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Adaptive livelihood strategies for coping with water scarcity in the drylands of central Tanzania

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ABSTRACT

In this paper, it is argued that local knowledge for adapting to water scarcity is important for integrated resource management by taking into consideration both the natural and social constraints in a particular setting based on accumulated experience. The paper examines the relevance of local knowledge in sustaining agricultural production in the semiarid areas of central Tanzania. The paper specifically focuses on how water scarcity, as the major limiting factor, is addressed in the study area using local knowledge to sustain livelihoods of its people.

The study was conducted in four villages; Mzula, Ilolo, Chanhumba and Ngahelezi, situation in Mvumi Division in Dodoma Region. The study mainly employed qualitative data collection techniques. Participatory methods provided a means of exploring perceptions and gaining deeper insights regarding natural resource utilization in terms of problems and opportunities. The main data sources drawn upon in this study were documentation, group interviews and field observations. Group interviews involved discussions with a group of 6–12 people selected on the basis of gender, age and socio-economic groups. Data analysis entailed structural and content analysis within the adaptive livelihood framework in relation to management of water scarcity using local knowledge.

The findings confirm that rainfall is the main limiting factor for agricultural activities in the drylands of Central Tanzania. As such, local communities have developed, through time, indigenous knowledge to cope with such environments utilizing seasonality and diversity of landscapes. Use of this local knowledge is therefore effective in managing water scarcity by ensuring a continuous production of crops throughout the year. This practice implies increased food availability and accessibility through sales of such agricultural products. Local innovations for water management, such as cultivation in sandy rivers, appear to be very important means of accessing water in these dryland areas. It can therefore be concluded that utilization of local knowledge has wide impact on integrated water resource management. These implications are important considerations for development of adaptive water system innovations at community level.

1. Introduction

1.1. Background information

Drylands have for a long period of time been viewed as parched landscapes devoid of diversity of life that we associate with more humid environments. Viewed as marginal lands inhabited by marginal people, policies and programmes sometimes put in place failed to take account of centuries of local experience and accumulated knowledge in dealing with the harsh environment. Communities living in Ugogo[1] area, for instance represent people utilizing the semi-arid areas of central Tanzania. Despite the problem of water scarcity in the area, the Ugogo landscapes are diverse and provide a number of opportunities for realization of the water potentials for various livelihoods needs. In order to understand the livelihood system and means through which local people, i.e. the Gogo, have managed to cope with difficult circumstances of water scarcity and the strategies they have developed over decades in their struggle for survival, various factors such as policy and socio-economic aspects have to be taken into consideration. The paper specifically focuses on how water scarcity, as the major limiting factor, is addressed in the study area using local knowledge to sustain livelihoods of its people. Local innovations for water management, such as cultivation in sandy rivers, appear to be very important means of accessing water in these dryland areas. It can therefore be concluded that utilization of local knowledge has wide impact on integrated water resource management. These implications are important considerations for development of adaptive water system innovations at community level.

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[1] Ugogo is an area within the central plains of Tanzania. It is inhabited by the Gogo, an agro-pastoral society. The study was carried out in Mvumi, which forms only the central part of it.

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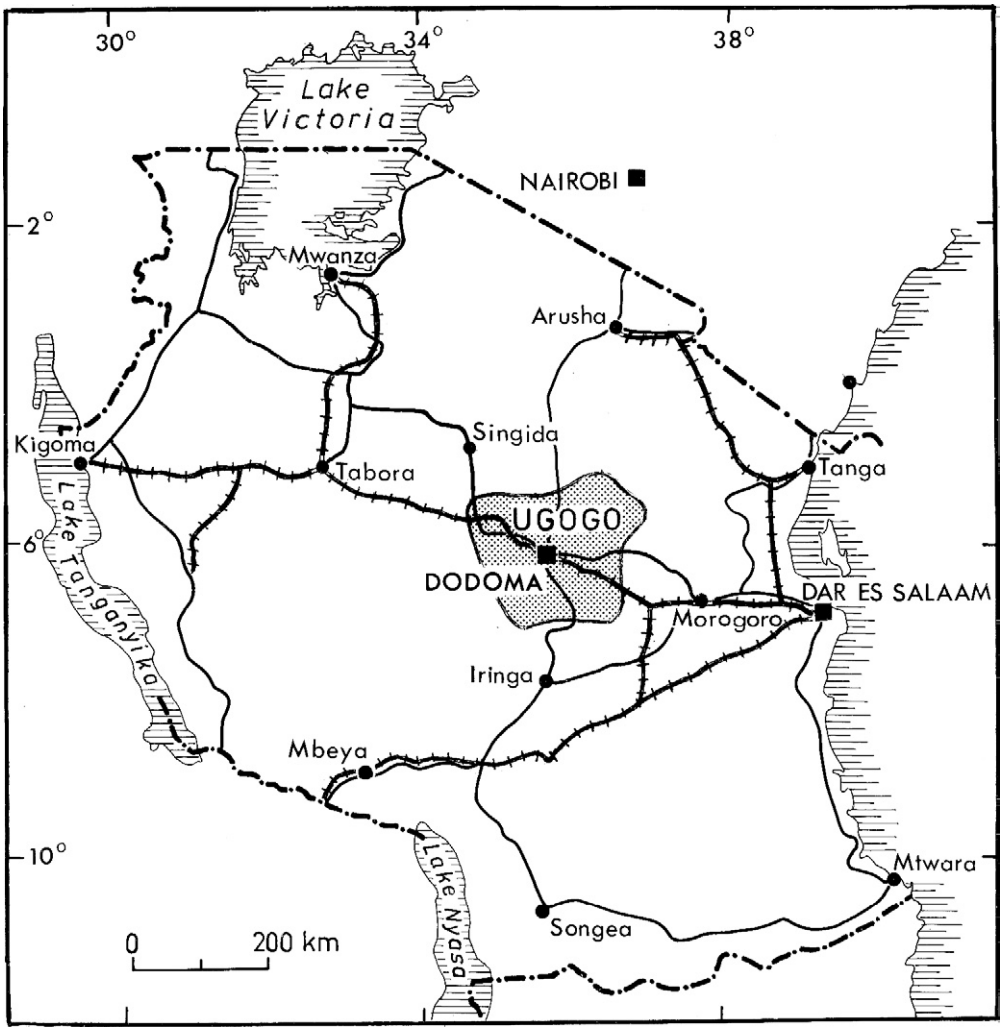

Fig. 1. Location of the study area (Ugogo) in Tanzania: Source: Christiansson (1981).

1.2. Local knowledge and adaptation to dryland environments

Local knowledge also sometimes referred to as indigenous knowledge is defined as the set of concepts, meanings, skills and routines that emerge actively over time. Rural people's knowledge derives from the interaction of individuals in a particular society and environment (Chambers and Jiggins, 1986; Chambers et al., 1989). Local knowledge refers to a wide range of accumulated local experience concerning the ecosystem and natural resources and how they are used and managed in the context of local organisational and institutional arrangements (Kauzeni, 2000, p. 37). In order to better understand how people living in harsh dryland conditions e.g. in situations of water stress adapt, it is important to take into consideration local knowledge as a factor influencing adaptation.

Many people living in rural areas obtain their livelihood from agricultural activities and non-farm activities. Though water is the most limiting factor particularly in the drylands, it is a pre-requisite for survival through facilitation of carrying out most livelihood activities. Faced with a number of constraints under dryland environment, such as low and unreliable rainfall, poor soils, labour and capital shortages, people in Mvumi have over a long period of time developed certain agricultural practices to cope and adapt to these harsh conditions. The accumulated experience of people having lived for generations in hostile environments such as that found in Mvumi in Ugogo, for instance provides a fundamental source of knowledge for the future. There is much to be learned concerning farmers' adaptation in order to understand to what degree they react to changes occurring within their socio-economic and physical environment. The variety of experiences and the use of local knowledge in both agricultural production and performance of non-farm activities are regarded as potential resources necessary for survival and adaptability of people to dryland conditions.

2. The study area

2.1. Location

This study was conducted in Mvumi Division part of the area known as Ugogo within the semiarid area of Central Tanzania. The Ugogo area covers most of Dodoma Rural District in Dodoma Region. Mvumi Division is located some 40 km southeast of Dodoma Town, the capital of Tanzania (Fig. 1). Of special attention is the fact that Mvumi Division is situated within the sphere of a soil and water conservation project called HADO.[2]

Mvumi Division comprises 13 villages located within six wards. This study was conducted in four villages, two from the western part (i.e. Mzula and Ilolo) and two from the eastern part (i.e.

[2] HADO is an acronym of Swahili words "*Hifadhi Ardhi Dodoma*", which implies Conserve the Lands of Dodoma Region, Tanzania. Among the major measures to conserve land taken in this area was total removal of livestock (destocking) in 1986.