People, livelihoods and decision making in catchment management: a case study from Tanzania

By Tom Franks and Frances Cleaver

Photos by
Frances Cleaver

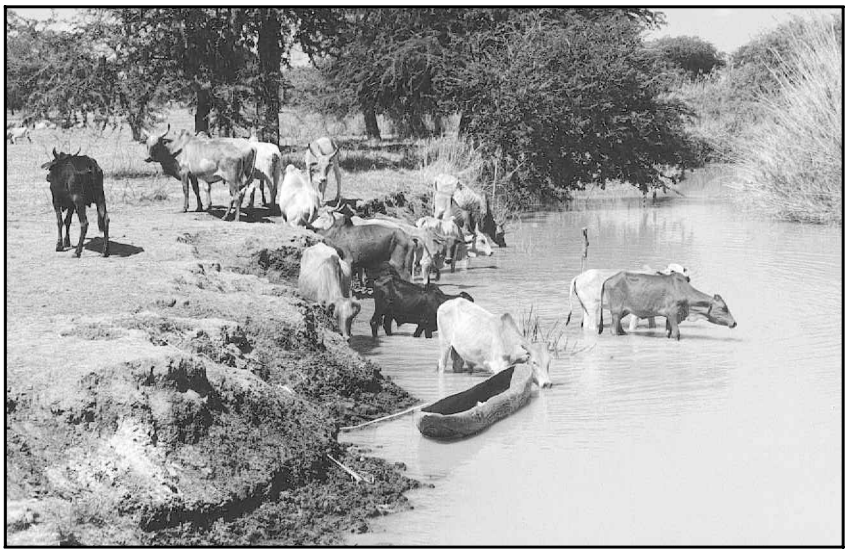
This paper illustrates the complexity of catchment water management and the importance of understanding the context of economic, political and cultural aspects of livelihoods in a catchment. Issues highlighted include the need for institutions which cross resource boundaries, ways of including those stakeholders usually excluded from decision-making processes, and the importance of livelihood constraints on people's participation in resource management.

The Usangu catchment – a complex environment

'Studies have confirmed that there is intense competition and sometimes conflict over the various uses of water'

Usangu ('the place where the Sangu people live') is part of the upper catchment of the Rufiji river. Located in SW Tanzania, it covers an area of about 20,000 km² and is home to more than 200,000 people who draw their livelihoods primarily from its natural resources. Some petty trading and transport activities take place along the trunk road, which passes through the middle of the catchment linking Iringa and Mbeya.

Studies have confirmed that there is intense competition and sometimes conflict over the various uses of water in the catchment. Uses include water for domestic purposes, irrigation, livestock keeping, fishing, maintenance of the wetland and downstream users. Domestic water, although given highest priority by the government, in fact constitutes only a small requirement in volumetric terms. Irrigation demands the largest volume, however its use is not as contentious as that of water for livestock since the latter entails problems of access and land-use patterns. Water for maintenance of the wetland also provides for the local fishing industry, whilst flows downstream support Tanzania's important tourist industry in the National Park, as well as generating power. Indeed, it was power shortages in the 1990s that first alerted the wider public to changes in water-resource availability in the catchment.



The needs of cattle are significant in discussions about the management of water resources

Lack of water downstream may be the most visible evidence of a changing situation. However, it is important not to consider it as a water problem only. Water is part of the overall resource base of the catchment, and its availability affects such matters as settlement and land use patterns in an intimate and direct way. Thus the drive for understanding of and solutions to the problem is being based on an integrated and holistic assessment of the human and natural resources of the catchment.

Institutional arrangements

The complex linkages between land and water are very important in determining resource management strategies for the people living in the catchment. In addition,

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several other factors combine to make it difficult to develop a plan which can be negotiated and agreed between all resource-users.

The catchment is defined by the drainage patterns of the various rivers in the highlands. In principle, its water resources are managed within the boundaries of the larger Rufiji basin, of which it forms the upstream catchment, through the Rufiji Basin Water Officer. The key task of the Water Officer is the issuing of licenses for water abstraction and use, according to the Water Act. In this task, he is advised by the Rufiji Basin Water Board, which provides a basis for stakeholder participation in the process of water allocation.

The sub-catchments of individual rivers in Usangu are important determinants in peoples' individual livelihood strategies. However, whilst water is considered a national asset in Tanzania and is accordingly managed through the Water Office as a national agency on the basis of the catchment, other resources (lands and forests) are managed locally through the local government structure of district, village and hamlet. Sub-catchment boundaries set by landscape and hydrology seldom coincide with the boundaries of local government. Thus land is managed within one set of boundaries by one set of mechanisms, whilst water is managed according to different boundaries and mechanisms. This may present day-to-day difficulties of practical co-ordination, as well as more lasting problems. In particular, the formal resolution of conflicts over resources is usually approached through the administrative or judicial system which is also based on local government boundaries.

The size and scale of the catchment is another constraint on resource management within it. Stretching some 140 km from north to south and east to west, it covers a large number of small and sometimes remote communities with different resource use patterns and needs. 'Think globally, act locally' may well be an appropriate dictum for environmental management, but it is difficult to apply when the context and even the knowledge for considering the whole of the catchment are lacking. The size of the catchment also creates practical problems of access and communication because the transport infrastructure is often poor and sometimes entirely lacking. In any case, significant parts of the catchment are almost entirely cut off during the rainy season, over a period of two to three months.

Communication problems are further compounded because local resource-users are accustomed to a verbal culture, and much relevant information is only available in written form. Experiments are underway with the use of video mediation. In this process, local people are encouraged to present their problems in their own words directly to the camera, rather than face-to-face with other stakeholders such as senior officials. They are then able to view and comment on the reactions and opinions of the other stakeholders and enter a dialogue in a non-confrontational situation. There has been considerable success with this so far, but much more work is necessary to develop mechanisms in which all stakeholders feel equally at ease.

Community engagement processes

Although there are many significant institutional stakeholders in the catchment, the key resource users are local people – the farmers, fisherpeople and livestock owners. Their actions are critical in defining resource management patterns, yet their involvement in the wider management process is problematic. A key constraint on livelihoods in Usangu is lack of labour, a phenomenon currently exacerbated by the AIDS epidemic. Small households, those comprising mainly old people or very young children, struggle to find enough physical inputs to make a living. Larger and richer households use extended family members, hire workers or take part in collective labour arrangements with neighbours.

There are a number of implications for patterns of resource use and for the improved management of land and water. Labour-rich households are able to use proportionately more natural resources; collecting large amounts of water using animals or carts, ranging further afield to gather scarce materials like thatching grass. They can also buy and sell (or rent) scarce resources such as charcoal, thatching grass, building poles, irrigated land and drinking water. They have the ability to send members to participate in management structures, although even they strug-

gle to do this at times of peak agricultural activity.

Poor people, on the other hand, are generally unable to enter the market for scarce resources and often have to travel further to seek 'free' supplies, thereby adding to their labour burden. Generally they cannot spare the time from meeting their basic subsistence needs to participate in management structures, on which they are under-represented.

'Ethnic and cultural identities are key influences in shaping people's livelihoods and resource-use practices.'

As a result of severe time and labour constraints, people favour resource management arrangements which are easy to implement and monitor; for example rationing of water from wells is only implemented at the height of the dry season and varies from year to year. People prefer minimal, ad hoc and flexible arrangements, rather than rigidly applied rules and regulations which may take considerable time and effort to enforce.

In practice, resources in Usangu are commonly used and managed by children. Children and youths collect water, graze animals, make charcoal, collect firewood and so on. Despite being the managers-in-use of these resources, they are never included in resource management decision-making structures, so leading to potential disjunctures between resource rules and actual practice.

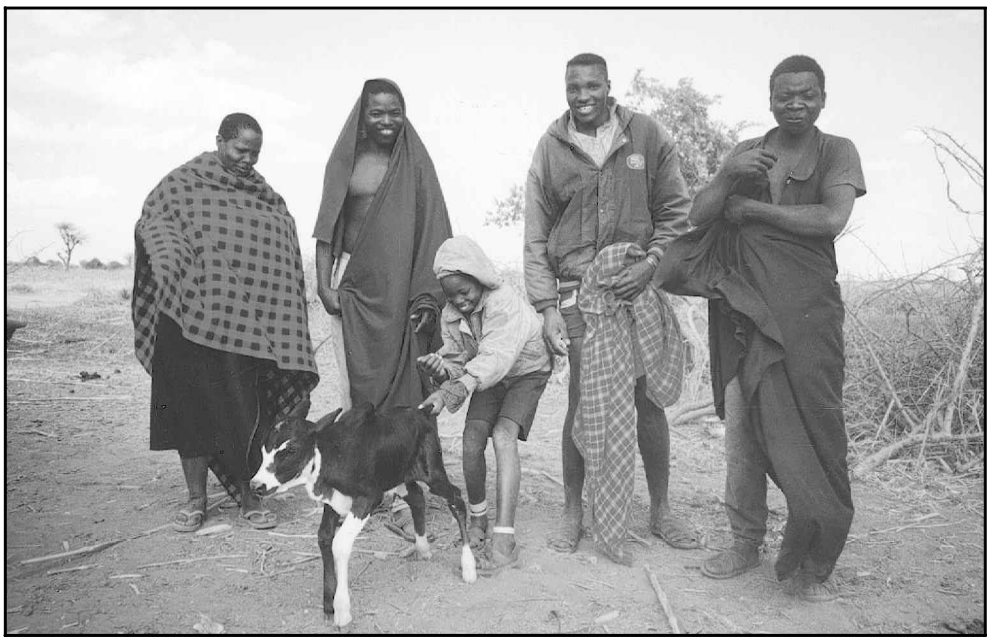
The relative absence of women in public decision-making fora concerning natural resource regulation may be partly to do with the intimidating and alienating effect of formal institutional arrangements. Women commonly participate in very local hamlet-level meetings but claim they 'do not have the language' to participate in village or catchment-level meetings. The video mediation approach described above is one attempt at overcoming such constraints.

Culture, conflict and institutions

Ethnic and cultural identities are key influences in shaping people's livelihoods and resource-use practices. For example, pastoralists living in large polygynous households often collect water using donkeys and carts, or send youths to collect large quantities of firewood and thatching grass by bullock cart. Agriculturalists of from other ethnic groups tend to live in smaller families, with fewer animals and collect water, grass and firewood by head loading. However, because the agriculturalists predominate politically and in decision-making structures they are able to shape resource-use regulations to their benefit and to the disadvantage of the pastoralists.

Cultural beliefs are critical to people's perceptions about natural resource trends and proper use. These include beliefs about the role of ancestral spirits and supernatural forces in making rain, keeping pools full of water, ensuring the fertility of land, and securing the health and wellbeing of people and animals. Interestingly, despite ethnic/livelihood competition for resources, cultural beliefs also provide scope for cross-ethnic and multi-user collaboration. People of different ethnic groups participate in the same rain-making ceremonies and in traditional arrangements to regulate use of grazing lands. All ethnic groups hold common principles about the desirability of respect for others, peaceful co-existence, proper observation of cultural ceremonies and the responsible use of natural resources.

An associated study into mechanisms for managing conflicts over land, grazing and water found that many local people prefer to use traditional or informal approaches, rather than formal legal processes. Such 'informal' local arrangements may employ very different principles to those underpinning formal institutional



Young men and boys are managers in the use of natural resources for the grazing of land

about the authors
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arrangements. Traditional ceremonies and conflict-resolution practices emphasise principles of co-operation, accommodation and reconciliation between different users, rather than the strict imposition of fines and punishments for abuse of resources. For example, hamlets and villages may impose fines against those community members who offend communal rules or fail to participate in collective work, but these are only levied (in the form of money, household goods or animals), when the social situation and extenuating circumstances of the 'offender' is taken into account. The proceeds are used to fund a celebration (a beer drink or feast) for the law abiding community members, as well as the offender. According to our informants, one of the purposes of this occasion is to celebrate forgiveness; it also helps to cement social ties and to build the social trust on which institutions depend.

Conclusions and implications

Many implications for people's livelihoods and resource management are emerging from the work in Usangu. Chief amongst these are the need for:

- Compatibility of formal processes of resource management (legal frameworks and organizations) with existing 'informal' practices and traditional principles
- Mechanisms for supporting co-operative action across boundaries (physical, administrative and cultural)
- The involvement of managers-in-use such as youths and children as well as traditional resource guardians
- Different forms of participation/decision making at which women and poor people feel able to present their views
- The reduction of crippling labour constraints in order to increase participation

Many of these have their origins in key current issues of governance, democracy and equity. These issues are as relevant to the management of water in river catchments as they are to other types of resource management.

Further information can be found on the Usangu web site (www.usangu.org). Much of the information on which this article is based has derived from the DRF-FID-funded poject 'Sustainable Management of the Usangu Wetland and its Catchment' (SMUWC), 1998-2002.

books

Engineering in Emergencies: A Practical Guide for Relief Workers Second Edition

By Jan Davis and Robert Lambert

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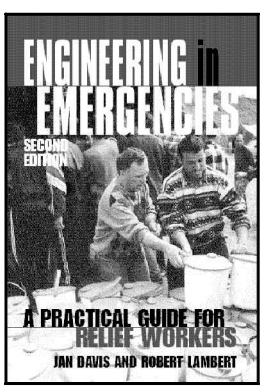

The first edition of what is commonly called the 'RedR Manual' was – still is – a great book. I would not exactly say it is 'the most exciting and ambitious work of non-fiction I have read in more than a decade' (that was another book), but it is such a comprehensive, reliable, accessible and well rounded book that I have no doubt it really has improved the performance of humanitarian workers – and not only the engineers – in many ways. It provides personal and professional guidance, reference material, and examples covering a huge range of subjects, from what to pack in an humanitarian worker's suitcase (Abney level, small musical instrument) to managing a team, designing a water supply system, building bridges and mending pipes with old inner tubes.

The second edition is clearly the product of a very thorough review. Most of the text, tables and illustrations remain the same, but the result is a book that is still highly relevant, incorporating the lessons learned from recent emergencies as well as important developments in techniques and thinking. Some of the newer technical features presented include water storage in cold climates, plastic latrine slabs, and the Oxfam/University of Surrey coiled pipe flocculator and up-flow clarifier. Standards and indicators from the Sphere Project are included in the text where relevant, and a new appendix of useful websites has been added to the vast and updated bibliography.

The experience of emergency situations in Europe over the past decade is also reflected in the new edition, broadening its scope beyond tropical conditions, giving a focus on a whole range of emergency situations, not only refugee camps. The previous chapter on refugee camps has been substantially reworked in the light of recent research, providing practical decision-making tools for choosing and designing temporary settlements, which go beyond traditional physical planning ideas.

Two entirely new chapters have been added – Personal Security and Telecommunications – based on RedR's training programme, providing clear and appropriate guidance both for individuals and agencies on key aspects of working in insecure environments.

The suitcase-packing list in the second edition is also bang up to date, including an MP3, a kilt and, rightly so, *Engineering in Emergencies*. I recommend it highly.

John Adams, Bioforce