

Conflict Management in Rural Water Sources

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SUMMARY

Water resources depletion and rising demand on limited water supplies result in putting at risk some of the water related investments, thereby creating conflicts. Conflicts however, occur in the presence of local institutions such as village councils, ward development committees and district councils which are empowered by legislation and encouraged by policies to undertake resolution and management in their areas of jurisdiction. But still water use conflicts continue leading to open fighting, property damages and in some places have led to blood shedding.

However, many attempts have not been successful as water use conflicts continue to explode and escalate in many parts of the country. This situation calls for a need of finding out why conflict management practices are failing in some areas.

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1. INTRODUCTION

Tanzania's main water usage is from domestic consumption, industry, irrigated agriculture, fisheries and hydro-power generation. With a large and rapidly increasing population of approximately 40 million, less than 80% live in rural areas, there are many and often-conflicting pressures on the nations water resources (URT, 1995a). Although there is a theoretical priority in water resource allocation and development for domestic supply, in reality considerably greater resources are put into irrigation (for food security) and hydropower (for energy security) schemes (Maganga, P. and Juma, I.2000)

Unfortunately, fragmented planning and management, a lack of integrated approaches and conflicting sectoral policies has contributed to increasing conflicts over water use (*ibid*). Weihrich (1993) in Magai (2005:7) defined management as the process of designing and maintaining the environment in which individuals working together in groups efficiently accomplish selected aims. Management comprises of four main management functions: planning, organizing, leading and controlling.

Ali N. (2004:4 Unpublished) defined the word conflict as a disagreement and differences within, between and among individuals, groups and structures. These disagreements and differences become conflicts when they have devastating effects on the individuals.

Conflicts emanate from poorly managed changes which are inevitable elements of individual or societal life. The change can be in form of:-Competition over certain benefits which each individual or institution feel it deserves in an environment where there no acceptable modality of moderating or rationalizing needs or interests.

-Changes in policy, legal and institutional context.

-Changes in power centers and its distribution in the society, the power in its various forms, political, economic social, including the power of information (*Ibid*).

Water scarcity has resulted in conflicts between farmers and pastoralists, especially during the dry season. The rising number of cattle has increased the requirement for water and forage during the dry season, while at the same time the expansion of areas under irrigation by farmers has reduced the land area available for grazing.

Pastoralists in turn graze their cattle on cultivated fields to access water sources during the dry season, causing damage to crops and cultivated fields. Again, domestic water issues are the focus of little concern, despite the large numbers of people without access to adequate supplies and the important contribution that domestic water makes to livelihoods (promoting economic activities as well as obvious health gains).

This is the story of water use conflict on Mlali River, a tributary of Great Ruaha River in Morogoro region. It takes place in Kiperu village; however cases such as these are not uncommon in the areas where pastoralism and farming are taking place in Tanzania.

Therefore Kipera village is illustration of how water use conflicts have been dealt with over time. In many cases there are no success stories, but only for a period of time.

The establishment of Kipera village was in 1968 by villagers and its recognition by the government was in 1972 with registration number MG/VG/301. From the time of its establishment, the village had no any written local plan (Land use Plan) which could show how its land could be used. During this period the households which were living in the region were farmers as well as livestock keepers (the Maasai).

Since Livestock keepers had large herds of cattle (more than 2,000 which were only found in the now Kipera village), which could interfere with other land uses in the region particularly during the dry season, some weak conflicts started to emerge.

2. EARLY CONFLICTS

In early August 1971 during the dry period there emerged a conflict in the village over the use of a common water resource which was mostly depended by users (river Mlali). In this conflict, domestic users particularly women and pastoralists quarreled as a result of insufficiency of water for their needs. The main issues that caused these parties to be in conflict were firstly water pollution i.e. contamination of water and destruction of the water quality by the livestock which were taken to the river basin to drink water; and the secondly the tendency of the livestock keepers to value the needs for their livestock more than the domestic needs for water.

In this case, livestock keepers when at the river basin, regardless of water shortage let their livestock consume all the available water and did not spare it for domestic users. Due to this circumstance, domestic users prohibited livestock keepers from bringing their cattle to the river basin to take-in water. Because the river water was the only and mostly dependable source of water in the village, then livestock keepers did not agree with what domestic users wanted.

3. A CALL ON CONFLICT GROUPS TO MEET BY ELDERS

Elders are people whose ages are 55 years and above. Another attribute for qualifying in this group is originality from the village with a good knowledge of events that have been taking place. They are from both pastoralist and farming societies in the village, and the pastoralist societies which were included in this group were those which existed and lived in the village from 1970. Nomadic pastoralist societies were not considered in the conflict resolution team.

The escalation of conflict between domestic users and pastoralists brought antagonistic lifestyles to the inhabitants of the village, the pastoralists declared to kill anyone who shows up to prevent their livestock from drinking river water. For that matter elders who were leading the village by that time saw it wise to resolve that conflict.

4. DOMESTIC USERS AND PASTORALISTS MEET TO RESOLVE CONFLICT

A participatory process for that matter was used in resolving this conflict. After a long time dialogue and compromise between the groups in conflict a common consensus was reached

which was believed to maintain peace while using the limited river water. The decision that was reached in this process was to set specific times when domestic users particularly women could draw water from the river and when livestock keepers could allow their livestock to flow down the river to drink water.

Women were for that matter obliged to draw water from the source from 6 am to 11 am while the livestock keepers agreed to use the resource from 12 noon to 6 pm. The agreement lasted longer since the livestock number was still low and therefore the resource sufficient to for all users.

This group of actors (village elders) in conflict resolution process acted independently employing traditional methods of resolving conflicts that occurred in the village between competing users since it did not use any legal or statutory document to settle the disputes. By applying this method conflicting groups particularly women appreciated the way it organized the discussion.

5. VILLAGIZATION AND ITS EFFECT ON AGREEMENT RESOLUTION SHARING SYSTEM

However, during the villagization process (resettlement) in 1973-1974, Kipera villagers were forced to move from their original residing areas (on the hills and elsewhere) and concentrated in one area. This was an order from the Government in order to enable them enjoy economies of scale for easy access and sharing of services. This order however, had a negative consequence since people who used to live in large areas were now forced to confine themselves in a specified small area (a so called village). For that matter therefore pressures over the use of available resources increased more than it was before the programme. In Kipera village, the distribution of different land uses was in such away that farmers were mostly concentrated near the Ng'ole valley which was at the centre of the village while livestock keepers settled on the sides of the village where they could get enough land for their animals.

As the plate below appears, it shows one of the traditional conflict resolution processes that were done under the leadership of the village elders.

Elders In A Traditional Water Conflict Resolution



Source: Field Survey in Kipera Village, 2006

Between 1973-1974 when resettlement took place, as it has been explained above, villagers were concentrated in one area and this caused an increase in population and hence competition over the use of available resources particularly river water. Due to this situation conflicts over water emerged again this time involving livestock keepers, farmers and domestic users.

6. A PLAN BY THE VILLAGE GOVERNMENT

From the time of its establishment, the village did not have a land use plan. During this period all the households were farmers except three households which were livestock keepers (the Maasai), who had more than 2,000 herds of cattle, this was 1970. In this manner, 156 hectares were set apart as a grazing area on the north-western part of the village and 1 hectares was left as a cattle track from the grazing area to a water drinking point, while 17 hectares along the river basin were left as a refuge for cattle while drinking water” (Interviews with the Village Executive Secretary Mr. Ramadhani Maguo)

No land for neither institutional nor commercial activities was provided to serve the purpose since due to low population by that time no one could dare to engage in commercial activities or establish a private or public institution. The zoning (locally prepared plan) had positive benefits since incompatible land uses were separated and this helped to minimize frictions among different land users although water was still a factor that brought users into frictions during times of scarcity.

7. MONGWE SOURCE DRIES UP

In July 1974 the main source of river Mlali experienced shortage of water and hence supplying limited water. Following this factor then water users were in a great threat over available water. In August 1974 farmers and pastoralists quarreled as a result of cattle, after having drunk water from the river stepped into the farm and destroyed the crops.

8. VILLAGE ELDERS ADVISE THE VILLAGE LEADERSHIP TO CALL GROUPS IN CONFLICT

As it was agreed in mid August, all the groups in conflict (farmers and pastoralists) appeared for the resolution meeting.

Once again, when Elder Hussein was asked to tell about this situation gave out the following:

“Really this was terrible when compared to that of 1971. This was because in this time (1974) pressure on the use of river water was greater when compared to that of 1971. We all depended on only one common water source with an increase in users because of the villagilisation programme and in the dry season when water was scarce every user wanted to dominate it particularly the pastoralists. Due to this, the village government through the advice from the elders saw the need to call the conflicting parties and create consensus among them. The resolution process of this conflict was now under the leadership of the village council since the village had its democratically elected leaders already”.

To resolve this conflict as it was used to be done, all the actors involved in the conflict (farmers and livestock keepers in this case) were called by the village leadership in the presence of elder people in the village to discuss the matter and then make an agreement in a participatory manner. In the resolution process, all parties were given equal chances to

express their issues relating to the conflict that had occurred and finally giving opinions on what could be the long-term solution for the problem.

After the dialogue had come to the end, it was agreed that livestock keepers should diligently take care of their cattle while drinking water because the number was not so big in a sense that the area which was set apart as a refuge could not be enough. Failure to do this then, when such situation could occur again compensation to the farmer for the destructed properties was their right. From this time conflicts were greatly minimized and villagers lived in harmony though water scarcity was still persisting.

The root of this agreement was however the local plan that was prepared by the village government in collaboration with other actors who were directly linked to the conflicts that ever had evolved. However, conflicts started to occur and evolve when the irrigation scheme gained popularity in production in 1980s particularly during the dry season as well as when pastoralists from other areas lacked pasture and water for their livestock and hence moving to Kipera for their sake.

9. EFFECTIVENESS OF IRRIGATION SCHEME AND CONFLICT ESCALATION

From the statements that have been made above, the irrigation scheme became effective from June 1980 whereby people showed seriousness in using the fertile land in the Ng'ole valley during the dry season with the application of irrigation systems. Crops that were grown through irrigation system included tomatoes, onions and maize to mention a few.

Irrigation Channel Used in the Dry Season



Crops Grown through Irrigation



Source: Field Survey in Kipera Village, 2006

Because of the increased demand for water by different users in this era, conflicts in the use of river water which is a common and dependable source grew bigger than it was before irrigated agriculture became effective.

Due to this reason, in June 1985 farmers, pastoralists and domestic users quarreled. In the village and in other many parts of the world, irrigated agriculture takes place during the dry season after the rain season has come to an end. During this period other water sources such as ponds, seasonal rivers and water wells which in one way or another serve people dry up

and direct users to the available permanent water source. In Kipera the same situation occurred in this year and for that matter directed all users to river Mlali for their requirements.

10. ATTEMPTS OF THE VILLAGE GOVERNMENT TO SETTLE THE CONFLICT

As time went on the conflict continued and it started to be more excruciating. Because of this situation the village government as it used to do, called pastoralists, farmers and domestic users so that all these parties under the leadership of the village government resolve the dispute and make a new agreement for sustainable use of river water.

In the resolution process it was said that in order to avoid contradictions over the use of river water, domestic users were asked to use water from 6 am to 11 am, pastoralists were to allow their livestock to flow down the river from 12 noon to 6 pm while night time was granted to farmers to allow water through their respective channels to feed their fields. Farmers and domestic users agreed with this arrangement but pastoralists did not agree with it because they claimed that the time set for them was not sufficient for their livestock to get enough water. For that case consensus was not reached and the meeting was postponed until it could be stated. When an old Maasai Laibon, Mr. Olisaiko Ole Loiko was asked to tell of the situation said:

“We, of course, did not agree with that decision since it mostly favoured farmers and domestic users. The water that was available during that time when compared to the number of livestock was not sufficient, we needed more time may be from 10 hours in the morning up to evening”⁶. He concluded.

11. WARD EXECUTIVE OFFICER PARTICIPATES IN RESOLVING THE CONFLICT

After the failure of the village government to resolve that conflict, WEO of Mlali ward was invited to participate in the resolution process. Following that failure, the village government set another date on which all the groups in conflict were to meet again (in September 1985). On that day WEO came to participate in the resolution process.

In his participation he wanted to hear from each side (group) and the decision that was reached. He really agreed that time that was set for pastoralists to use water compared to the number of livestock they had was not enough. But on the other hand he could not adjust the time set for the rest of the users since if he could do so then consensus could not be reached. In finding the solution to this issue he dedicated to pastoralists to continue using the time set and within that very time they were allowed to go down to Mlali village to access their livestock to river water. One of the reasons that drug the WEO to advocate this to pastoralists was that Mlali village had no livestock keepers with large herds of cattle and flocks of goats and sheep. All the groups that were in conflict agreed to this decision and the meeting went over. One old Maasai who attended that meeting when asked to express his feelings on the decision reached said:

“That one sounded better to our side because if not so we could not agree our livestock to die of thirsty unless some one on our opposite side could die. This is because livestock is our everything, we neither practise cultivation nor business activities and for that case we care more livestock than we do to our children and therefore we could not let our livestock die”.

After the gathering with common consensus reached and each group having comfort then conflict ceased for quite a long time until irrigated agriculture expanded more in 1986.

12. EFFECTS OF RAPID EXPANSION OF IRRIGATED AGRICULTURE OVER WATER

Irrigated agriculture rapidly expanded immediately between 1986 and 1988. Today, irrigation is the motor of development in the basin, notably in the valley, due not only to improved technology, but also to the wider variety of produce grown (rice, onions, tomatoes, potatoes, sweet potatoes and maize). About 228 hectares of land are now cultivated in the basin: 143 hectares during the rainy season (March-June) and 85 hectares during the dry season (June-September) shows on the following page.

For that case population increased by 49% from 1978 to 1988. This is due to the fact that in 1978, the village population was 2,289 while in 1988 it was 3,407 people.

13. IMPACTS OF EXCESSIVE LIVESTOCK RAISING OVER WATER

From 1990 different livestock keeping groups started to migrate in the village from other neighboring and even distant villages such as Melela, Kilosa, Msongozi, Malaka, Mangae, Mkata and Dodoma. The main reason for their migration was to search for pasture and water for their livestock. Each group that moved to the village had about 2,000-3,000 cattle who were the Maasai and Gogo.

Two significant droughts impacted the region in recent years, one in 1990 and one in 1997. In the fall of 1997, Mlali River reached its lowest storage level since its initial filling. As droughts have been a reoccurring challenge, the frequency, intensity, and magnitude of drought damage in this region is of great concern. Drought, instream flow targets, regional water needs, and misunderstanding have resulted in a high level of conflict in the river basin. This conflict was sufficiently great in 1997 when Mlali River was not filled during the raining season, even though this storage would have been extremely valuable during the drought that followed.

One of the pasture attracting Pastoralists



Source: field Survey in Kipera Village, 2006

This plate shows one of the areas in the river basin that has green pastures for livestock that attract livestock keepers for their herds of cattle and flocks of goats and sheep. The pastures appear in that way during the dry season when other areas have no pasture for livestock. Due to this case, there has been

massive migration of livestock keepers to the village from other areas which faced scarcity of pasture as the table below illustrates.

Livestock Keepers Migration to Kipera Village

S/N	Livestock Keepers Moved From Other Areas To Kipera	No. Of Livestock Keepers	No. Of Livestock	Year Of Movement
1	Mkata	3	6100	1993
2	Mangae	1	1900	1994
3	Dodoma	4	8300	1994
4	Malaka	2	4200	1995
5	Melela	3	5600	1995
6	Msongozi	2	4050	1996
7	Kilosa	5	12500	1997

Source: Village Executive Office, 2006

The above table shows the number of migrant pastoralists from different neighboring and distant areas to Kipera village from 1993 to 1997 whereby water scarcity was great. This situation for that matter increased pressure over the use of river water and hence explosion of conflicts between pastoralists, domestic users and farmers started.

14. FARMERS AND PASTORALISTS QUARREL FOR SCARCE WATER

The emergence of pastoralist groups increased pressure on the grazing area and water especially during the dry season where all livestock could drink water from the Mlali River. Another factor which contributed to the increase of conflicts over the use of water was effective irrigation farming.

Due to this, in July 1993 conflicts over the use of river water between livestock keepers and farmers started. The reason for the conflict was the breaking of the agreement that was made between the WEO and groups that were in conflict on the time for each group to access and

use river water. They thought of using another organ (Changarawe Primary Court) which is in Changarawe village.

15. FARMERS REPORT THE CASE TO THE POLICE POST

When these occurred farmers did not want to go the village leadership for the solution since it most of the time proved failure in resolving conflicts that occurred in previous years. For example, in one case when a farmer reported a case to the police post of the destruction of his crops by the Maasai herd of cattle, the police called both parties at the station. On their arrival for the resolution agreement, it was agreed that the destructor (the livestock keeper) should compensate the farmer and the date for this was set. Since the Maasai are nomadic, after an agreement it was a time to start moving to another distant area and for that case the terms of the agreement were not fulfilled.

In making judgments and agreements between conflicting parties there has been a tendency of one party disappearing forever. This is particularly applies to the Maasai people who are nomadic.

16. MORE PASTORALISTS COME TO KIPERA

Photo of Maasai Nomadic Pastoralists



After livestock keepers had roamed in some areas without getting pasture and water for their livestock they came back to the village in 1997. In June 1997 there appeared a massive migration of pastoralists from Kilosa to move to the village for the sake of water and pasture. The reason for this was the tremendous drought that took place in most areas in Tanzania before the El Nino downfall in 1998. Movement of pastoralists from Kilosa to Kipera was contributed by the factor that Kipera village has a river valley that does not loose green pasture compared to other areas of the region. Again, the massive migration had no peace to the residents of Kipera village

particularly to the farmers who practice irrigation farming. These two groups had an endless quarrel from the time pastoralists arrived in the village. Since farmers had lost hope to the village government and police post, they asked for a help from the district council.

17. FARMERS, DOMESTIC USERS AND PASTORALISTS MEET FOR NEGOTIATION

In October 2002, all actors met to discuss in detail about the conflict and find out the long-term solution. Actors who were involved in this meeting pastoralists, domestic water users and farmers as groups which were in conflict; village council members, elders and WEO acting as mediators to the groups which were in conflict.

In this negotiation meeting fair and active participation were considered. In the meeting all stakeholders had equal chances to express their ideas concerning themselves. In the discussion pastoralists were identified to be the causative agents of conflicts in the village since they did not abide with the rules and regulations that were set by the village government over the use of river water. Finally, ways to conclude the persisting conflict were committed whereby among those mentioned; observing time that was agreed to be used by each user particularly during the dry season was given priority.

The WEO's concluding remarks marked the end of the resolution meeting and it was very successful since from that time conflicts over the use of river water have not been threatening as it was in the past.

18. CONCLUSIONS

This study has demonstrated the occurrence of conflicts over the use of water and for how long such conflicts have been persisted in Kipera village, actors who have been involved in those conflicts, actors and processes which have been employed in resolving such conflicts and actors who have not been involved in the resolution processes. With regard to the findings of this study, the following conclusions are made:

-Attitudes, roles and responsibilities of men and women have not been taken into account in the village, both sexes and different social classes do not have the same access to and control over water resources and that work, benefits and effects may be different for the diverse socio and gender groups.

Not considering the needs, roles, capacities, benefits and burdens of men and women, rich and poor, young and old has become the norm rather than the exception.

-The prevailing gender division of labor in agriculture, farming practices, and land-tenure systems has rarely been a concern before and after irrigation systems were established. One consequence has been the dispossession of female farmers. When the irrigation scheme was established, land was given to male farmers, excluding women and unmarried youths. There is strong evidence of a decline in female farming as the irrigation schemes became widespread. Similarly, when irrigated tomato and maize farming was introduced in the Ng'ole valley, resource and access rights of women and unmarried youths declined.

-Lack of involvement of women and unmarried youths in councils which are concerned with settling matters pertaining to the use of river Mlali waters. Although sometimes involved,

their opportunity to be heard is still restricted to a few numbers while the poorest are less concerned.

-The village lacks a well-organized institutional arrangement which helps to form the basis for all actors to get involved in the decision-making process. As it was said by Lane *et al*, (2001) in his study on “collaboration” as a prerequisite for sustainable development, he argues that, collaborative efforts in local institutional building and development are very important because the local leaders and their subjects must work collaboratively so as to form a strong institutional framework that will be able to address management issues. Furthermore, Knight (2000) said that creation of new institutional arrangements that will provide more rooms for all actors to participate is also a prerequisite to effective collective action practices.

From these arguments it can be concluded that local institutional arrangements that will enable all people to participate fully and have dialogues that will lead them to coming up with a common consensus on policies to guide them and eventually lead to respect of the agreements reached during the dialogues is very essential for the sustainability of water supply systems.

Lastly, Kipera village does not have strong policies that ensure sustainability and conservation of river water as it is stipulated in the 1997 National Environmental Policy. In this aspect, Ostrom (1991) gave arguments that in order for communities to effectively manage their own development there should be policies that are developed by them. He further said that if users of the resources which, in this case it is water are involved over time in making and adapting rules within collective choice arenas of appropriate strategies, obligations of the users, monitoring, sanctioning and conflict resolution, then such a community will be able to manage its common resource sustainable.

However, the conflicts between pastoralists and farmers over water still persists in this locality, in October 2008, 9 pastoralists were involved in the killings of 6 farmers after a farmer shot dead a pastoralist on a confrontation in the farmer’s farm. The pastoralists are in police custody. This magnitude of conflict is being handled by Morogoro Regional Commissioner (*Guardian Newspaper, 9 Nov 2008*). Local people who talked to The Guardian on Sunday claimed the judiciary and police force favoured pastoralists whenever farmers filed cases regarding damage on their crops.

They said because of their wealth the pastoralists easily bribed the police and the magistrates (*Ibid*).

REFERENCES

- Ali Hassan, N. (2004); *Experiences of Land Use Conflict Management Strategies in Rural Tanzania*, University of Dar es Salaam
- Baur, P.; N. Mandeville; L. Mbuya; B. Lankford and R. Boak (2000); *”Upstream/Downstream Competition for Water in the Usangu Basin, Tanzania”*, BHS 7th National Hydrology Symposium, Newcastle

- Burra, R. (Forthcoming) *Linking Institutional Changes and Local Resource Management: The Case of Hai District, Kilimanjaro District*, Dar es Salaam, University of Dar es Salaam, M.A. Dissertation
- Butterworth, J. and Soussan J. (2001); *Water Supply and Sanitation & Integrated Water Resources Management: Why Seek Better Integration?*, Andhra Pradesh, India, 5-14 May 2001. NRI, UK. <http://www.nri.org/WSS-IWRM/>
- Magai P.S. (2005); *Assessment of Local Community Activities on Managing Water Resources and Its Environment*, Dar es Salaam (published?)
- Maganga F. P., Butterworth J.A., and Moriarty P. (2001); 2nd WARFA/Waternet Symposium: *Integrated Water Resources Management: Theory, Practice, Cases*; Cape Town
- Maganga, F.P. and Juma, I. (2000); *From Customary to Statutory Systems: Changes in Land and Water Management in Irrigated Areas of Tanzania: A Study of Local Resource Management Systems in Usangu Plains*, Report Submitted to ENRECA
- URT (1991) *National Water Policy*, Ministry of Water, Energy and Minerals, Dar es Salaam
- URT (1995a) *Rapid Water Resources Assessment, Vol. 1, Main Report*, Ministry of Water, Energy and Minerals
- URT (1995c): *Water Resources in the Great Ruaha Basin: A Study of Demand Driven Management of Land and Water Resources with Local Level Participation*. Prepared for the Rufiji River Basin Office by the Joint Danida/World Bank Study of Integrated Water and Land Management
- WHIRL (2001) *Water, Households and Rural Livelihoods: Promoting Access of the Poor to Sustainable Water Supplies for Domestic and Productive Uses in Areas of Water Scarcity. Inception Report*. NRI, UK. <http://www.nri.org/IWRM-WSS/>
- White, G.F.; D.B. Bradley and A.U. White (1972) *Drawers of Water: Domestic Water Use in East Africa*, Chicago and London, University of Chicago Press
- World Bank (1997) *Tanzania: Water Sector Study, Water, Urban and Energy*; Eastern and Southern Africa, Africa Region
- The Guardian Newspaper (9 November 2008), *The Cost of Delayed Justice*, IPP Media Group, Dar es Salaam

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