

## **The modes of water resource appropriation in Zambia**

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### **Abstract**

*This paper discusses some findings from research on politics and water management in Zambia. It argues for a more holistic approach in the analysis of various modes of resource appropriation based on the fieldwork. Water policy frameworks adopted in most developing countries emphasise the access to resources and the cost return or community participation. The emphasis is drawn from the consensus applying the Dublin Principles and the models promoted by the water project financiers, usually donors and International Financial Institutions.*

*Key words: water resource appropriation, cost return, community participation*

### **Introduction**

The issues raised and discussed in this paper are some of the main themes emerging from research on hydropolitics in Zambia. The research investigates the decision making processes and strategies deployed by various actors performing a variety of roles. It focuses on the interactions among the actors and the factors they consider in decision making and strategy deployment. It also explores the various modes of resource appropriation. It uses an actor oriented approach within a Political Ecology framework. Political Ecology brings together political, economic, environmental and social issues.

This research was undertaken in 12 districts of Zambia from June 2003 to October 2003 and April 2004 to February 2005. The fieldwork also contributes to a wider research project on second order water scarcity in Southern Africa<sup>1</sup>. Rural, urban and peri-urban locations were included in the case study sites. The research participants included; users, regulators, NGO teams, donor agencies, academics, practitioners and suppliers. The positions taken by most of the participants indicated their conceptualisation of water resources. The positions also influence the strategies deployed to ensure access to water such as: formation of associations, social relations, representation, payment and advocacy. These strategies are compounded by the existing water resources management typologies.

The paper begins with a synopsis of Political Ecology, which is followed by background information on the Zambian water sector. It includes two case studies, Ngulula and Vuu, based in the Northern and Eastern provinces respectively. The case studies illustrate the modes of resource appropriation and the mechanisms of legitimisation. Both case studies used in this paper are drawn from the rural areas where options for water resources sometimes exist. The local communities use the resources that are available whether safe or unsafe. The patterns of use are influenced

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by external actors such as project teams, development agents and extension workers. The influential actors cover all the fields of Political Ecology.

### **Political Ecology**

Political Ecology can be perceived as an inter-disciplinary approach to the study of humans and their environments incorporating studies from geography, sociology, economics, history, political science and anthropology. No single predominant definition of the term exists but Bryant and Bailey (1997) describe it as an inquiry into the political sources, conditions and ramifications of environmental change. Atkinson (1991) phrases it as a call for a more practical look at how we might go about building a world that will prevent the ecological catastrophe expected as a result of the continuation of the contemporary cultural trajectory’ - a project to achieve a ‘Green Utopia’.

Robbins (2004) summarises several definitions of Political Ecology, paying particular attention to the desired goals of the authors. In his view the understandings appear to describe: empirical, research based explorations to explain linkages in the condition and change of social environmental systems, with explicit considerations of power. The exploration is done within a normative understanding that there are better, less coercive, less exploitative and more sustainable ways of achieving the same targets. The fields of research include finding causes of starvation, soil erosion, landlessness, biodiversity decline, human health crises and the general exploitation of other people and environments for limited gain of specific social actors at the cost of the collective.

Stott and Sullivan (2000) point out that Political Ecology has increasingly become concerned with the human rights injustices which can be brought about by the transfer of inappropriate ideas. The ecological health and integrity are brought into contexts far from the ecological and political circumstances in which they arose and the exposure of interests served by these ideas. They also note that emphasis is increasingly placed on: local narratives, the significance of theoretical frameworks and the assumptions in constraining the construction of environmental narratives, culturally informed ideas regarding the conceptual separation of people from the environment and the importance of both the temporal and spatial scales of observation in influencing findings of environmental research (Stott and Sullivan 2000). In the Political Ecology framework the local scale is promoted as the focus of environmental research and the transfer of ideas. This is a welcome aspect especially because it is embedded in the analysis of the local level, the assets possessed and building on them as opposed to imposing ideas and grafting them locally.

The Global Water Partnership definition of water governance cited by Franks (2004) includes political, social, economic and administrative systems in place to manage and develop water resources. It includes the various key fields of Political Ecology and alludes to its application in the analysis of water resources governance.

### **Background**

In Zambia, the official documentation and legal institutions increasingly view water as a scarce economic good shifting from the previous social good concept. The emphasis is stipulated in the Dublin Principles, the World Water Council and Global Water Partnership documents (Abu Zeid 1998, GWP-SA 2001). The National Water

Policy for Zambia was drawn up in 1994 (GRZ 1994). The exercise was funded externally and was inherently a condition for funding water sector programmes and projects. The Millennium Development Goals (MDGs) appeal to the Government’s ideal of universal access to domestic water. The funds secured through the MDGs are mainly used to drill boreholes in rural areas as a way of reducing poverty levels. The percentage of the Zambian population with access to safe and clean drinking water remains almost stagnant below 70% overall and below 50% in rural areas (CSO 2000).

Most water users view water predominantly as a social and cultural good. The urban water sector strategy is based on cost recovery (GRZ 1994, NWASCO 2002). The Commercial Utilities established in urban areas usually increase water tariffs excluding more of the urban poor<sup>2</sup>. They attempt to exploit the cross subsidisation but admit that the system would only work if they have a significant number of high volume water users (above 20 cubic meters per month). The high volume users are the only client group that pays the full cost of their water supply. The need for high volume users is counter effective to the water conservation and demand management programmes undertaken by the Utilities. The commercial model depends on low unaccounted for water, a high percentage of clients paying their bills, high collection efficiency, access to financial markets for water suppliers, supply efficiencies, effective water treatment, a well maintained water distribution system, a constant power supply and effective workforce. Most of these conditions are not met by most urban water suppliers. The inefficiencies and dilapidated infrastructure, which resulted in the water sector reforms, have not been addressed in most towns (NWASCO 2004).

The rural sector strategy depends on donor funding and the conditional community participation as well as cost sharing (GRZ 1994). The level and type of participation varies from project to project (Cornwall and Brock 2005). The community participation is usually in project implementation and their contribution is a symbol of support for the project. The contribution is often in the form of labour and materials. Water committees are created to maintain and operate the infrastructure in rural and peri-urban areas. The ownership of the project is usually interchanged with the ownership of the infrastructure. The community members are aware of some ownership in the project cemented by their participation in its implementation. Their sense of ownership however rarely extends to the infrastructure (JMP 2004). The ownership characteristics perpetuate the dependency on outside intervention for major breakdowns and repairs. The national policy adopted and the sector strategies affect the local populations in various ways.

## **Case Studies**

The representation of water as an economic or social good is an example of the first mode of appropriation (Weber and Reveret 1993). Other emphasised modes of appropriation are access, use and formal allocation. They obscure modes such as informal allocation and the transfer of the access modalities. In Zambia the Water Board in the Ministry of Energy and Water Development (MEWD) is responsible for formal water allocation. However at the grassroots most allocation is done informally

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<sup>2</sup> Poverty levels are very high in Zambia. The last report on living standards estimated that more than 60% of the Zambian population is classified as poor.



insufficient. Neighbours have to negotiate amongst themselves to ensure each one gets an allocation of irrigation water. Sometimes one farmer offers to irrigate in the late evening when most other farmers are not irrigating their crops.

Some of the farmers are members of a vegetable growers association, which has a revolving fund that is used as a central loan facility for the members. At the time of the field visit the association had 13 members. Some initial members withdrew after failing to pay back the loans.

According to the village residents, domestic water is sometimes obtained from the furrow i.e. when the flow is high and the water appears clean. When the flow is low and the furrow has weed growth, the community members use a perennial stream near their fields. The members had applied for funding to line the furrow with cement to make operations more efficient. The application was suggested by the MACO officials. The furrow users have other fields that they use for rain fed farming where they grow mainly maize, groundnuts, beans and sweet potatoes.

The furrow users in Ngulula interact on an informal basis using their relationships developed in the community. Community members are expected to participate in the cleaning and the maintenance of the furrow based on their responsibility as furrow users and community members. The negotiations used in ensuring access to irrigation water especially for the farmers that are down stream build on the relationships developed in the community. The farmers are aware the furrow is there for the benefit of all community members and in order to maximise the benefits from it; they have to co-operate as members of the community and users. Reportedly some farmers occasionally hoarded the irrigation water upstream but this practice was addressed and discouraged during a community meeting chaired by the village headman. The farmers in Ngulula benefit from their close proximity to urban markets in Kasama. Some farmers are able to secure markets for their crops in the urban supermarkets. The farmers assert they need to be persistent and produce good quality crops to secure space on the supermarket shelves.

## **Vuu**

Vuu Irrigation Scheme is situated in Lundazi district, Figure 1. A scheme management committee elected by the members regulates the use of irrigation water using a first come first served principle. Water flows in the primary and secondary canals are controlled using the gate valve. The committee chairman keeps the key for the gate valve. A member wanting to irrigate his plot must obtain the key from the chairman. If it is not available then the member negotiates with other members who may be irrigating their plots at a given time. The scheme operates on an informal basis based on the relationships of the members. Each scheme member pays an annual subscription fee of K10, 000<sup>3</sup>. At the time of the field visit the scheme had 25 members but only seven were active. These seven members were the only ones that appeared to pay the annual user fees.

Some farmers also use bucket irrigation when the water level in the dam is low. They use a stream that runs along the edge of the irrigation scheme area. Bucket irrigation

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<sup>3</sup> The fee was decided on by the scheme members and approved by the local MACO team.

however is only suitable for crops that have low field capacity i.e. low water requirement, because of labour demands. The water level in the dam is substantial during the early part of the dry season but low when irrigation is desired the most i.e. at the end of the dry season. The dam is used by fishermen, farmers and livestock owners. The fishermen prefer low water levels so they can catch their fish easily. The farmers and livestock owners on the other hand prefer high levels of water in the dam to sustain their farming activities and have enough drinking water for their animals in the dry season. The fishermen are sometimes accused of leaving the valve open overnight when no-one is irrigating the plots. This practice lowers the level of water in the dam.

## **Discussion**

The case studies illustrate a variety of mechanisms shaping the appropriation of water resources in the particular communities. In Vuu the irrigation scheme is located relatively far away from the residential area. The water scheme members use a separate source for domestic water. The membership for the scheme is determined by the elected committee that appears to be a formality. The narratives of the members reveal the importance of the water committee chairman who is given the position not because of his ability to perform the required duties but mainly due to the position he holds in his community. He is believed to be a powerful man based on his alleged witchcraft practices. His position of leadership in the scheme is not challenged for fear of retribution. Creating a committee should ideally decentralise the water management to the community level. The unforeseen result in this case is the cementing of the power held by some individuals in the community. The gains are concentrated in specific members.

The allegations of witchcraft would not necessarily affect the operations of the scheme if the chairman was performing his duties according to the MACO expectations. The cultural beliefs of the community however affect the relationship between the MACO officials and the scheme members. The MACO officials feel the members are too dependent on outside intervention and come up with various excuses for the poor performance of the scheme; such as witchcraft. They expect the members to produce surplus crops for sale in the nearby urban markets thus generating income. However the income generation sometimes obscures the need for food sufficiency. The MACO promotes agriculture as a business and not a means of survival, in line with productivity and the economic value of water.

In Ngulula membership to the vegetable growers association is voluntary. The furrow users consider the benefits of belonging to the group and decide whether to be a part of it or not. The residential area is close to the furrow and community members sometimes use the water for domestic purposes. The association is an income generating channel, meeting the expectations of the MACO project teams. The lack of a safety net for seasons with poor harvest has negative implications on its operations. Other economic and financial factors also have negative impacts such as the access to markets for some crops and the market prices. The pricing mechanisms tend to favour the urban residents leaving the farmers with little incentive for vegetable production.

Most decisions in the association are based on the relationships developed outside the formalities of membership, part of the social capital of the group. Social capital is an important element in capacity building and community participation. The individual

calculations of the potential benefits from a project are also important. Community members often participate in the implementation of the project despite their individual preferences as a future investment. The use of irrigation infrastructure is enshrined in the participation and community membership. The participation in the maintenance of infrastructure also qualifies right of use. The type of use, food sufficiency or income generation is an individual choice based on considerations of potential benefits and opportunity costs. The opportunity costs are not always considered by the project teams. Small scale agriculture is a demanding activity especially if irrigation farming is included.

## **Levels of appropriation**

The most dominant modes of appropriation in irrigation schemes are access, allocation and use. Appropriation is defined as the authority over a resource for the purposes of this paper. The authority has various sources and is legitimised in a variety of ways. The elected committees are responsible for allocation and access through the control of plot tenancy. The election process and membership regulations legitimise the authority of the committee. A village headman also controls the access to a furrow through plot allocation. At the household level the head is usually the decision maker and appropriator. In communities the appropriator is an elected committee, a voluntary leader or a hereditary one. Some communities also interact with field officers from Local Authorities or Government agencies and NGOs. These officers also play a role in resource appropriation. In farming communities the land owner or tenant is also an appropriator.

The water resources are represented as productivity assets and also as social assets in the irrigation schemes. The actor whose main concern is the use of the resource requires access to it through the available options. The options availed in the case studies include membership to a scheme, personal investment, risk analysis, tenancy and neighbourly relations. The transfer of these modalities is critical given the fluidity of the communities<sup>4</sup>. The water resources have to be available for them to be allocated. The grassroots allocating body coordinates the maintenance of the infrastructure and ensures the continued operation through the members. Any disputes arising from the allocation practices are addressed through the committee and the village headman. The headman is the community leader and his involvement symbolises community cohesion.

## **Conclusion**

The recognition of the impact of social and political processes in water management and governance fits into the Political Ecology framework. The influence of economics and the environment have long been accepted. However in the analysis of the socio-political processes emphasis tends to be on the institutions and how they operate to incorporate all water users especially the poor and vulnerable. The focus tends to be on specific modes of resource appropriation, mainly access, allocation and use. Access draws attention to providing more water points and creation of institutions for the maintenance and operation of the infrastructure. The project teams are constantly

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<sup>4</sup> A community for the purposes of this research refers to a group using a common water point.

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playing a game of catching up to increase the percentage of the population with access to clean and safe water. The representation of the resources and the transfer of the access modalities tend to be ignored. They tend to be embedded in the elasticity of the institutions and their sustainability.

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