Tyndall Centre for Climate Change Research

Climate Transitions: Connecting People, Planet and Place
PhD Conference 2013

BACKCASTING SCENARIOS FOR ADAPTATION TO CLIMATE CHANGE
THE CASE OF DAR ES SALAAM (TANZANIA)

University of Cardiff, April 3-5 2013

Giuseppe Faldi
PhD program in Sustainable Development and International Cooperation
DIAEE - Department of Astronautical, Electrical and Energetic Engineering
Sapienza University of Rome
giuseppe.faldi@yahoo.com
KEY POINTS OF THE STUDY

Background
Planning for climate change (CC) adaptation in urban contexts is a major challenge, particularly due 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

Assumptions
1. Adaptation planning should be aimed at:
   - reducing the potential impacts of CC
   - identifying transformative societal projects oriented to sustainability
2. Scenario analysis methods are particularly useful in:
   - anticipating and shaping the future
   - dealing with uncertainly and complexity

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

Case Study
Access to safe water in coastal Dar es Salaam (Tanzania)
MOVING TOWARDS A NORMATIVE SCENARIO APPROACH FOR CC ADAPTATION ON A LOCAL SCALE

EXPLORATORY SCENARIO (What could happen?)
- Articulate different plausible societal developments
- Explore present-future pathways and possible societal consequences
- Define problem boundaries, key trends and drivers
- Not able to support transformative planning processes

ADAPTATION PLANNING PROCESS

VULNERABILITY ASSESSMENT LITERATURE
Füssel and Klein, 2006
IPCC, 2007

EXPLORATORY SCENARIO - Exploratory approach

CURRENT STATE
- National and Regional Levels
- EXPOSURE
- SENSITIVITY
- ADAPTIVE CAPACITY

FUTURE VULNERABILITY SCENARIOS

EXTERNAL SOURCES OF INFORMATION
- Downscaled climatic scenarios, Socio-economic scenarios

BACKCASTING LITERATURE
- Energy studies (Lever, 1977; Robinson, 1982)
- Sustainability studies (Robinson, 1990; Oortbouw, 1996)
- Transition management studies (Nolte, Kemp, van Asselt, 2003)

SCENARIO BUILDING - Backcasting approach

CURRENT STATE
- Local and Community Levels

FUTURE VISION
- Steps to get there

ADAPTATION PLANNING PROCESS
MOVING TOWARDS A NORMATIVE SCENARIO APPROACH FOR CC ADAPTATION ON A LOCAL SCALE

BACKCASTING SCENARIO *(How can a specific target be reached?)*
- Generate a desirable future
- Explore future-present pathways
- Individuate strategies, including system change actions, for achieving that future

**ADAPTATION PLANNING PROCESS**

**EXTERNAL SOURCES OF INFORMATION**
- Downscaled climatic scenarios
- Socio-economic scenarios

**VULNERABILITY ASSESSMENT LITERATURE**
- Füssel and Klein, 2006
- IPCC, 2007

**ADAPTATION PLANNING PROCESS**

**EXTERNAL SOURCES OF INFORMATION**
- Problem boundaries, Key trends, Climatic and socio-economic drivers

**SCENARIO BUILDING - Backcasting approach**

**CURRENT STATE**
- Local and Community Levels

**FUTURE VISION**
- Steps to get there

**BACKCASTING LITERATURE**
- Energy studies (Levins, 1977; Robinson, 1982)
- Sustainability studies (Robinson, 1990; Dreborg, 1996)
- Transition management studies (Rotmans, Kemp, van Asselt, 2001)
PARTICIPATORY BACKCASTING
(Robinson, 2003; Quist and Vergrat, 2006)

How 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
  - Set normative adaptation assumptions and define criteria of desirability for various images of the future

- Promote a learning process through social interaction, thus broadening the space for actions, behavioural alternatives and agents of change
  - Organize information and enhance knowledge on climatic threats and opportunities
  - Incorporate the values and preferences of different stakeholders into adaptation strategies

- Highlight the possible need for system transformative actions
  - Connect future objectives with policy choices and adaptation actions to be applied in the present (adaptive management)
  - Promote a robust decision-making process, which will close the gap between planning and implementation typical of sub-Saharan local governments
  - Avoid the autonomous adaptation practices that can lead to maladaptation

FUTURE RESEARCH PLAN

METHOD FOR EXPLORING THE IMPLICATIONS OF THESE HYPOTHESIS: Community scenario exercise in coastal Dar es Salaam

PARTICIPATORY TOOL: Augusto Boal’s Theatre of the Oppressed