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ANNUAL CONGRESS  
9-12 JULY 2014  
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## **AESOP Annual Congress 2014**

Utrecht, The Netherlands, 9-12 July 2014

# **A BACKCASTING SCENARIO METHODOLOGY FOR PLANNING ADAPTATION TO CLIMATE CHANGE IN COASTAL DAR ES SALAAM (TANZANIA)**

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# BACKGROUND

## Climate Change 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, 2007: 6)

## Future Uncertainty in Local Adaptation Planning

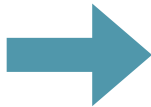
*How can adaptation planning face the issue of future uncertainty?*

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, variability in settlement processes, direct use of natural resources, complexity of the urban-rural system)



**FOCUS ON SCENARIO ANALYSIS**



# KEY POINTS OF THE STUDY

## Assumption

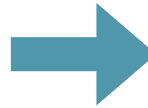
Planning for Climate Change (CC) Adaptation in urban context should be aimed :

*not exclusively at..*

→ reducing the direct and indirect potential impacts of CC

*but also at ..*

→ identifying transformative societal projects oriented to sustainability



Necessity of innovating the consolidated scenario approach for local adaptation planning, based on the use of downscaled forecasting scenarios for exploring possible future trends in climate and non-climate factors, as it is unable to fully recognize:

→ *the contextual mechanisms that determine people's trajectories of vulnerability*

→ *people's legitimate expectations for change*

## Research Objective

Improve participatory scenario methods for supporting local CC adaptation planning that take into account the community's development objectives as well as factors that influence their potential to reach such objectives



# APPROACH AND METHODS

## PILOT STUDY

Testing an **alternative scenario approach** for supporting local adaptation planning

→ places at center of the planning process **people's aspirations**, and considers **contextual uncertainty** and **complexity**

by reversing the usual approach to planning  
(*backcasting* rather than *forecasting*)

by promoting direct participation in the  
definition of objectives and strategies



Conceptual model of  
**PARTICIPATORY BACKCASTING**  
(Robinson, 2003; Quist, Vergragt, 2006)

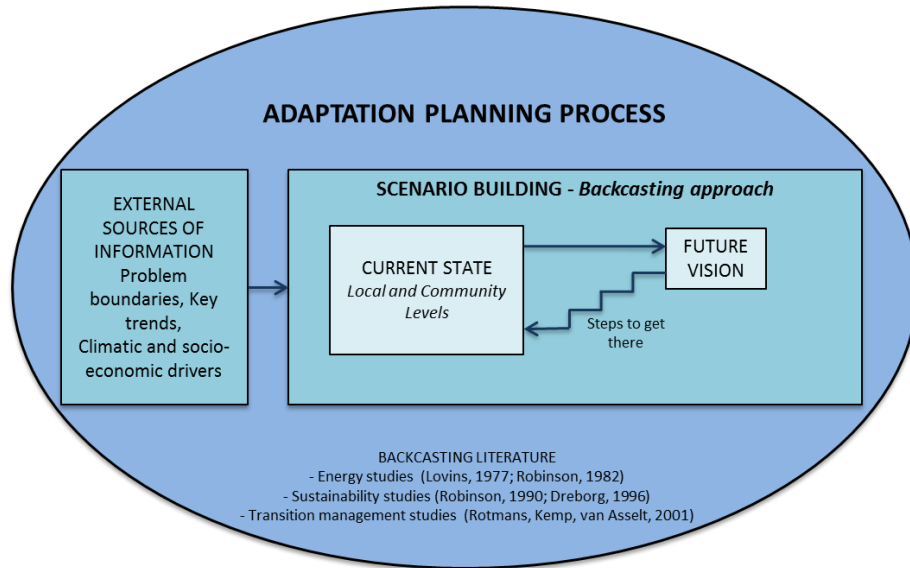
Use of the **THEATRE OF THE OPPRESSED**  
(Boal, 1995) as a method of  
participation

**Participatory scenario building methodology**  
*tested through a scenario exercise in a peri-urban area within Dar es Salaam's coastal plain*



# APPROACH AND METHODS

## Backcasting Approach



### NORMATIVE SCENARIO

*(How can a specific target be reached?)*

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

### Key elements of Participatory Backcasting (Quist, 2007)

1. **Stakeholder involvement** in the whole process  
→ Increase legitimacy and accountability for the decision and the related action plans
2. **Participatory generation** of desirable future **vision**  
→ Vision acts as activator and motivator
3. **Stakeholder learning** through interaction during vision development and future-present pathway definition



# APPROACH AND METHODS

## Theatre of the Oppressed

Theatre of the Oppressed (TO) is a **participatory theatre method** that allows people to bring their **everyday issues** to the stage, and involves the audience in a **collective exploration** of possible solutions/actions for overcoming oppression, first on the stage and then in real life.

TO techniques: Forum Theatre, Image Theatre, Invisible Theatre and Legislative Theatre

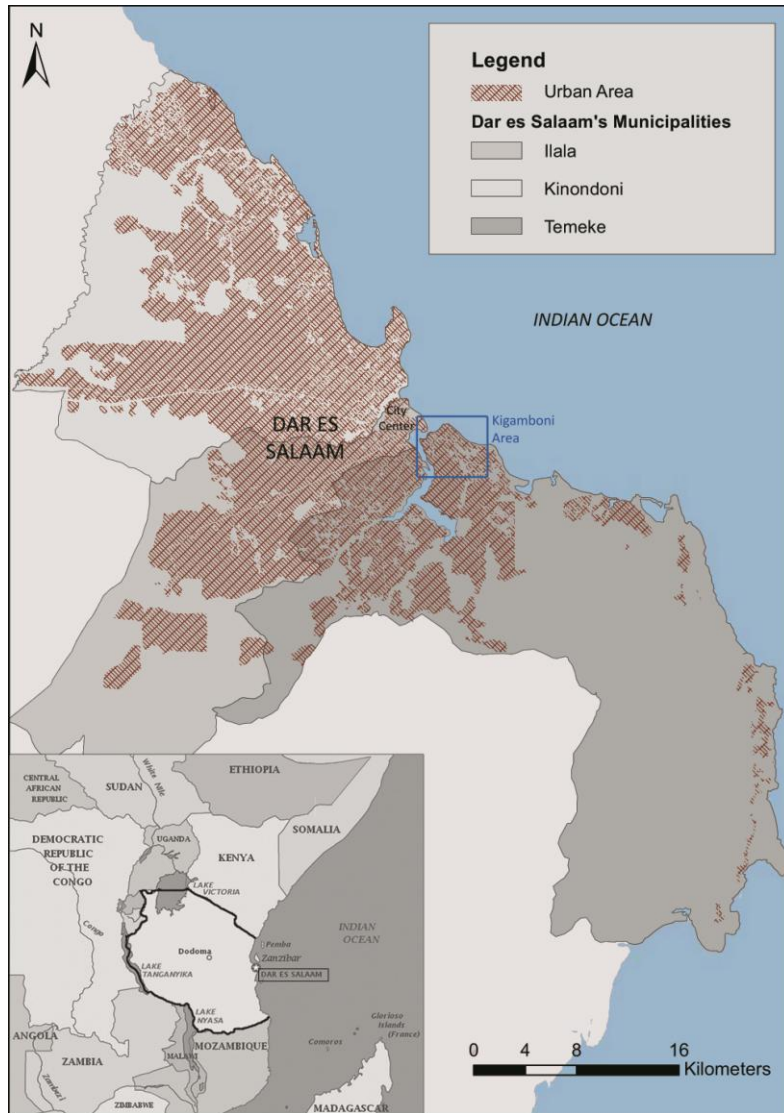
Powerful tool for:

- energizing large audiences
- increasing knowledge and awareness on specific issues
- strengthening coalitions
- building community action agendas
- developing community advocacy skills

Participatory theatre is a relatively well-known approach in Tanzania, and is already recognized as valid due to its successful implementation in many spheres, including in HIV/AIDS prevention programs



# APPLICATION OF THE METHODOLOGY

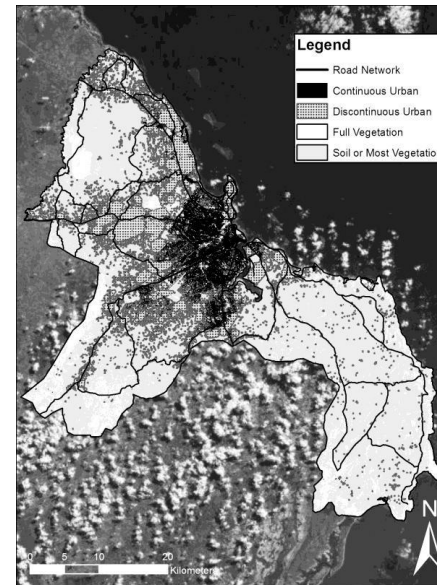


## Study Area

### KIGAMBONI, DAR ES SALAAM

## Topic

### ACCESS TO WATER IN COASTAL AREA



(Congedo, Munafò, Macchi, 2013)

Area: 1393 kmq  
 Coastline: 100 km  
 Population: over 4.3 million  
 Annual Growth Rate: 4.39%

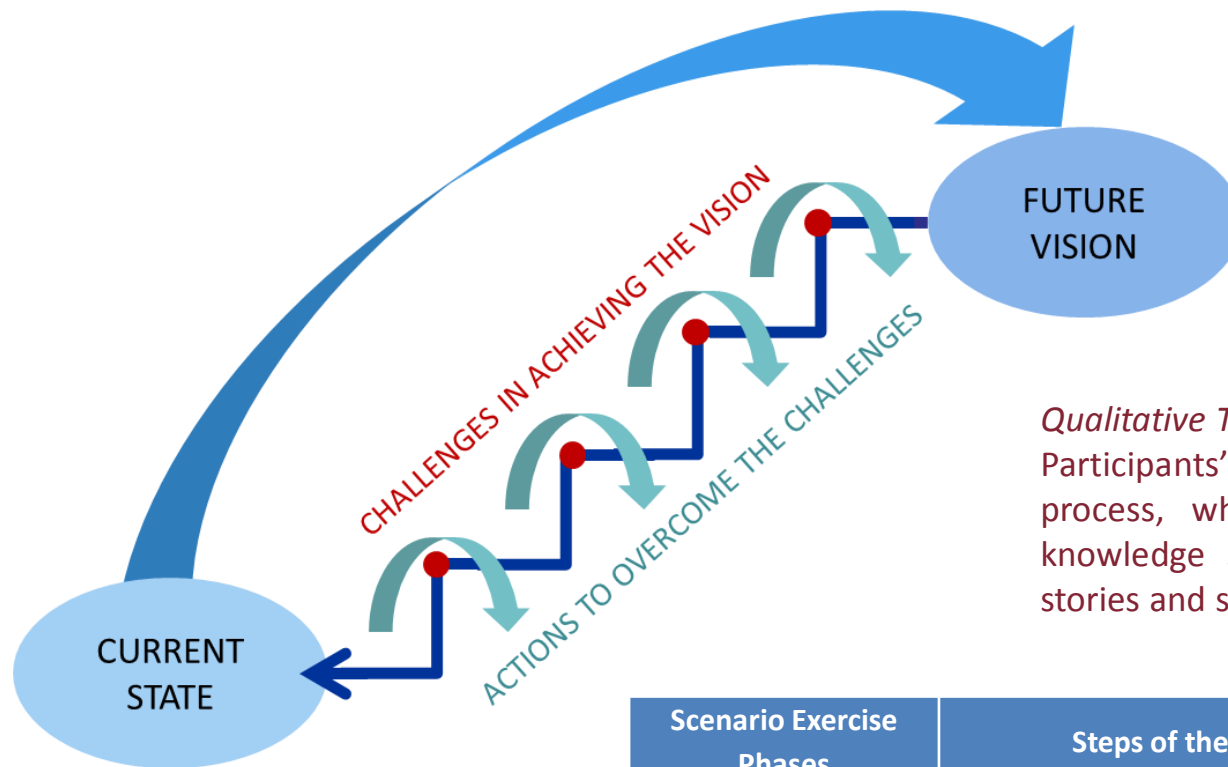


Municipal Water Supply: 30%  
 Sewage System: 12%  
 ~ 2300 official boreholes in 15 years  
 + informal shallow wells





# PARTICIPATORY BACKCASTING METHODOLOGY



Types of purpose it seeks to meet:

- *Knowledge-oriented purpose*
- *Target-oriented purpose*
- *Action-oriented purpose*
- *Process-oriented purpose*

*Qualitative Type of Data:*

Participants' interaction represents the core of the process, which relies heavily on a qualitative knowledge system, made up of words, images, stories and scenes

Scenario Exercise Phases	Steps of the Developed Scenario Methodology
Community Scenario Workshop	1. Development of a shared future vision about access to water
	2. Identification of the challenges in achieving the vision
Forum Theatre Sessions	3. Preparation of a theatrical representation that stages the vision and the challenges emerged
	4. Search for alternative actions and strategies to overcome challenges





# ACTORS

## Community Scenario Workshop

**24 young adults** (equal numbers of men and women, ages 18 to 33) from various Mtaa within the Kigamboni ward.

Representative of the socio-economic composition of the community, in terms of:

- level of education (from primary to high school)
- household income (from low to high, as compared to the average income in the selected ward)
- main type of economic household activity (agriculture, fishing or small "informal" businesses).

## Forum Theatre Sessions

11 public FT events were performed in various areas within the Kigamboni ward, involving in total more than **2000 people**



Community Scenario Workshop (a, b) and some Forum Theatre events (c, d)

**Individuals in decision-making roles** within the community, **people with economic interests** in the water sector, and **“higher level” actors** were not involved in the workshop at all, but were partially involved in the FT events.

→ desire to exclude any external elements (such as cultural differences or power dynamics)

# PRESENT CONDITION AND SHARED FUTURE VISION

## CURRENT STATE

### *Access to Water*

Lack of municipal water system;  
Water from private and community shallow wells is salty;  
Freshwater purchased locally at moderately elevated prices from street vendors or in other areas and transported for many km.

### *Water Use*

Domestic purposes

## FUTURE VISION

### *Access to Water*

2000 l/household per day (volume of many water tanks);  
Diversification of water sources: Deep Community Borehole + Public Standpipes connected to the municipal water supply system.

### *Water Use*

Domestic and agricultural purposes;  
Development of income generating activity at household level and community level

## Vision Building Process

Community hopes reflect the variety of perspectives on access to water

→ Well-defined and shared future objectives for the community

- *Water as a stable primary good*
- *Water as a motor of local development*
- *Water as a crux of community togetherness*



# CHALLENGES IN ACHIEVING THE VISION

## Challenge and obstacle identification process

Enable discussion of problems, conflicts and critical points related to the water access issue that require intervention in order to facilitate changes to the system

→ Complexity and transversal character of the water issue, as it involves multiple aspects of community life



# CHALLENGES IN ACHIEVING THE VISION

## POLITICAL CHALLENGE

Critical political situations in the development of community projects

### OBSTACLES

- Lack of or difficulty in communication between the community and political leaders (at the ward and district levels)
- Public funds allocation without consideration for community needs
- Corruption among politicians and technicians

## SOCIAL CHALLENGE

Difficulty in reaching an agreement within the community on a shared project

### OBSTACLES

- Individual interests prevail over community interests
- Community disorganization and disinformation
- Community disillusioned by the problem solution
- Community's growing disinterest in public participation

## CHALLENGES IN ACHIEVING THE VISION

**FUTURE VISION**

## TECHNICAL AND ENVIRONMENTAL CHALLENGE

Critical technical and environmental situations in the development of community projects

### OBSTACLES

- Little technical support when designing and building the community borehole and the water supply scheme
- Poor maintenance or lack of control of the built water systems
- Lack of communication and coordination between the community, politicians and technicians from different sectors
- Water pollution

## ECONOMIC CHALLENGE

Low access to credit for community development projects

### OBSTACLES

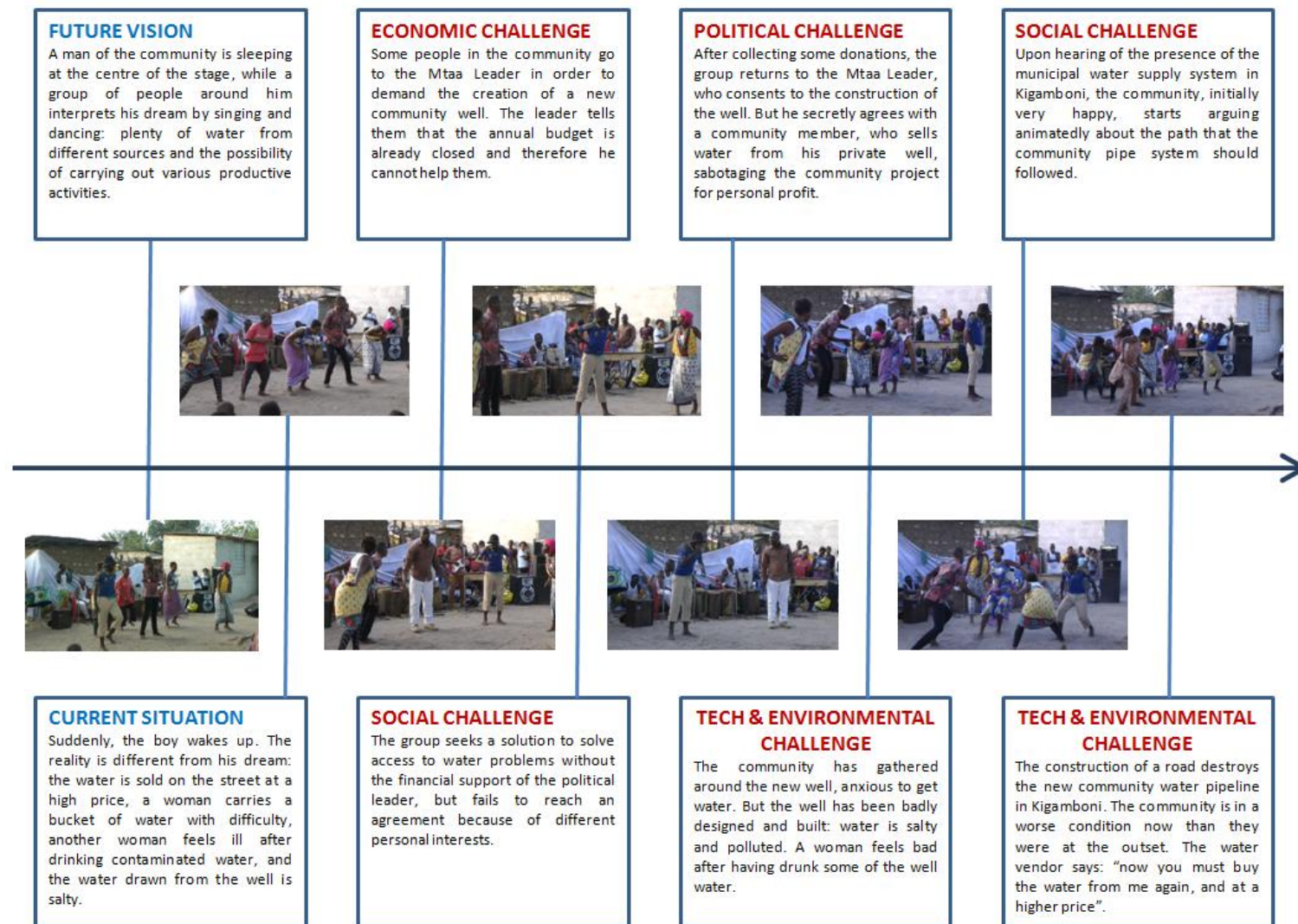
- Financial hardship in the community
- Scarcity of public funds
- Difficulty obtaining and repaying private loans
- Difficulty managing the money collected (due to theft or fraud)

**CURRENT STATE**





# CONTENT AND STRUCTURE OF THE STORY



# ACTIONS TO OVERCOME CHALLENGES

## Action exploration process

Facilitated the identification of potentially key factors to changing the current situation

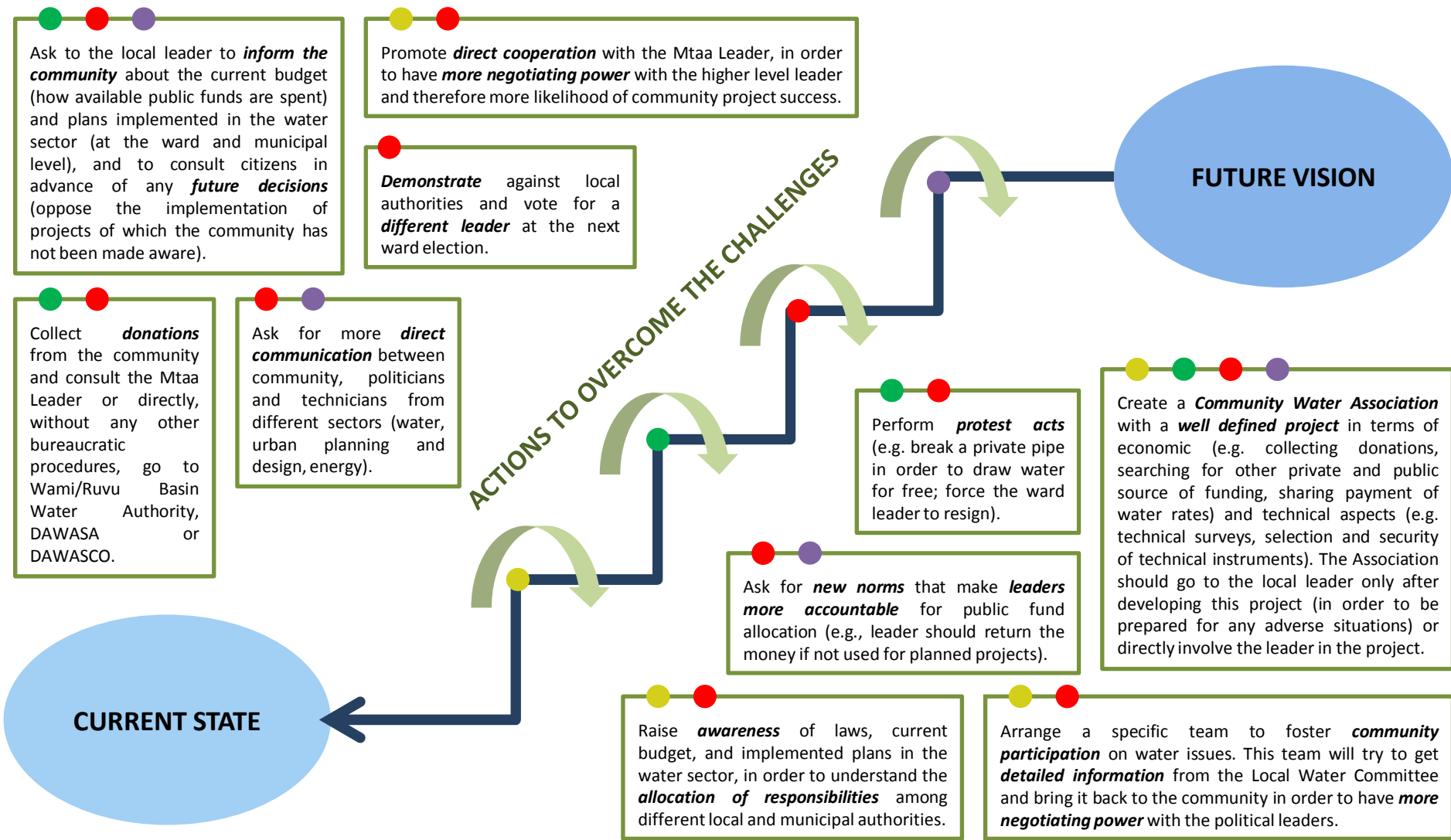
→ potential modalities of action, compatible with the capacities of the community, which could favor change

Common aspects to most of the proposed actions:

- *community cooperation*
- *willingness among community members to assume central roles in decision-making processes and to increase the community's awareness (increase their "negotiating power")*



# ACTIONS TO OVERCOME CHALLENGES





# CONCLUSIONS: Backcasting for local adaptation planning

**Participatory Backcasting** emerges as an useful complement to **Forecasting**

- Allow for recognition of the complex system of relationships between the individual, society and the environment
- Introduce into the planning process people's legitimate expectations for change
- Suitable for community level adaptation strategy development by promoting the process of transition to sustainable models

This approach can effectively **support communities and local authorities** in **various aspects** of the adaptation planning process, because it offers:

- the possibility to **define socially shared adaptation objectives** focused on the community's aspirations (rather than extrapolating them from a context-neutral vulnerability assessment);
- the possibility of overcoming a particular problem by **defining specific actions and strategies proposed by the community** according to their wants and needs, such that institutional adaptation initiatives can favor and support such actions if they are sustainable;
- the possibility of **providing criteria** with which to evaluate potential adaptation options on the basis of the community's aspirations, problems, conflicts, and proposals;
- the opportunity to **promote a process of sharing ideas, experiences, and knowledge** within the community, which may facilitate a broadening of the **potential for transformative actions**.



# CONCLUSIONS: Assessment of the developed methodology

## EMERGING CAPACITIES OF THE METHODOLOGY

### KNOWLEDGE PROVISION FOR LOCAL ADAPTATION PLANNING

Highlight in a **direct and rapid way** community's needs, aspirations, problems and conflicts

Rapidly identify the **connections** between the different dimensions of a problem

Highlight the **autonomous adaptation practices** that the community already adopts (or intends to)

### COMMUNITY AWARENESS AND LEARNING PROMOTION

Foster a **primary learning process** within the community through building and sharing ideas, experiences and knowledge (which can broaden the space for transformative actions)

Promote **community awareness** of the existing problems, capacities and responsibilities as regards access to water

### FUTURE PROJECT SUPPORT (in terms of targets and actions)

Promote the development of **shared goals**, expressed in the vision of a desired future (vision as activator, motivator and catalyst of change)

Facilitate the identification of **critical points** where a transformation is needed and possible factors that can lead to transformation

Facilitate the definition of **community's proposals** of actions to overcome obstacles and meet aspirations

### PARTICIPATION FACILITATING

TO facilitates broad community participation, by **stimulating people's interest** through performance, music, dance and games

Allow complex questions to be addressed and shared using simple and **accessible language**

Not favor conditions of subjugation among participants due to the **absence of conditioning elements** such as cultural differences and power dynamics

## ASPECTS THAT NEED FURTHER EXPLORATION

How to define a specific temporal follow-up agenda of activities (based on the action proposals that emerged during FT sessions) that takes into consideration external climatic and socio-economic pressures?

How to evaluate system transformations, in terms of social learning (identification of alternative livelihoods and agents of change) and actions to be undertaken?

How to effectively integrate this type of approach into a centralized institutional decision-making system, like Tanzanian's?



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# Thank you

