

Montemurro M., 2014. *Backcasting scenario methods for participatory climate change adaptation planning: the case of Temeke's municipality, Dar es Salaam, Tanzania*. MSc in Environmental Engineering. Sapienza University of Rome

## **Abstract**

This research study is part of the ACC DAR project (Adapting to Climate Change in Coastal Dar es Salaam), whose purpose is to contribute to the implementation of the national program of adaptation of the United Republic of Tanzania (NAPA). In particular, the study focuses on community participation in the formulation of climate change adaptation strategies regarding the local population's access to fresh water. The aim is to explore the potential of the backcasting method combined with Theatre of the Oppressed (ToO) techniques in improving the capacity of communities to participate effectively in adaptation planning.

Backcasting is an innovative planning method that is becoming quite popular in sustainability studies. However, its use as a tool for climate change adaptation planning in urban Sub-Saharan countries has not yet been widely tested.

In recent years, the growth of large Sub-Saharan African cities, including Dar es Salaam in Tanzania, has become a definite and accelerating trend. This creates an urgent need for planning tools that can support governments in managing the process of city growth, in particular by predicting the future expansion of the city, the future demand for services and the environmental impacts that these decisions will have.

Water concerns in Dar es Salaam are related to both the quantity and the quality of the resource. They are caused by a combination of factors, including pollution of surface and groundwater and a lack of appropriate infrastructure to meet community demands. Although climate change predictions at the local level are highly uncertain, its effects can certainly be included among these factors, both as a direct cause of increasing stress on water resources and a driver for further population growth in peri-urban areas. Due to the significant and rapid increase in population in the absence of adequate water services, groundwater has become an increasingly important source for the population. The number of shallow wells in urban, peri-urban, formal, and informal areas has increased dramatically, especially in areas not served by the municipal water distribution system. This growing pressure on the aquifer has worsened the salinization of groundwater, especially within the coastal plain, where it is aggravated by seawater intrusion.

The present study proposes an alternative approach to the issue of access to water. That approach is based on a case study of action research for participatory scenario building, carried out in Kigamboni, a ward located southeast of downtown Temeke, from which it is separated by the Magogoni Creek. Seawater intrusion is a major environmental problem in the area. Well water is salty, but in most cases is nevertheless used by residents for domestic use and agriculture. In fact, the only locally available sources of fresh water are street vendors, who sell water at prices unaffordable to the most. The only alternative is for residents to travel miles away from their homes to draw fresh water from rivers and wells.

For this case study, a methodology was defined based on the conceptual model of backcasting and the use of the ToO as a method of formulating strategies to improve community access to fresh water. ToO was chosen following the positive results of similar activities that the ACC DAR team previously conducted in Dar es Salaam.

That methodology was then tested through a two-stage scenario exercise. The first stage consisted of a community workshop aimed at envisioning a desirable future state of access to water, and at identifying the existing challenges in achieving that vision. In the second stage, a series of Forum Theatre events were conducted in several public locations throughout the ward in order to prompt the community to propose solutions/actions for overcoming the challenges identified during the workshop.

The results from the case study highlight the strengths and limitations of the methods used (Backcasting combined with Theatre of the Oppressed) and constitute a good basis for the development of similar adaptation planning activities in Sub-Saharan cities.