

Water for Agriculture in Zimbabwe

Policy and Management Options for the
Smallholder Sector



Edited by

Immanuel Manzungu, Aidan Senzanje and Pieter van der Zaag

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Emmanuel Manzungu
Aidan Senzanje
Pieter van der Zaag

September 1998

Notes on Contributor

Emmanuel Manzungu completed his PhD research in irrigation management with the Wageningen Agricultural University, The Netherlands, and is attached to the Department of Soil Science and Agricultural Engineering, University of Zimbabwe, which hosted his research. He is the author of a number of journal articles and book chapters. He has also co-edited the book *The Practice of Smallholder Irrigation: Case Studies from Zimbabwe and Researcher-Practitioner Dialogue on Smallholder Agriculture in Zimbabwe*.

CHAPTER 11

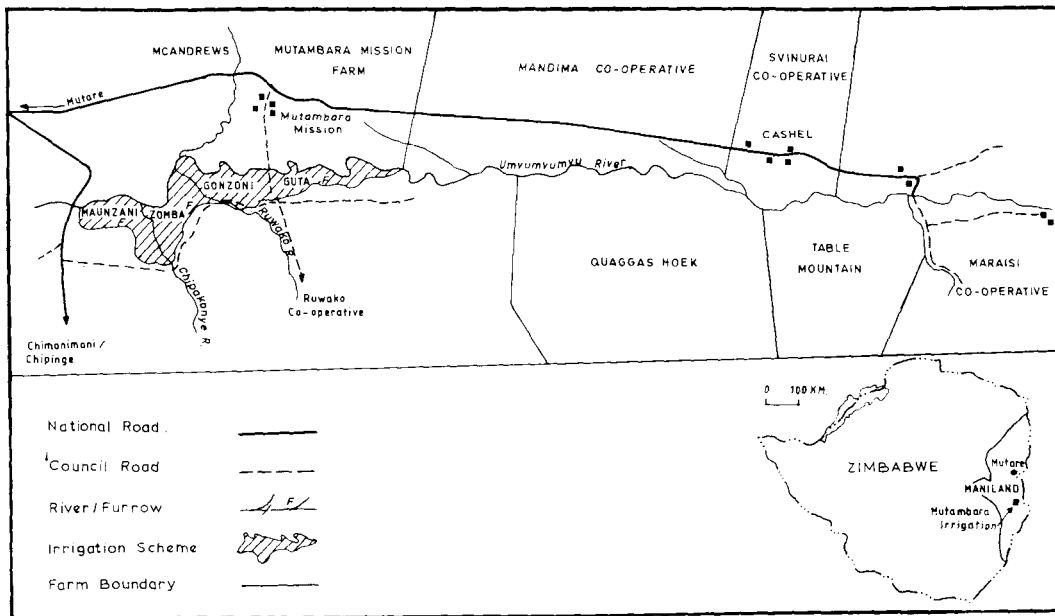
Conflict management crisis in the Umvumvumu Catchment, Eastern Zimbabwe

E. MANZUNGU

Any resource, such as water, when used by more than one person, tends to attract conflicts about how it is shared. This is especially true when the resource is scarce and yet the number of users is large. In such cases, conflict resolution mechanisms are an important component of sustainable resource management. This chapter sketches the dilemmas posed by the absence of conflict resolution mechanisms in the Umvumvumu catchment in eastern Zimbabwe, a catchment composed of non-homogenous users (see Figure 11.1). The chapter goes a step further and attempts to isolate the main causes for this situation. The principal factor was the main legislation governing water allocation in the country, the Water Act (1976) No. 41. The inappropriateness of this piece of legislation *vis-a-vis* the realities in the catchment had to do with some of its central tenets. Practically all the actors in the catchment did not relate to the difficult system of defining property rights (water user rights). The doctrine of priority system, the basis of water allocation in Zimbabwe, espousing the principle of first-come-first served in granting water rights, and first-come-last out during water scarcity, was a problem as will be shown below. Another problem was a centralized conflict resolution structure located far away in the capital city (Harare), which moreover, embodied alien concepts of conflict resolution. Compounding this situation were a group of actors who, although sharing a common water source, found little reason to co-operate. The hydrologic behaviour of the water source, the Umvumvumu River, further complicated matters as the fluctuations in the supply was not accompanied by flexible water sharing arrangements.

It is suggested that these issues are relevant for the proposed water reforms being proposed by government (see *Preface* in this volume) and need to be adequately resolved if the water reforms are to succeed. Of particular concern to this chapter are the practicalities of some of the decentralization suggestions which propose catchment councils (incorporating sub-catchments) that are meant to represent all stakeholders in local management of water resources. Under this proposed arrangement, the Administrative Court (popularly referred

Figure 11.1: The lower Umvumvumu catchment: Location and farm boundaries



to as the Water Court) will cede its administrative duties to catchment councils. The Court will remain as a court of appeal. It is argued in this chapter that while rolling back the state in water resource management is desirable, there is a need to understand the prevailing situation and then craft the reforms on the basis of the realities on the ground. Some authors have given examples of some of the weaknesses of the current legislation. Van der Zaag and Roling (1996) and Bolding (1996) note that water rights that are issued are often far in excess of the available water. Moreover the rights are expressed in absolute volume terms which was at variance with the natural fluctuations of river flows. Further, the technologies used to 'meter out' the water cannot not be read by many smallholder farmers. The same authors also note that the priority system is culturally incompatible with local irrigators, who gave each other chances in situations of water scarcity.

This chapter concurs with these observations. It however focuses on conflict management and argues that most of the decentralization 'discourse' is short on detail on the important subject of conflict management. For example, as has already been said, it is assumed that the setting up of catchment and sub-catchments will solve many of the problems. To underline the lack of interest in conflict management, it is said that the Water Court will remain the court of appeal. I will argue in this chapter that conflict management should be considered an essential part of water resource management and not be dismissed as an appeal matter. I shall illustrate that conflict management is influenced in part by water allocation principles. A poor water allocation principle that is out of touch with the physical and social realities can make the reforms unworkable. Another point to note is that this 'appeal matter' is costly (Matinenga, 1995) and is generally elitist. Even when conflict resolution structures are decentralized, power issues are still relevant; do all the users have the means to protect their interests? In other words the internal functioning of these new structures should interest research — it cannot be taken for granted that the existence of new institutions is synonymous with a democratic culture. Besides these are really *new* in the sense that there is no experience in the country about how such organizations function. These are some of the issues examined in this chapter.

To provide a context of the discussions, the next section gives some of the conflict resolution mechanisms enunciated in the Water Act. There is reference to the definition of property rights, how the rights are operationalized and what happens in the event of disputes. After outlining the official directions, the next section introduces the actors in the Umvumvumu catchment and their water entitlements before and after independence in 1980. A following section looks at the scenes in the 1994/95 hydrological season when matters reached a breaking point in that no solutions could be found either through official

mechanisms or local structures. Lastly, there is a discussion of the empirical material. Possible alternative conflict resolution mechanisms are explored.

CONFLICT RESOLUTION IN THE LAW

Zimbabwe's water law is based on the appropriation doctrine. To appreciate the implications of this doctrine, it is important to briefly consider the rival doctrine of water allocation — the riparian doctrine. The riparian doctrine originated in well-watered regions while the appropriation doctrine emerged in arid and semi-arid areas (Howe *et al.*, 1986). Under the riparian doctrine, landowners bordering on a water body (riparian owners) are entitled to make *reasonable use of water provided the water is returned to the river undiminished in quantity and quality*. Because of the difficulty of defining what constitutes *reasonable use of water*, and the increasing scarcity, the riparian doctrine has been changed in favour of the appropriation doctrine in many places (Howe *et al.*, 1986). On the other hand the appropriation doctrine is supposedly based on efficient use of water. There is reference to water being allocated on the basis of *beneficial use*. To ensure *beneficial use of water*, a water right application is required to be accompanied by a demonstration that the water will be used efficiently (see Matinenga, 1995) in the form of a document from the government department of Agricultural, Technical and Extension Services (Agritex). Once the beneficial use is demonstrated water rights are issued in perpetuity and on the first-come-first served and first in-last-out basis. This means that first applicants get the water and in the face of water scarcity, the same first applicants get the water ahead of anyone else. To expedite water use, the applicant is also required to install water measuring devices so that water can be monitored. Van der Zaag and Roling (1996) report that complicated (to smallholder farmers) structures such as V-notches are used.

It can be seen that the Zimbabwean Water Act fits within a physicalist and economic mould (see Appendix I). The emphasis is not on ensuring food security among the vulnerable groups such as communal and resettlement farmers but on economic efficiency. In reality this refers to White large scale commercial farmers who were able to lay claims in the colonial era. This situation has resulted in social tensions, contempt for the law, large scale theft and illegal use of water from public streams (WRMS, 1997).

It is noteworthy to state that under the current legislation, the state owns all the water; irrigators get user rights. All issues relating to water allocation are under the jurisdiction of the Administrative Court. The Administrative Court is empowered to hear and determine; (a) applications for the use of public water made in terms of the Water Act and (b) disputes concerning the abstraction, appropriation, control, diversion or use of public water (Zimbabwe, 1996). It is also stated that 'no court, other than the Administrative Court, shall have

jurisdiction in the first instance to hear and determine an application or dispute [involving water]'. When the Administrative Court is in session it constitutes a Water Court.

In the Act there are a number of situations where other forms of conflict resolution apart from litigation, are mentioned. Parties involved in a dispute can opt for a less rigorous route by writing to the judge and asking him to make a decision on the issue. Any award made under this route is however just as valid as the normal process of a court of law. The Water Court also entertains and rules objections to water right applications that are made by other users. If requested by an interested party the Court may order payment of costs as it sees fit.

In summary all provisions of the Act are enforced by the Water Court. It is important to state that the Water Court is in Harare, the capital city, which means that all those seeking redress have to travel to Harare. Another pertinent observation is that seeking redress constitutes substantial costs in legal fees as well as the associated travelling. With regards to smallholder farmers, this is a big disadvantage. Another problem is that the Act has been described as an unwieldy piece of legislation (Matinenga, 1995), a fact which assumes greater significance in the context of smallholder farmers. Apart from the implied legal complexities, one can also guess that the use of the English language in official water law transaction further alienates the majority of smallholder farmers who cannot lodge their protests in their vernacular language. These observations explain why the Ministry of Lands and Water Resources, responsible for reforming the Water Act, wants to make the legislation simple (WRMS, 1997).

After outlining the legal conflict resolution mechanisms the next section introduces the actors in the catchment after which follows water allocation in practice. Attention is drawn to emerging conflicts involving water allocation.

THE ACTORS AND THEIR ENTITLEMENTS

Before independence in 1980, the only smallholder Black irrigators in the lower Umvumvumu were in schemes such as Mutambara and Chakohwa (formerly known as the Mvumvumu) with the rest being White large scale commercial farmers. Today the whole area reflects a 'liberated' zone in that all irrigators are Blacks. The change in the racial composition of the users has, however, not brought in a period of harmony. It seems competition for water knows no colour. The lack of harmony in the area, it is concluded, is exacerbated by a poor water legislation which does not reflect the new political and social realities.

Before independence

This chapter concentrates on irrigation activities upstream of Chakohwa Irrigation Scheme. Mutambara Irrigation Scheme (the Scheme), that was started

in 1912 through local initiative aided by the nearby Mutambara Mission (the Mission) is next. The help offered by the missionaries in the beginning of the scheme is frequently mentioned at the expense of another relevant fact. Missionaries got land from Chief Mutambara. As will be shown below this still has some significance in the scheme. Mutambara Scheme is host to 250 irrigators. Across the Umvumvumu River is Mutambara Mission. The Mission, because of the presence of White missionaries who were conversant with the colonial law governing water, secured water rights as early as 1916. The Mission has two Umvumvumu water rights. The first is water right number 66 with a priority date 16 March 1916. This entitles the Mission to abstract 56 lps for agricultural purposes. The second water right, 2469, priority date 7 October 1949, entitles the Mission to abstract 3 lps for agricultural purposes. In addition the Mission has also another water right on the nearby Nyambeya River.

Water rights for the Mutambara Scheme became a talking point only after the mid-1930s when the government decided to take over irrigation schemes in the "native" areas. As a consequence a number of irrigation furrows started by "natives" were closed down and the "natives" were ordered, cajoled and forced to join the government-designated schemes such as the then Mvumvumu, Mutambara, Nyanyadzi and Mutema. Individual water rights of "natives", which they had gained through labour investment in digging furrows, were replaced by communal water rights that were applied for them, without their consultation of course, by the Department of Native Affairs. As argued by the author elsewhere (Manzungu, 1995) the 'communization' of water rights has provided the necessary bone of contention for squabbles and quarrels in the Scheme. According to one report (Danby, n.d.) the first water right was granted in 1941 with the final grant in 1953. The right stated that a flow of 89 lps may be abstracted when the flow in the river was in excess of 344 lps, but when the flow was less, abstraction was supposed to be 42 lps. Another report (GOZ, 1985) put the permissible irrigated area at 152 ha.

What was happening in the "native" areas was in stark contrast to the White areas where farmers gained individual water rights. According to Department of Water Resources records, the owner of East and West Penkrige Farm, upstream of the Mission, successfully applied for water rights as an individual. The property was granted water rights 621 A and B which entitled the abstraction of about 15 lps for agricultural purposes. In addition there was a grant of water right 5716 which stipulated the abstraction of 15 000 gallons per month for primary use. Water right 3758 which was granted for turbine operation lapsed on 12 July 1976. Almost opposite this property was Quaggas Hoek. This property did not manage to secure a final grant. The provisional water right lapsed in 1976. North of Cashel, was another White-owned property. There is no record of water rights for this property.

After independence

After independence some White commercial farmers left, clearing the way for resettlement for Black farmers to take place. Mandima Cooperative, whose membership was local and non-local, a model B co-operative (where members work not as individuals but as one group and share the produce) occupied Springwoods, and East and West Penkridge farms. By August 1995 there were 62 families, three short of the target. Through the help of the Department of Water and Agritex, this cooperative inherited the water rights of the original user as water rights are attached to land. The Cooperative also inherited earth furrows which they use for irrigation.

Quaggas Hoek together with Ostend farms are now occupied by 35 families each with one hectare. All the holdings are irrigated. This resettlement scheme is officially known as Shinja Extension model A. Unlike Mandima, individual families here work on the fields independent of other families. Besides, the members are local. This resettlement tried to secure water rights but because the original user had no final water rights, this proved difficult. In fact Agritex tried to assist with no success. Farmers say that this process of securing water rights was now in suspension because the former chairman of the Irrigation Management Committee died and with him, it seems, the papers. Be that as it may the farmers are simply irrigating using the old earth furrows left by the commercial farmer. There is also a small earth reservoir.

Maraisi Coop is in a similar situation with Quaggas Hoek with regard to water rights. They know that they have no water rights but they are irrigating wheat from two furrows, which they found present when they came to the area. Agritex ran into problems when they tried to apply for water rights on behalf of the Coop because they could not even find a record of the original owner. One Agritex officer said that the cooperative is illegal.

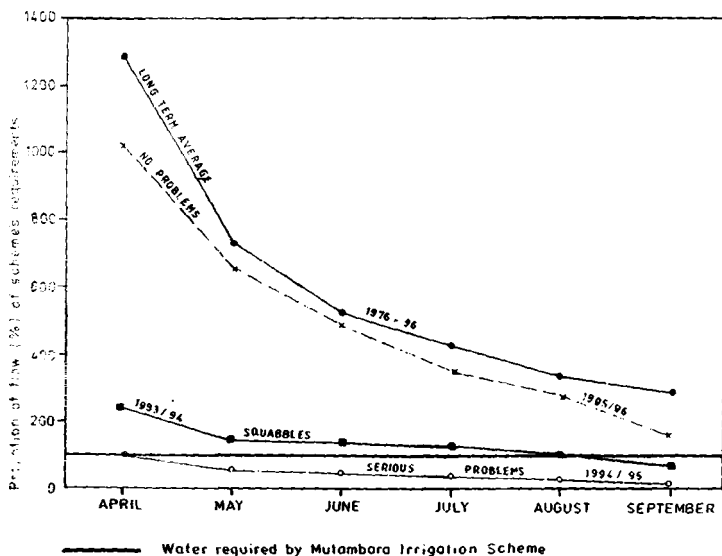
A few kilometres from Quaggas Hoek is about five hectares of illegal gardens. These are irrigated by some people from Svinurai model B Coop (the Coop does not use the Umvumvumu water for its official irrigation) and also from Quagas Hoek. These have complicated water allocation in the lower Umvumvumu (see below).

CONFLICT RESOLUTION IN PRACTICE

This section looks at problems with regards to water sharing in the catchment between the 1993/94 and 1995/96 seasons. As can be seen from Figure 11.2 the degree of problems were directly related to the amount of water flowing in the river (the basis of comparison is Mutambara Scheme, the most downstream of all the water users). Serious problems were encountered when the water was way below that required by the Scheme. In such cases people from the Scheme travelled upstream in search of more water.

This situation was compounded by the definition of property to this water. Although all the users were aware that they needed water rights to abstract water, they understood that in different terms as highlighted below. The narrative hereunder refers to the situation captured by the researcher in September 1995 when he went up the river with the Scheme water bailiff. One significant fact about the journey was the enthusiasm shown by the irrigators about the prospect of "the machine", the current water meter, which the researcher had, as an independent unbiased arbiter.

Figure 11.2: The relationship between water availability and conflicts in the Mutumvumvu catchment between 1993/94 and 1995/96 seasons



Mutambara Irrigation Scheme versus Mutambara Mission

As can be seen from Figure 11.2 the Scheme faced a critical water shortage in the 1994/95 season. This was a result of decreasing water inflows into the river which was in turn a result of reduced rainfall. Figure 11.2 clearly shows that in the 1990s the flow in the river was below average. The culmination was in the 1994/95 season when as reported by Manzungu (1995), irrigators in the scheme slept in the scheme with axes at their side to secure water which was largely a

failure (the situation was markedly pleasant in the next section when all the irrigators were assured of water).

This hydrologic background was important in the way conflicts over water ensued. When water is low in the river like in the 1994/95 season, the Scheme wanted more water to be released. The Mission naturally did not agree to such a request as this would jeopardize its own farming operations. Besides, the Mission had senior water rights (see above). Faced with this 'intransigence', the Scheme water bailiff would attempt to get water down by removing the stones at the Mission intake. Mission workers would simply put the stones back. In the end the Scheme water bailiff resorted to removing stones at night. The following morning workers from the Mission would put back the stones. In more than one incident, the Mission, exasperated by this hide and seek game, deployed its workers to patrol the intake during the night to make sure that their intake was not tampered with.

During these encounters the Mission would use the legal argument and say that they had senior water rights. The Mission, however, had no copy of the actual water rights. These were kept in their head office in Harare. However, they have a list of the water rights which was made by a consultant engaged some time in the late 1980s. On the other hand, the Scheme has no copy of the water rights because nobody bothered to give them. To them the knowledge that they have water rights is enough for them to engage in serious wrangles with the Mission. Besides the Scheme irrigators could not agree with a situation where they would stop irrigating in favour of the Mission. This was all too familiar to the Mission who had approached the District Administrator and the local police on more than one occasion to have the law enforced. The arbitration efforts failed.

Exasperated by the situation, the Mission could only blame the Scheme people "who are illiterate and who do not understand water rights". The Mission conceded that it was in a difficult position because on the one hand it has to pursue its evangelistic call (and therefore cannot apply stringent measures against the offenders) while on the other hand it has to survive through a secure water supply for primary as well as for agricultural purposes. Meanwhile people in the Scheme particularly the royal people, remember that the Mission got its land from Mutambara people. They consider that the Mission has finished its job of "teaching" and now must go and give them back their land which means the Mission farm, which has richer soils than the Scheme and is not fully utilised. Some people from the Scheme have settled on the Mission farm. The Mission has forced some of the people on the farm to leave. In 1995 the matter went to the High Court. It was withdrawn on the advice of the District Administrator who argued that the Chief could not be taken to court; the matter needed an out of court settlement. The matter, was however, not resolved.

Mandima Coop versus Mutambara Mission

Ever since the Coop farmers settled, the Mission used to dissuade them from abstracting 'too much water'. The District Administrator was again called to arbitrate. In an interview in November 1995 he commented that the Mission tended to be dogmatic about the law which did not help matters. The Department of Water was called in to arbitrate. It ruled in favour of the Mission on technicalities but this did not solve the problem.

After realizing that the water right issue weakened their hand, the Coop enlisted the help of Agritex to obtain water rights. Eventually the Coop received a copy of its water rights in 1988. They, however, did not mind the fine writing of the water rights which stipulated that they were entitled to abstract 15 lps when the flow in the river is greater than 56 lps and also that the Mission had the priority over water because of the older water right. The Mission constantly accused the Coop of being ignorant of the provisions of the water rights. It appears, however, that the Coop people were well aware of the provisions but simply took as much water as they wanted. They seemed not able to understand why a population of 300 people, with a primary school of all grades, and depended entirely on agriculture, should have less priority over a Mission station that got external funds and also received school fees from its student population.

Mutambara Irrigation Scheme vs Mutambara Mission, Mandima Coop, Shinja Extension and Maraisi Coop

In 1995 the Scheme was up in arms against all the upstream users who were "denying" it water. From time to time the water bailiff would go up and talk to the users with no success. He would open up the stone barriers but that did not help. The upstream users would put back the barriers as soon as he turned his back.

Similar to Mandima Coop farmers who argued about the legalities of water allocation, Shinja Extension and Maraisi used the legitimacy argument. Why would they not irrigate when they were occupying lands which used to be irrigated? The other reason was one of livelihood; they needed to survive. In fact Shinja took water equal to, if not more than, every other user, despite the fact that they irrigated only 35 hectares.

Mandima versus Shinja Extension

The basic problem between these two is one of ideology. Mandima Coop farmers assert that they do not want to live like those in Shinja Extension who are bothered by all the tradition that goes with living in the *ruzevha* (reserves, a term that refers to areas which were earmarked for Black people in the colonial times, the term has apparently persisted with the connotation of impoverishment). On the other hand, the Shinja farmers blame the Mandima

farmers for disrespect for tradition by refusing to contribute towards rainmaking ceremonies. This was a cause of poor rains, they asserted. On their part, although refusing to acknowledge the authority of the nearby Chief Mutambara, they contributed towards the rainmaking ceremonies under the auspices of the Chief.

There was ill feeling between the two to the extent of a fist fight. Unwittingly the researcher had allowed one Mandima farmer to come up to the Shinja intake and 'observe'. This was not appreciated at all, hence the near fight.

DISCUSSION

It is obvious that there is a new water allocation 'principle' in the Umvumvumu catchment which is at variance with the official use. It can be argued that the water legislation that was supposed to be in force was anachronistic in a number of ways. The priority right system could not be enforced because it clashed with what was considered fair, just and equitable. According to local perceptions, the Mission with a legal senior water right, had a lower priority since it had other sources of obtaining food for its students. The legal provisions were also impractical. It was unrealistic to expect people to deny themselves water by stopping to abstract water once the flow has fallen below a magical certain point. In any case that cut-off point was difficult to determine and could not even be enforced by the Department of Water Resources, the local custodian of the Water Act.

Thus the legalities around the definition of property rights reflected in the concept of water rights, formulated in another political era, failed to be applicable to a new socio-political reality. For example, how was it possible to deny Shinja and Maraisi farmers access to water just because the original owner did not secure water rights? The existing legislation, whose origin was clearly politically motivated, was now viewed, ironically by many Black officials, as a mere technicality. This was shown by the Department of Water which wrote letters to Mandima Coop explaining the provisions of the Water Act. Of course that did not work because Mandima Coop wanted a favourable political settlement and not a repeat of the legalities of the Water Act. Cutting across all the disputes was the issue of livelihoods. All irrigators wanted to secure their livelihoods. The practical implication is that unless the water legislation is seen to address the basic needs of the people concerned, it is likely to run into problems. It appears that it is no longer sufficient to guarantee casual and primary water use.

We must not lose sight of the importance of the hydrologic reality in the lack of conflict resolution. We saw that when the water was plenty there were no conflicts. An obvious conclusion is that conflict management arrangements conceived in water abundant years may appear successful, not on their merits, but on a 'hydrologic luck'. Once this crumbles, as in the 1994/95 season, the

real litmus test of the water allocation arrangement begins. This means that water scarcity is the right circumstance to evaluate any conflict management arrangements.

The last point that must be made relates to the structures for conflict management. The case of the Umvumvumvu catchment has shown that the present legislation has no appropriate mechanisms. For a start it is too centralized and, as we have seen, it espouses culturally unacceptable solutions such as the first-come-first-served and the first-in-last out concepts. Moreover, the definition of property represented by absolute volumes read by sophisticated gadgets meant that this was hardly angled towards local resource management. Decentralization of water allocation and conflict management (this is actually not mentioned in any detail in the proposed reforms) may be a better alternative. However, as was shown here, the decentralization discourse needs to engage in the specifics of conflict management. Often decentralization is presented as a panacea. This case has highlighted some of the pitfalls that decentralization has to avoid. For example, how would one choose representatives to this sub-catchment? If two representatives per sub-catchment as suggested by Taylor *et al* (1996) are used, it is obvious that other important actors would be excluded. In other words, there should not be an *a priori* decision on the composition of the catchments. This is a subject for research. On the same point, it is also worthwhile to think of how democratic these decentralised bodies can be. If these are constituted on the basis of alien/unfamiliar (to smallholder farmers) concepts of water allocation using technical or non-vernacular language, then smallholder farmers can easily be side-lined. How can one meaningfully participate in local resource management when the very communicating vessel (English language) is beyond one's reach? It appears that it is the detail and not just the concept of decentralization in water management that needs to be spelt out.

Another relevant point that needs to be mentioned is the issue of procedures in conflict management. Matinenga (1995) reported that the current legislation was costly for the smallholders. This point is relevant for the proposed reforms. If costs are prohibitive then justice is denied. That is the reason why there is a need to look at alternative forms of conflict management (see Appendix II).

In conclusion it can be said that this chapter has shown that conflict management is a central component of water resource management. It has also shown that conflict management is linked to the principles of water allocation. For example, because the current legislation was based on prior appropriation, users in the Umvumvumvu seemed to think that it was not possible to have workable water sharing arrangements. The physical dimension, in this case the hydrologic reality, was also demonstrated to be linked to conflict management.

REFERENCES

- Bolding, Alex. 1996. Wielding water in unwilling works: Negotiated management of water scarcity in Nyanyadzi irrigation scheme, Winter 1995. In Manzungu, Emmanuel and Pieter van der Zaag (eds.) *The practice of smallholder irrigation: case studies from Zimbabwe*. University of Zimbabwe Publications, Harare.
- Danby. n.d. Mutambara Irrigation Scheme.
- Howe, Charles., Dennis R. Schurneier and W. Douglas Shaw Jr. 1986. Innovative approaches to water allocation: the potential for water markets. *Water Resources Research* 22 (94): 439-445.
- Manzungu, Emmanuel. 1995. But where is the community spirit? The individualization and parcelization of water in Mutambara irrigation scheme. Mimeo.
- Matinenga, E.T. 1995. Development and utilization of water in smallholder farming areas — A legal perspective. Paper presented at the ZFU workshop 'Water development for diversification within the smallholder farming sector' Harare, 30 May 1995.
- Syme, J. Goeffrey and D. Mark Fenton. 1993. Perceptions of Equity and Procedural Preferences for Water Allocation Decisions. *Society and Natural Resources*. Vol. 6. 347-360.
- Taylor, P., C. Chatora and J.P.M. Hoevenaars. 1996. Mupfure Catchment integrated water resource management: Project formulation.
- WRMS, 1997. The Impact of removing the priority date system in water allocation. Terms of reference.
- Zaag, Pieter and Neils Roling. 1996. The water acts of Nyachowa catchment. In Manzungu, Emmanuel and Pieter van der Zaag (eds.) *The practice of smallholder irrigation: case studies from Zimbabwe*. University of Zimbabwe Publications, Harare.
- Zimbabwe. 1996. The Water Act. Chapter 20:22.

APPENDIX 1: SOME DISTINGUISHING FEATURES OF PHYSICALIST, WELFARIST AND ECONOMISTIC PERSPECTIVES TO WATER ALLOCATION

Physicalist	Welfarist	Economistic
Natural physical processes are considered the determining influences	Physical aspects are not necessarily determining Water is viewed more from a man-man than a man-water perspective	Physical factors are not stressed
Social relations and social organizational issues are unimportant	Social relations and social organizational forces are important	Market instead of social relations are emphasized
Distribution is not important	Allocative distribution is important	Allocative distribution is not important
Markets and political power are subsumed	Political power is important	Political power is subsumed under the market
There is no focus on reform	Reform is important	Reforms are not as important as market establishment
Private and public are not considered as antagonistic	Private and public distinction is problematized	The public domain must give way to the private domain
Market and planning are mere mechanisms and not institutions	Markets and planning are institutions	
Political economy of water is not on the agenda	Political economy aspects are important	
Physical efficiency is paramount	Equity is paramount	Economic efficiency is paramount

Source: Author's own construction

APPENDIX II. TYPES OF CONFLICT RESOLUTION MECHANISMS

Type	Characteristics
Autocratic	The third party has complete control over the presentation of evidence and the judgement
Arbitration	Disputing parties have complete control over presentation of evidence but the arbitrator retains complete control over the final decision
Litigation	Disputes settled in a court of law
Moot	Conflicting parties freely present evidence to a third party who, however, has no control; the third party shares an equal vote with the conflicting parties regarding the final settlement
Mediation	Third party has no formal decision control; the mediator listens to arguments and gives a non-binding solution
Bargaining	There is no third party involvement

Source: Adapted from Syme and Fenton, 1993



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