore future-present pathways
- Individuate strategies, including system change actions, for achieving the desired future



# FORECASTING VS. BACKCASTING

REFLECTING ON THE ROLE AND IMPLICATIONS OF THE USE  
OF SCENARIO ANALYSIS FOR ADAPTATION PLANNING

FORECASTING APPROACH	BACKCASTING APPROACH
<ul style="list-style-type: none"> <li>- The future, though uncertain, is strongly influenced by the current mechanisms</li> <li>- Vulnerability is considered as an intrinsic individual characteristic that heavily influences the person's future trajectory</li> <li>- Not suitable to support transformative planning processes, as it is based on dominant trends that may not apply in a specific local context</li> <li>- Generate conservative adaptation objectives, i.e. extrapolated from the present conditions of vulnerability</li> </ul>	<ul style="list-style-type: none"> <li>- The future is envisioned as a utopia, a desirable horizon beyond the current situation</li> <li>- Vulnerability is considered as a contextual characteristic, determined by the complex system of relationships that the individual develops with society and the environment</li> <li>- Suitable to support transformative planning processes, as it considers the present as just a starting state, thus detaching from the current drivers of vulnerability</li> <li>- Can generate potentially transformative adaptation objectives</li> </ul>
<ul style="list-style-type: none"> <li>- More suitable for the investigation of path-dependent systems, such as biophysical ones</li> </ul>	<ul style="list-style-type: none"> <li>- More suitable for addressing the problem of decision-making when faced with highly uncertain systems whose trajectory depends on human choice</li> </ul>





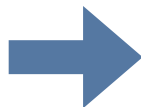
# PARTICIPATORY BACKCASTING

## Research Hypothesis

### Participatory Backcasting Methodological Features

(Robinson, 2003; Quist, Vergragt, 2006)

- 1 - Create community vision for future development  
*(future vision as analytical and social construct)*
- 2 - Stakeholder involvement and learning  
*(importance of the process over the outcome)*
- 3 - Develop future-present pathways  
*(continuous feedback between future visions and present actions)*



### How Participatory Backcasting can assist communities and local authorities in CC adaptation

#### Define societal adaptation objectives

Maintain a systemic perspective in reading the key features of natural and human systems and the different ways in which CC can impact them

#### Promote a learning process through social interaction, thus broadening the space for actions, behavioural alternatives and agents of change

Incorporate the values and preferences of different stakeholders into adaptation strategies

#### Highlight the possible need for system transformative actions

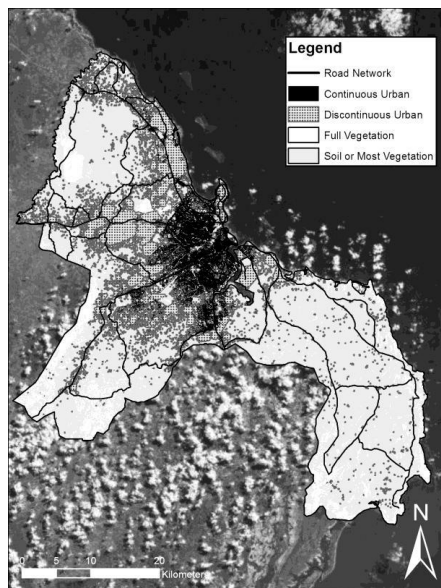
Avoid the autonomous adaptation practices that can lead to maladaptation



# CASE STUDY: DAR ES SALAAM (TANZANIA)



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



(Congedo, Munafò, Macchi, 2013)

Area: 1393 km<sup>2</sup>

Coastline: 100 km

Population: over 4.3 million

Annual Growth Rate: 4.39%

## ACC Dar Scenario Methodology

→ aims to support local government authorities in preparing long-term adaptation strategies for fighting groundwater salinization in a perspective of water resource conservation

## Topic

Access to safe groundwater in coastal Dar es Salaam



Municipal Water Supply: 30%

Sewage System: 12%

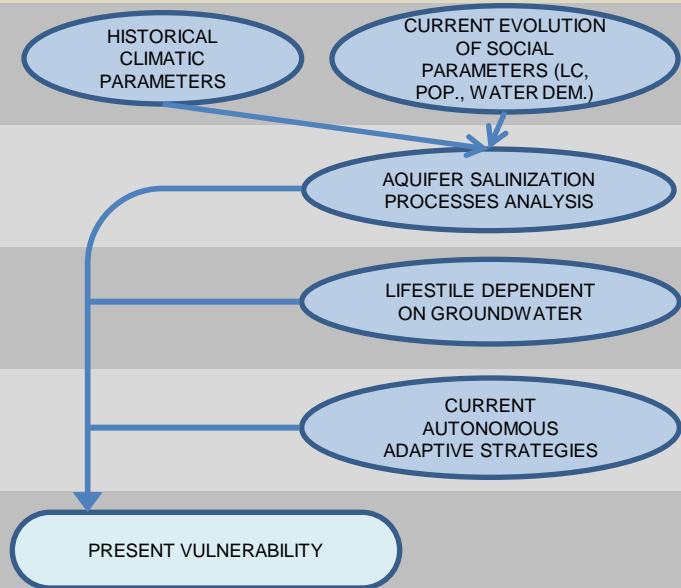
~ 2300 official boreholes in 15 years  
+ informal shallow wells



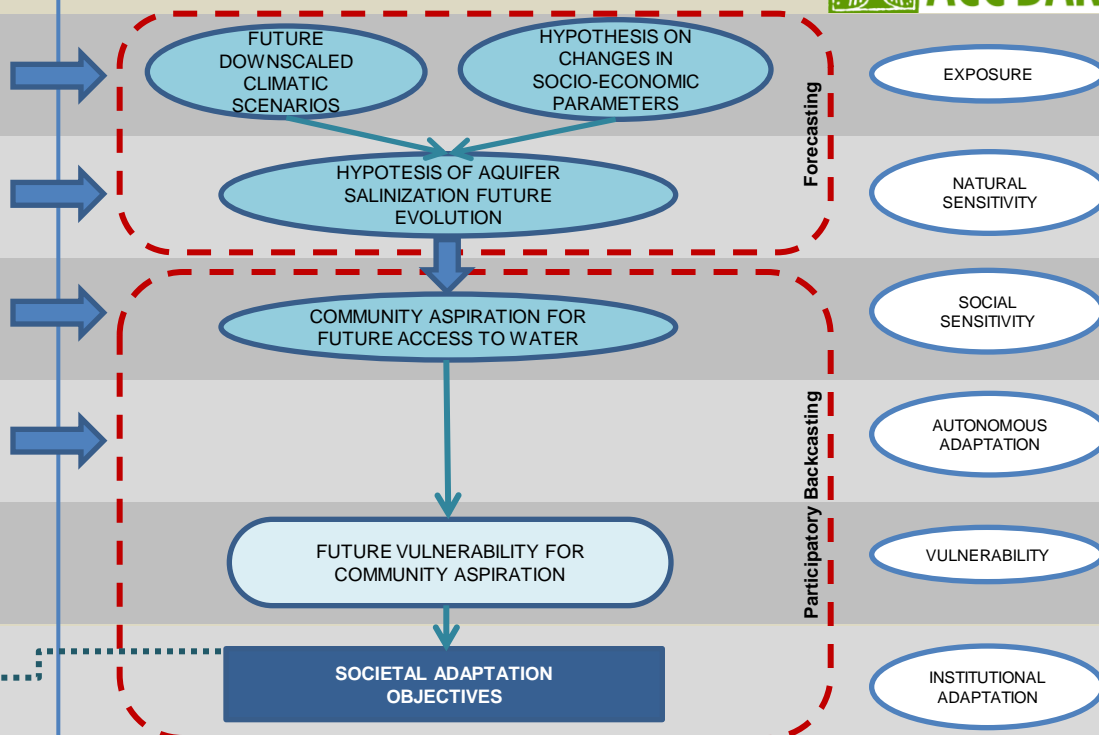
# THE ACC DAR SCENARIO METHODOLOGY



## PAST - PRESENT



## FUTURE - SCENARIO ANALYSIS





## CONCLUSION

*Starting from the theoretical reflections on the role and implications of the use of scenario analysis for adaption planning at community level that have been made...*

from the perspective of an adaptation process aimed at reducing the potential impacts of CC, and identifying transformative social projects oriented to sustainability



**It is recognizes the potential of participatory backcasting to support communities and local authorities in the definition of socially shared adaptation objectives, alternative livelihoods, potential agents of change and possible systemic transformative actions**

### FUTURE RESEARCH STEP

Explore, in practice, the implications and advantages of using a participatory backcasting approach for planning adaptation, through a community scenario exercise that will be conducted in a peri-urban settlement of Dar es Salaam by means of **Participatory Theatre techniques**



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*Thank you...*