

Climate change adaptation action plans in peri-urban areas of LDCs: the case of Dar es Salaam

Problem statement

Urbanization process is a significant contributor to global environmental change and at the same time climate change (CC) poses complex and multilayered development challenges to cities, particularly in least developed countries (LDCs). The rapid urban growth and the impact of urbanization on ecosystem sustainability make urgent the understanding of reciprocal interactions between urbanization and global environmental change processes. **Together with the challenges of rapid urban growth, CC impacts will undermine country efforts to achieve the sustainable development.**

«Since climate change impacts will undermine country efforts to achieve the goals of sustainable development, adaptation is needed. This is crucial particularly because climate is already changing and most countries do not have the adaptive capacity to respond or be prepared to face the climate change impact on cities, settlements and on livelihoods.» (UN Habitat, 2008).

Adaptation plans and strategies to reduce CC risks are not only necessary but urgent to improve capacity to cope with CC in the cities of low- and middle-income nations.

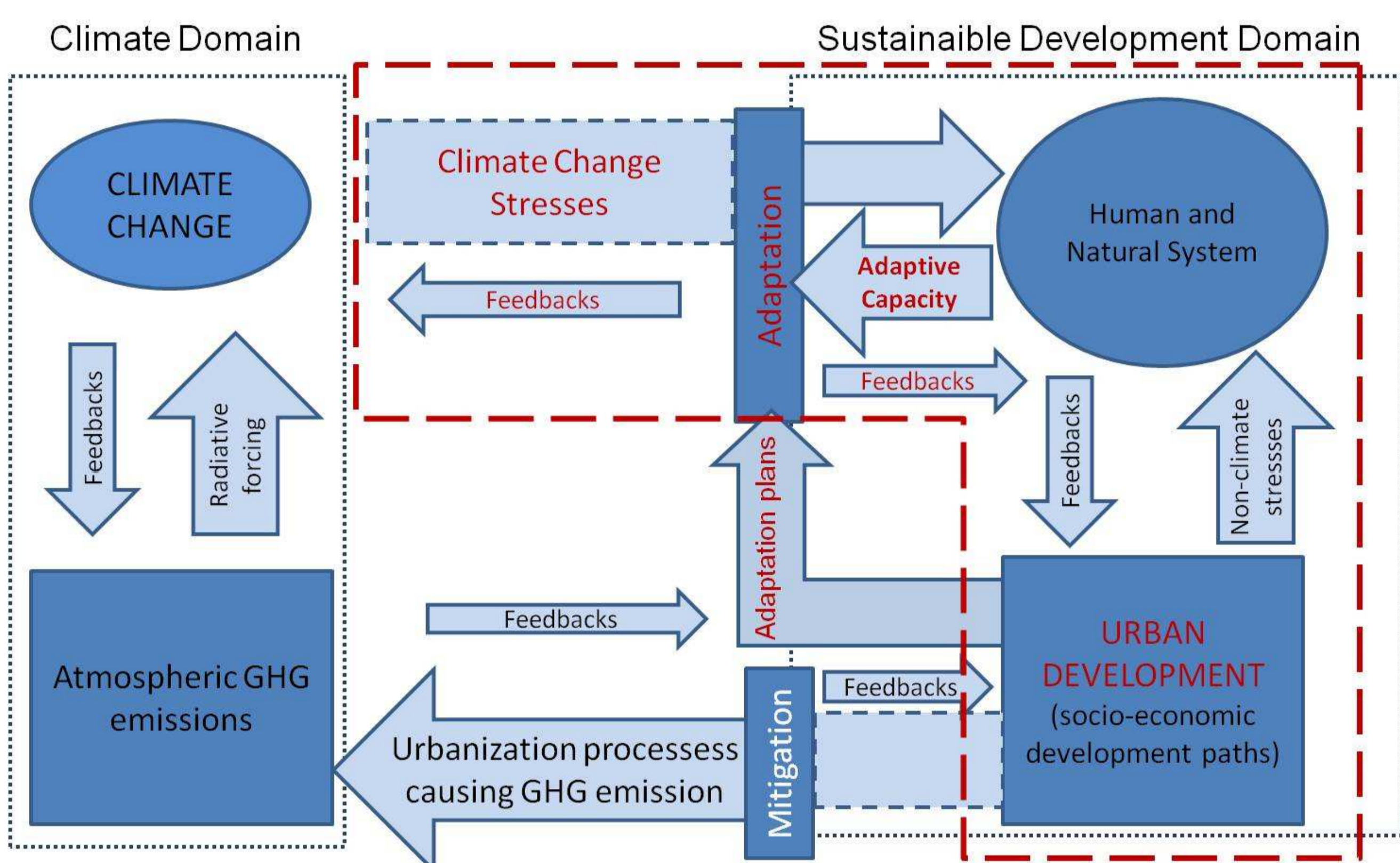


Figure 1. Framework for analysing climate change, urban development and sustainable development linkages. Source: adapted from IPCC 2001, Third Assessment Report

Research framework

The research assumes that the **peri-urban (PU) interface** is the part of the cities most vulnerable to CC, due to its numerous environmental, social and economic concerns, which make it a priority area for improvements in adaptation to CC and variability. In this analysis it is assumed that PU areas are, for various reasons (Satterthwaite (2007); Tacoli (1998)), crucial to the improvement of **adaptive capacity** in regions severely effected by climate change. Such region include LDCs, which (as stated by UNFCCC) must provide for the implementation of national adaptation programs (NAPAs) through local plans. For these reasons the activities undertaken in PU areas must be included, as fundamental resource, in the adaptation action plans development process.

The research aims to **understand how improving adaptation capacity** in PU areas by:

- understanding how urban planning can contribute to the **implementation of NAPAs** in local strategies for adapting to CC (LAPAs);
- identifying the key requirements for ensuring that **urban action plans** (Friedmann, 2005) take adaptation into account.

It is hypothesized that the adaptive capacity in PU areas depends on four main factors:

- type and magnitude of local **environmental impacts** of CC;
- **rural-urban dynamics, land-use patterns** and **urban fabric** ;
- **local capacity to cope** with CC effects;
- **institutional capacity** on environmental management and urban development planning adaptation into account.



Figure 2. Dar es Salaam's peri-urban area, Madala in Kunduchi ward



Figure 3. Rural-urban activities in Dar es Salaam's peri-urban area, Kawe ward

Research analysis and methods

The research activities undertaken in the field entailed four different types of investigation:

- household questionnaires;
- wards and district questionnaires (interviews and questionnaires to local authorities focused on policies and instruments for urban planning and environmental management in urban and PU areas);
- surveys and data collection (to gather data and information on the current status of natural resources, infrastructure and services, land use, informal activities, pressures and environmental concern in PU areas);
- interviews to research development centres, government institutions and NGOs (to know policies, programs and tools for natural resources management, for adaptation to CC and for urban and regional development at national and local levels).

Household questionnaires

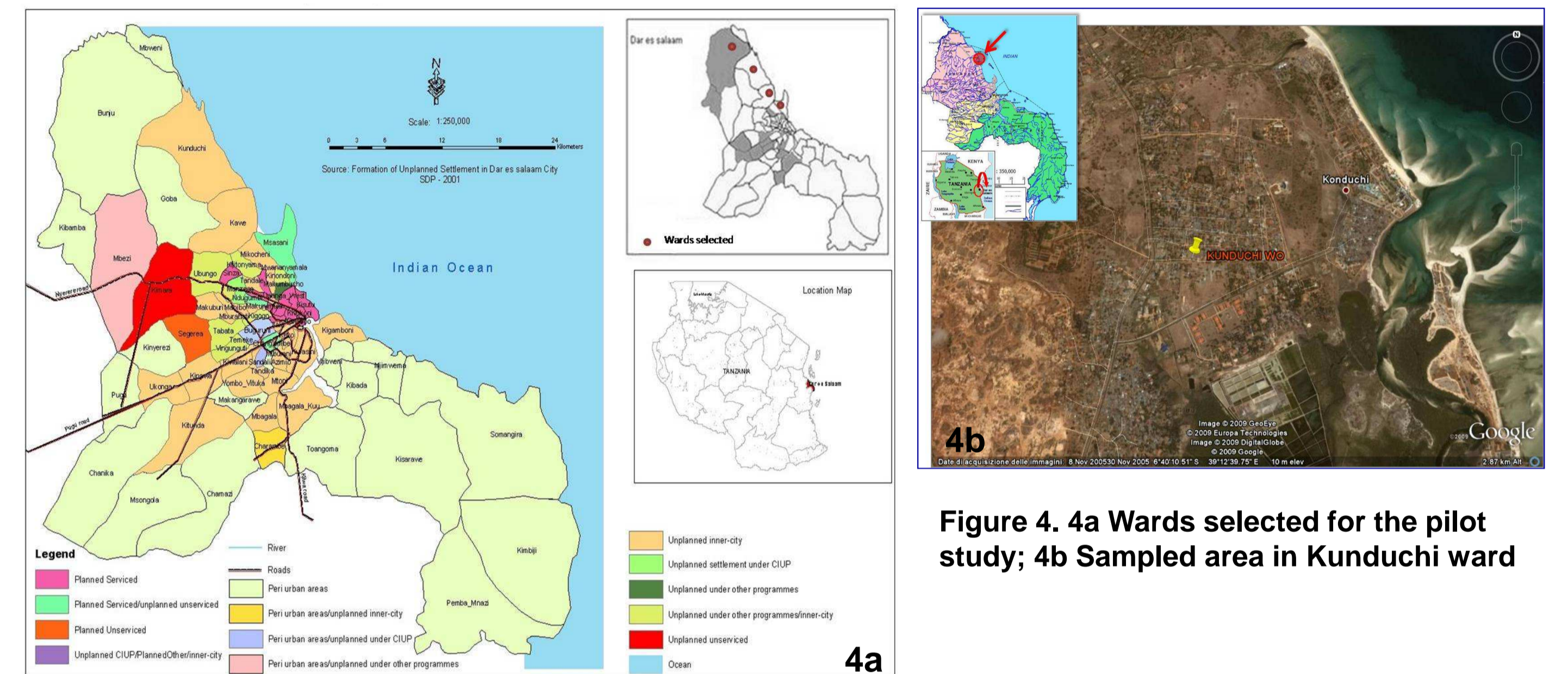


Figure 4. 4a Wards selected for the pilot study; 4b Sampled area in Kunduchi ward

The Pilot Study in Dar es Salaam identify the **key factors in adaptation planning and environmental management** in order to contribute to the improvement of the adaptive capacity of people living in PU areas.

The **specific objective** of the investigation is to collect information and data relevant to four main areas of investigation which were identified through a review of the literature on PU areas and preliminary surveys in Dar es Salaam:

- rural-urban interactions;
- access to resources and environmental services (land, water, energy, etc.);
- environmental management (water, waste, soil, etc.);
- climate change: **environmental changes and autonomous adaptation strategies.**

Preliminary results

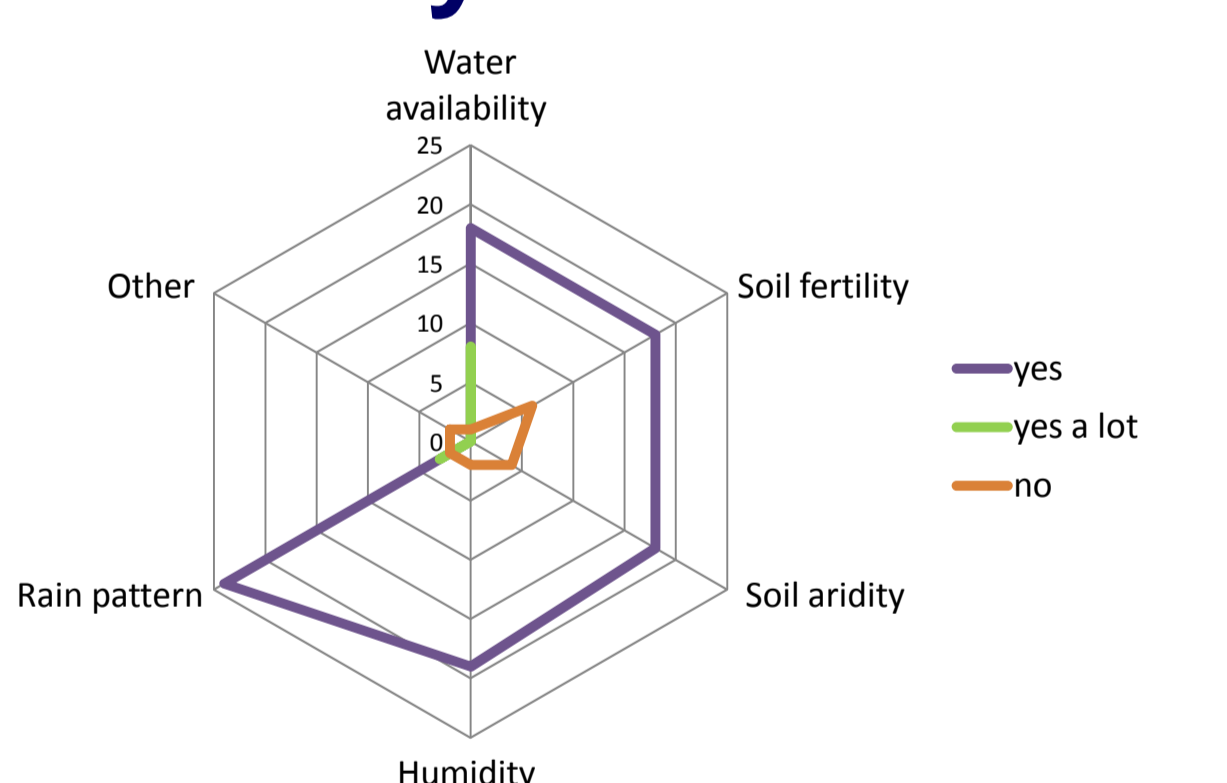


Figure 5. Climate change: observed environmental changes

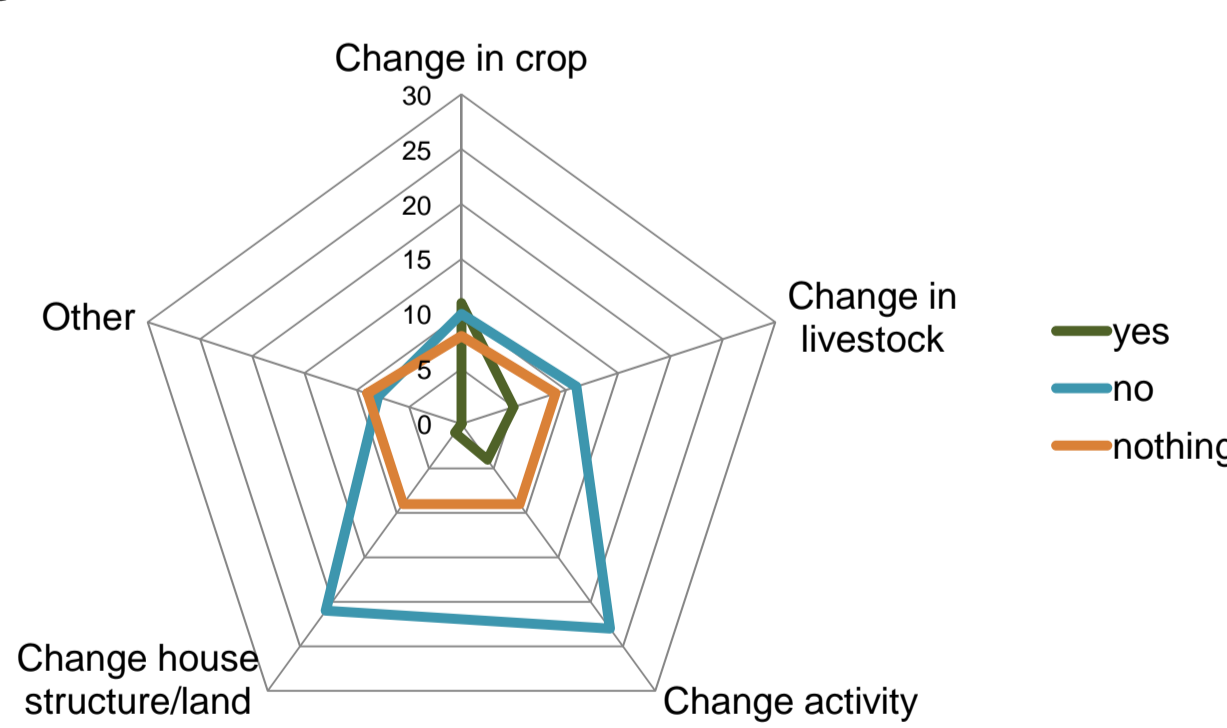


Figure 6. Autonomous adaptation strategies

Regarding the section on CC almost all **respondents noted changes** in water availability, soil fertility, soil aridity, in air humidity and rain patterns (fig.5). These and other environmental changes are the **result of a complex set of factors that are not exclusively linked to global warming but can also be caused by anthropogenic pressures and inadequate local environmental and urban policies.**

Different strategies, for coping with environmental changes, are taking place (fig.6). Furthermore, most respondents, who have been observing changes in recent years, are contemplating plans for coping with further deterioration of environmental conditions, which go beyond immediate reactive solutions. They are considering strategies such as change of employment, transition from subsistence activities dependent on natural resources, to activities only partially or indirectly dependent on them (eg trade or small business). In some cases respondents have even thought of moving to another area or returning to their rural native region.

Conclusions

The pilot study has highlighted dynamics and resources of PU interface, and paid particular attention to areas, processes and functions that can be determined for both the development of adaptation strategies and actions implementation. **The information obtained from the analysis is essential to identifying sustainable and viable adaptation options.** According to the research hypothesis, this information (along with data provided by other surveys) is fundamental to understanding the adaptive capacity of communities living in PU areas. It is relevant not only because it provides knowledge on environmental management and community-based autonomous adaptation strategies, but also because it reveals the neglected part of urban development processes and the physical, social and economic rural-urban dynamics.

References

- Friedmann J. (2005), "Globalization and the emerging culture of planning", Progress in Planning 64 (2005) 183-234
 Satterthwaite, D., Reid, H., (2007), "Climate change and the cities: why urban agendas are central to adaptation and mitigation", IIED
 Kombe, W.J. (2005), "Land use dynamics in peri-urban areas and their implications on the urban growth and form: the case of Dar es Salaam, Tanzania", Habitat International, 29,