Southern Africa in water crisis – A case study of the Pangara River water shortage, 1987–1996: Towards a resource-based conflict management and resolution perspective[1]

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ABSTRACT

This paper is organised in three parts. The first is an assessment of the nature of the environmental and regional weather patterns leading to predictable water shortages. This is followed by the case study of the Pangara River community. Analysed at the micro-level, as the community tried to grapple with the gradual onset of lack of water, it is hoped that the principles brought out can be anticipated at the regional level. The final part briefly draws on the earlier discussion putting forward suggestions and recommendations for the establishment of a regional mechanism for managing the water system.

1. PREAMBLE

The collapse of the bipolar world during 1991 and the removal of apartheid in South Africa by 1994 have overshadowed the recognition of new security issues until these erupt into open warfare. There is a wide gap between the levels of water available to citizens of different countries. The disparity in accessing water that stems from the different states ability in harvesting, conserving and distributing water, is a situation likely to become a future source of conflict in the region. A single example is illustrative. Of the estimated regional annual average of 152 cubic meters (cu. m.) of water needed by each of the 145 million inhabitants in Southern Africa, South Africans and Mauritians use 410 cu. m. each while Malawians take up a low 20 cu. m. per individual. What this means is that there is a tiny population in the latter country supplied with readily available water leaving the rest fending for themselves. Existing water based management systems depend very much on the mode and period of rainfall delivery. In Southern Africa the rainfall season is restricted to the months of November to March except for parts of the Cape, South Tanzania and Northern Mozambique. During these few months water supply for the following two thirds of the year is delivered. While the timing of the rainfall has become critical, wild gyrations in the rainfall pattern which register differences in each year of as much as 30% have been noted, making cropping predictions unreliable (Chenje & Johnson 1996:27). Consequently, management systems to harvest, store and evenly distribute the water throughout the dry period covering two thirds of the year are critical to the survival of states in the region. Some states in Southern Africa have partly achieved this position as a result of decades of technological and resource investment in water conservation, purification and distribution systems. Water availability is also affected by *predictable changes in the environment*, to overcome which states have been forced to adopt counter-measures.

Secondly, there is the question of the historical *fait accompli* where states are sometimes faced with a river that has already been fully exploited. As discussed below, for instance, the Orange and Save Rivers have been fully exploited by South Africa and Zimbabwe, respectively. This has left no room for any subsequent initiatives to access water from these two rivers by emerging neighbouring states. Third, the region is experiencing marked population increase leading to rising urban drift. In most countries, the rural to urban drift averages 11% per annum coupled with a population growth rate of between 3% and 4%. This has effectively outstripped economic growth rates. Worse, Tanzania and Mozambique are states occupying pole positions amongst the world s poorest. Thus any growth experienced during the next decade will not be able to produce enough surplus to invest in water

infrastructure. In order to cope with the urban population, states have embarked on development strategies that are dependent on the availability of water without which these cannot be realised. The context in which all the above is taking place is an environment that has no regional water management institution. Individual and uncoordinated action by the region s countries is likely to erupt into war over water. Failure to appreciate this and take anticipatory action, in the absence of a conflict management mechanism,[3] heralds a source of future conflict based on access to an essential resource — water.

2. THE CONTEXT OF WATER AS A NEW SECURITY ISSUE

What has the end of the global standoff and abandonment of apartheid meant in the context of water use in Southern Africa?

The availability of water underpins survival and development. In Southern Africa, at least four elements determine the success or failure of newly independent states ability to provide water to their nationals. These are the environmental and rainfall patterns, population increase and pressure, development strategies, and the head start already made by some states in exploiting existing potential. Each of these will be briefly discussed to reflect the extent of their contribution towards facilitating or retarding access to water.

Environment and rainfall patterns

Southern Africa is a drought prone region in which predictable shortages of water have to be overcome through contingency plans. Sadly, this fact has not been widely acknowledged. Based on the first reliable records of 1888, later confirmed in 1908, an eighteen year cycle of wet and dry years hang over the region (Chenje & Johnson 1996:31). Global warming experienced in the intervening period has since been exacerbated by the effects of the dry cycles dating from 1860 to the present. Taking the last thirty years or so, the University of East Anglia Climatic Research Unit has documented a significant 0,43…C increase in warmth occurring between 1961 and 1990 (*Guardian Mail* 1998:11). In their findings, the ten warmest years since the unit s record began were from 1983 when temperatures averaged 14,58…C (58,2…F) compared to 14,0…C (57,2…F) between 1961 and 1990 (*Guardian Mail* 1998:11). The warm temperatures result in increased evaporation affecting levels of harvested water in storage. Kariba loses a quarter of its holdings through evaporation every year and given the increase above, this loss level will also

increase. In other words, the quantities contained in reservoirs and dams will have a greater portion evaporating than would have been previously forecast. As if to bear out the veracity of the scientific discovery, the intervening period has been interspersed and characterised by droughts and shortages of water.[4] The years 1935,[5] 1946-47, 1965-66, 1972-73, 1982-83, 1986-88, 1991-92 and 1994-95 have witnessed particularly impoverishing shortages of water (Chenje & Johnson 1996:33). The lack of water has been defined as follows:

> Drought is a condition of abnormal dry weather resulting in a serious hydrological imbalance, with consequences such as losses of standing crops and shortage of water needed by people, livestock and wildlife.
>
> (Chenje & Johnson 1996:31)

The droughts of 1991-92 and 1994-95 for instance dramatically reduced the economic production and quality of life of most Swazi whose wealth is tied up in cattle. Over 55 000 head of cattle were lost and most households were pauperised (Chenje & Johnson 1996:32). For the countries that are landlocked, the existing fishing industries, and tourist attractions such as those at the Victoria Falls, Kafue, Kariba and Cahora Bassa, assume an added significance with the onset of drought. Complete livelihoods including employment and survival are at stake. Droughts experienced on the continent, such as those of 1992 and 1995, forced Zimbabwe to appeal for aid to feed 5,157 million people. The effects of such droughts are not only life-threatening but also economically dislocating, and an urgent response is therefore always required. This is what makes the shortage of water transcend its seemingly mundane confines into the dimension of conflict about human survival and economic security.

Even during periods of good rainfall — limited to the period between late November and early March in each year, the distribution of water is uneven. The rest of the year is a dry period with only surface water readily available in wells until about August in most regions. Only the three regions of the Western Cape, Northern Mozambique and the area east of Lake Malawi stretching into southern Tanzania receive more than adequate water supplies mostly spread over two rainy seasons. The rest expect 60% of their rainfall to arrive during the three wettest months of December, January and February. As one moves to the central areas of Botswana, parts of South Africa, western Zambia and south and western Zimbabwe as well as southern Malawi, this confined rainfall rises to as much as 80% of the total (Chenje & Johnson 1996:34). This therefore means that for most of southern Africa, states must establish dams and other water holding mechanisms to ensure regular

availability throughout the rest of the eight dry months on average. The result has been increased reliance on ground and dammed water, harvested from fast flows during the short rainy season. Finally, certain dams have started drying up. Lakes Xau, Liambezi and Ngami in Botswana have (since 1982) become dry dust bowls (Chenje & Johnson 1996:20).

Although limited ground water levels are available, these are prohibitively expensive to harness according to the United Nations (UN) Ground Water Survey undertaken in East, Central and Southern Africa in 1989 (Chenje & Johnson 1996:40-41). This survey established that at most, trapped water in the rock cracks, caves and channels is at depths of 800 m. The alternative has been the aquifers where water quantities being exploited are supplying nearly 80% of the region s requirements. Aquifer depths vary from 30 to 100 m., the deepest being in the Kgalagadi desert at 600 m. Extensive and uncoordinated regional exploitation of aquifers has the added threat of unsettling rock formations with all the implications for the populations on the surface.

Population increase and pressure

Political independence in Southern Africa during the last two decades has led to the release of the hitherto captive population comprised of internally displaced peoples inside countries at war and those who went into exile in neighbouring states or elsewhere. Population concentration centres — such as Protected Villages, Concentrated Compounds, Independent Homelands , Reserves, Refugee Camps, Military Training Camps, Civilian Holding Camps — under control of the African National Congress (ANC), Pan African Congress (PAC), Front for the Liberation of Mozambique (FRELIMO), Mozambique National Resistance Movement (RENAMO), South West African People s Organisation (SWAPO), Zimbabwe African Peoples Union (ZAPU), Zimbabwe African National Union (ZANU), Union for the Total Independence of Angola (UNITA), the Movement for the People s Liberation of Angola (MPLA), Malawian exiles and other organisations, have in the last two decades released millions of people into the mainstream regional economy. Host nations of mainly African liberation movements including Lesotho, Swaziland, Botswana, Tanzania and Zambia have also finally found an opportunity to direct their attention toward development away from the protracted wars except in Angola, the Democratic Republic of Congo and Lesotho. On attaining freedom, many proceeded to the towns and urban areas seeking jobs, security and improved lifestyles, forcing local government administrations to provide readily available water. An 11% rural to urban drift per annum, coupled with a

population growth rate of 3%, has effectively outstripped national economic growth rates. In the various camps, however, most endured severe deprivation. It was since they were living in barrack room type of accommodation generally supplied with a single tap or portable water bowsers that consumption levels were held at artificially low levels. Of 142 million people in Southern Africa by 1995, over half were so affected (Chenje & Johnson 1996:10). The situation has not been helped by the location of the acknowledged UN worlds poorest states , Mozambique and Tanzania, in Southern Africa.

However, an even more ominous prediction is the likelihood of the region s population set to reach over 280 million in the next twenty-five years. The available resources, of which water is the most important, are static and are unlikely to cope against such a phenomenal increase.

Development Strategies

The second phenomenon lies in the development adopted by the new and emerging states seeking to catch up with the rest and bring about a stable, economically integrated and prosperous zone. For the sake of the millions coming into the urban areas, the new majority governments have set themselves the task of providing the basic infrastructure to encourage development.

Zimbabwe s example is typical. A three-phased developmental strategy has been identified: providing water firstly to urban areas, secondly to peri-urban areas (including mining centres, small towns, townships and irrigation schemes), and finally, to rural or communal areas.

Within the urban areas, 91 400 low cost housing units were planned to be built over three years (Chenje & Johnson 1996:110). This was expected to house the rapid influx into the cities and eliminate the mushrooming squatter camps. Two decades later this goal has remained elusive. Meanwhile, urban unplanned settlement has continued. In a similar development, in 1994, the ruling ANC announced that it would provide each household with between 20 to 30 litres of water within 200 m. every day (Chenje & Johnson 1996:9). The reality so far has been anything but the achievement of these ideals.

The next developmental focus was on the agro-based strategy, which emphasises reliance on irrigation schemes as the route to relieve impoverishment in the rural areas. The irrigation schemes, once infrastructure was established, were capable of

giving birth to other spin-offs such as commercial fisheries, small-scale enterprises and ginning mills. Taking the researched Zimbabwean example, this showed that the Tilcor Irrigation Estates on the Sabi-Limpopo provided agricultural employment and stimulated industrial and commercial development . The Chisumbanje Irrigation Scheme employed 4 000 agro-workers as well as an additional 1 000 in milling and grinding sugar. Their remuneration averaged Z$500 per year which was way beyond the subsistence return . The irrigation scheme raised the income levels of farmers and created employment at the rate of a single job per 1,2 hectares of irrigated land. Similar experiences were noted at the Hippo Valley and Triangle Sugar Irrigation schemes (Zimbabwe Conference on Reconstruction and Development 1981:68, par. 3,5). The related benefits of mining centres and small towns served to consolidate development ushered in by the irrigation schemes.

Finally, attention was focused on the rural areas, previously untouched by imperial and colonial development. In 1980 Zimbabwe announced that 700 000 family units, representing nearly 70% of its population, resided in the rural areas. These were spread amongst 174 (then) Tribal Trusts areas and would have had dams built around them. At least one dam for each of the 55 Districts in which the Tribal Trusts areas were located was planned to be established within the next two decades (Zimbabwe Conference on Reconstruction and Development 1981:68, par. 5).[6]

The three-pronged development strategy adopted by Zimbabwe in 1980 can be extrapolated on a wider regional canvass. These ambitious programmes — of providing water to the previously disadvantaged urban arrivals in an environment where the dreaded restrictive pass system has been abolished, of establishing irrigation schemes and of constructing dams — reflect the type of aspirations of the new political entrants. Clearly, implementing policies oriented towards the majority of the people and designed to raise standards of living is dependent on the availability of water. Activities taking place around the Victoria Falls, Kariba, Cahora Bassa and Kafue are illustrative. Tourism and internal recreation facilities, fisheries[7] and electrical power generation provide the engine for economic development and growth in these outlying regions, as well as in the country and region as a whole.

The quantities of water required, as determined by new majority rule governments, are staggering but unsustainable. In Namibia, following the installation of the SWAPO government in 1990, the trend revealed that consumption between 1970 and 1993 had hovered at 37 cu. m. per person per year. In the final years, this rose sharply to 95 cu. m., reflecting a 4,2% increase per annum, which is unsustainable in the long run (Chenje & Johnson 1996:6). Namibia, one of the three Southern

African Development Community (SADC) states after South Africa and Zambia, has over 51,3% of its population urbanised and abstracts over 40% of its water from underground sources (Chenje & Johnson 1996:40-41).[8] Furthermore, based on the broad considerations addressed in this paper, a looming water shortage has been predicted for Namibia, South Africa and Botswana to occur by the year 2030.

What is the state of access and sharing of water in Southern Africa?

Eleven states share national boundaries demarcated by the major river basins in which some of the countries have already established extensive water storing dams presenting a *fait accompli* to any newly independent state wishing to provide for its previously disadvantaged peoples. A historical overview of the Southern African region reveals that some states have greater survival ability than others, resulting from technical management of water established over the last three generations.

The regional rivers include the Zaire, the Zambezi (on which 30 dams have been constructed) (Chenje & Johnson 1996:38-39), the Limpopo (with 43 dams shared between South Africa and Zimbabwe), the Okavango, the Orange River (with 29 dams, 24 of which are in South Africa), the Inkomati (on which 10 dams shared between Swaziland, South Africa and Mozambique have been constructed), the Ruvuma, the Cunene, and the Save (which has been fully exploited from 20 dams all of which are in Zimbabwe effectively leaving little flow into neighbouring Mozambique) (Chenje & Johnson 1996:xv). The Lesotho Highlands Water Project (LHWP) is saddled with six dams from which the country exports water to the South African Gauteng Province. This brief inventory reflects the state of access on major rivers and how water has already been shared in Southern Africa.

Southern Africa s objective conditions in the area of accessing water

As a result of appreciating the shortages in the availability of water, over the period, some states have taken contingency measures. Not only has South Africa established the largest irrigation scheme in the region, the 52 000 ha. Vaalhartz Irrigation Scheme, but between 1880 and 1980 she constructed 410 large dams (Chenje & Johnson 1996:102). As a result of decades of improved water management policies, uninterrupted by wars,

> South Africa uses a high 51% of its available water for irrigation, 15,5% for nature conservation, 12% for mining and domestic consumption, with Industry and Forestry each consuming just over 7%, manufacturing 2,7%

> and hydro electrical generation another 2,3% with 1,5% remaining as stock.
> (Chenje & Johnson 1996:14)

In Southern Africa, the estimated average quantity of water that should be available to an individual is 152 cu. m. per year. Consumption levels reveal wide disparities, however. The affluent South Africans and Mauritians use 410 cu. m. per individual, while Malawians survive on the lowest average of 20 cu. m. per individual (Chenje & Johnson 1996:2).[9] Because of its ability to have fully exploited most of the local geographical potential amidst continuing increasing demand for water, South Africa has now embarked upon external sources of supply. For the parched and heavily populated Gauteng Province, its water needs have been met by importing the commodity from Lesotho.[10] The LHWP is the single most important resource base and national asset for Lesotho and has made the country self-sufficient in electrical power while boosting the economy from royalties.[11] This is expected, over thirty years, to deliver water of good quality into the Vaal River System that then supplies the commercial, residential and farming requirements of the Gauteng Province. Following the successful implementation of the LHWP, the country has also expressed interest in accessing water from the Zambezi through Botswana. As an incentive the latter has been promised taps placed at intervals along the pipeline as it carries water from the Zambezi to South Africa. Zimbabwe is also eyeing the Zambezi waters, to be directed towards Matebeleland and even the Masvingo central Zimbabwean provinces. This is an area of possible friction in future that needs careful thought.

Zimbabwe and South Africa between them have monopolised the Limpopo River system, denying Mozambique and even Swaziland further opportunities in the future. Zimbabwe has also exploited the Save River system to such an extent that it leaves Mozambique with a water shortage (ACCORD 1998:15). This has been exacerbated by poor soil conservation practices that have silted up the river flow as it enters neighbouring Mozambique. This has limited the full potential that could have been realised from this river by both countries.

Against this background, most states are harbouring aspirations to develop major areas by providing water, but lack both the resources and technical capacity to put these into effect. Botswana, South Africa, Zimbabwe and to a certain extent Namibia have within their borders bore-holing and dam constructing capacity. For the rest, outside companies have to be engaged at international tendering market rates that are expensive.[12] The result is to almost emasculate states ability to survive, develop and prosper.

Conclusions

The combined effect of predictable rainfall shortages, population increase, the need to embark on development initiatives and the situation of co-existing with already developed states attracting skilled immigrants from throughout the region is to emphasise the need of intervention where water is concerned. However, available evidence shows that some states can take pre-emptive action while others lack the technical and material resources to do it.

The dynamics of the distribution of water are to a greater extent influenced by transitory factors of economic development than by the engineering and technological awareness of previous generations. Put differently, some of the states enjoy what is now an inherent advantage over newer polities.

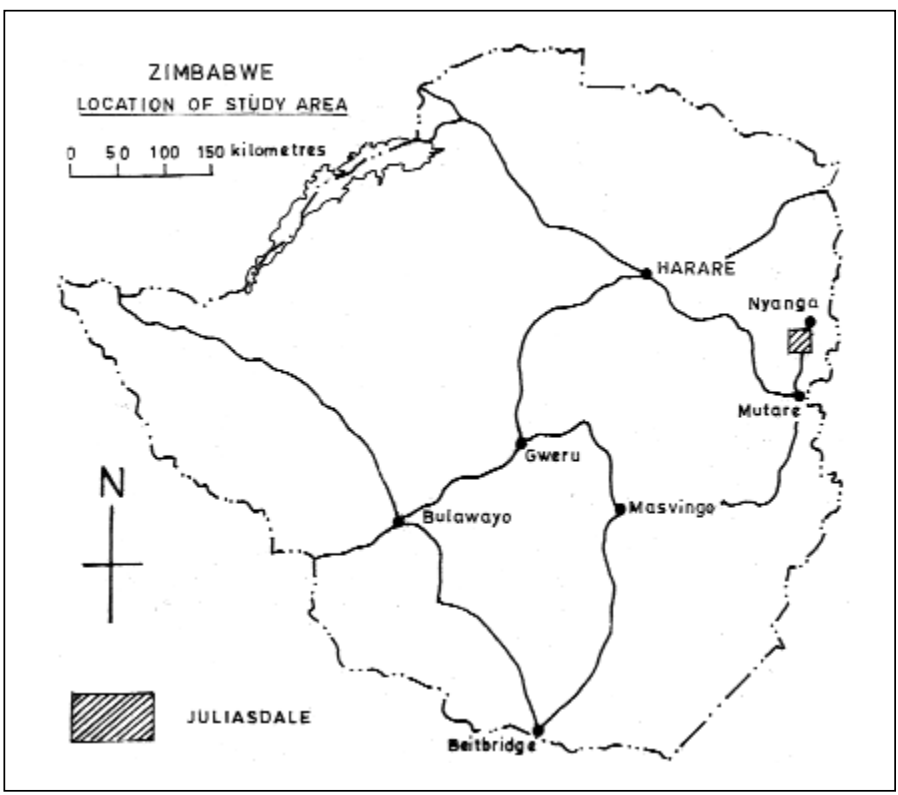
Existing water system management mechanisms

According to Chenje & Johnson (1996:151), the earliest mechanism attempting to co-ordinate Southern Africa s eleven states whose national boundaries share access to water, dates back to 1948 when the Southern African Regional Commission for the Conservation of Utilisation of the Soil (SARCCUS) was established. However, in the same year, the Afrikaner National Party swept the polls in the South African elections. Soon afterwards, the National Party introduced political programmes inimical to the integration not only of their country alone but the region as well. Since this early period, apartheid has contributed towards the economic, social and military divisions still existing in the region in which access to water is the most entrenched. Following the South African April 1994 elections, which ushered in the majority government of the African National Congress (ANC) within a transitional arrangement, SADC Protocol 1995 on Shared Watercourse Systems has been signed. This is expected to assist with the Water Management System of the region but judging from its inactivity, the institution has not been accorded enough political and legal support or autonomy to make a difference. While the concept put forward in the case study of River Boards, duly constituted by local key stake holders who are answerable to the Minister who then co-ordinates national development, is the way to go, this procedure is not standard practice in most states in the region. Angola and the Democratic Republic of the Congo, for example, are still to inculcate town and country planning methods when the military and political conflicts presently tearing those countries apart are settled. What is required then is to raise awareness of water as a security issue to the level that state policy makers take cognisance and begin to factor this into their general development plans. A necessary part

of this would be the parcelling out of tasks related to water to a regional planning agency. From its pedestal position, this body is equipped to better understand the intricacies of regional cohesion and respond accordingly. But such an institution needs to be agreed upon. This study therefore forms one of the small information resource bases providing building blocks towards the realisation of the regional response.

3. THE RESOLUTION OF WATER-BASED CONFLICT: THE PANGARA RIVER-NYANGA[13] CASE STUDY, 1987-1996

The Pangara River starts from the hill past the road to Nyanga and runs through eighteen plots ranging from 10 to over 15 acres. Owners use the properties as residential homes. This is within a commercial farming area, which runs downhill and



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ends some 8 km. below in the Communal Area. The youthful and fast flowing river with a width of not more than 50 m. at the widest point, drops at a steep gradient averaging 1:7 through several kilometres before reaching flat land. The river flows strongly between December and April each year.[14] As a consequence of the topography, the water level in the river is uneven and except for pools around tight bends the rest is a fairly shallow central river line. Those living on the slopes along the river are therefore forced to resort to capturing the fast flowing water during the short period of flow by establishing weirs, dams, wells or bore-holes. Since the water table is erratic, those sinking bore-holes or wells find it difficult to strike water the first or even the second time.

While all the residents accessed water from the Pangara River — and most needed nothing more than the general Primary Rights allocations — a few with business interests applied for and received Secondary Rights. To access the water, especially during the dry months, a number of residents had installed hydrams. These water driven pumps extracted only a small amount of 2 litres per second (l/s) while allowing 45 l/s to pass as overflow. The combined applications of those with hydrams showed that a total of 93,86 l/s were drawn as Water Rights from the Pangara and its tributaries. There was however, a qualification to the Water Rights: abstraction could only be effected after Primary Rights of human, livestock, fish and other water dependent plant life had been satisfied. A contradiction existed where, for instance, Secondary Rights had been authorised for the establishment of a piggery, but where the animals being reared had to assume Primary Rights almost the moment they were placed into the pens. If they were denied nourishment, their condition would become life threatening, their destruction would result in financial bankruptcy of plot holders and the general commercial derailment of ongoing operations would follow.

Over time, however, small-scale farming and commercial agriculture expanded. Beef and pork production, fresh water fishing, fruit and vegetable farming and protea growing (for exporting the flowers) became established. This resulted in plot holders, who were now small-scale entrepreneurs, beginning to employ workers. While some of the workers came in for the day from the neighbouring farms or adjacent Communal Area, others lived permanently on the plots. This resulted in a dramatic human population increase with an immediate impact on water consumption. This was further exacerbated by *water levels required for the upkeep* of cattle (for beef and milk), pigs, orchards, vegetable gardens and export flower gardens. These certainly needed more than the rural 20-30 l/s per day or even the urban 500 l/s standard daily requirements.

The first signs of reduced water flow (in retrospect) occurred during the erratic rains and drought of 1987. Quietly, each of the water abstractors found means to address what was then perceived as a minor shortage. Some constructed weirs while others established small dams to boost available quantities. In order to siphon more than the hydram rate of 2 l/s and to ensure business survival, others invested in diesel and electric pumps. These could abstract quantities required within hours if not minutes during the rainy season. In order to cater for the dry months after April, many sunk bore-holes or wells. Sinking a bore-hole is at the best of times a risky undertaking, based on probabilities and predictions about the likely flow of water. Bore-hole construction companies have, as standard practice, fail-safe conditions according to which, in the event that they do not strike water, the risk is borne by the customer. Sinking a bore-hole on the steep Pangara slopes, became, more than anywhere else, a hit or miss affair. With most residents unable to afford the costs, the majority was forced to borrow from the banks. In such an event, a failure could result in long-term indebtedness with little prospect of having alleviated the situation of the water shortage. The responsibility of providing expensive infrastructure as an individual had become a very heavy burden. In the end, only the wealthy could indulge. The net effect was to polarise the community into haves and have-nots .

In sinking bore-holes, residents had to apply for increased water rights and not a single applicant from Pangara had such an application turned down. The almost wholesale granting of water rights was in excess of what the river could sufficiently provide. In retrospect, evidence showed that the Ministry of Water and Development through its Mutare office did not thoroughly investigate the submissions and by allowing increased abstraction, worsened the already desperate situation. Those with additional water rights and located upstream where they could now legally install and run powerful diesel or electric pumping engines affected the residual flow of water supposed to be allowed to supply those below.

All the above mentioned efforts could only have a limited effect as long as the drought conditions prevailed. The 1990, 1992 and 1995 droughts gripped the country and the region. The impact on the Pangara River community varied. While some of the people lived on the plots, others used these as weekend and holiday resorts, commuting from Harare, the capital. This latter group could easily leave the problem on a Monday or even not come out when they telephoned their property managers and were informed about the continued lack of water. They would concern themselves with worrying about the sustenance of their staff and animals . In other words, they could afford to take a detached view of the crisis. As the crisis evolved, these people were soon referred to as *absentee landlords* .

Those who resided in the area, however, were in the majority and were severely affected by the water crisis. This forced them to resort to fetching and carrying water from outlying regions for basic requirements. This included driving to the nearest gushing bore-hole if they were in good books with its owner, or to the nearest towns of Nyanga or Rusape, at a round trip distance of some 80 kilometres. In the process, many of them met and discussed their predicament.

Already factions began to coalesce around the more vocal characters in the community on both sides. A third faction also emerged, cutting across the Absentee Landlords and the Full-Time Residents. This was the more neutral, non-aligned group, who were prepared to try and further understand the nature of the problem and were wishing for an all-embracing solution. These people, however, were prone to be pressured to support certain factions at given times. The most affected people were naturally at the lower part of the Pangara River as the hyperactive pumping engines upstream ensured that little or no flow continued. Many of the severely affected gravitated towards the Action Now vigilante committee. Several options aimed at addressing the water shortage were then considered.

Strategies for survival: local efforts to ease the problem of water shortage

Quite rightly, others began to question the validity of individual water rights and whether or not some of the plot holders were accessing more water than their licenses authorised. On finding evidence of fiddling , many sought to challenge these practices by taking each other to the Administrative Water Court. Court decisions which upheld existing water rights or tried to qualify quantities to be abstracted did not take into account the objective conditions of the onset of drought and related settlement factors as discussed earlier. Consequently, court verdicts failed to provide a lasting solution. This route appeared to have been exercised by the more affluent members of the community. However, this only served to poison already strained personal relations.

Later, each of the factions contacted the office of the Ministry of Water and Development, and requested officials to come out and enforce approved water rights where these were being openly flouted. In a classical case of African conditions, officials indicated their willingness to come out, but their inability due to lack of transport. At different times each of the factions then provided transport or bus fares to the officials. When they arrived, however, the officials would be monopolised by the faction who had brought them out. The other faction, having been downplayed in such a way, would simply wait several weeks before they also brought out an

official — sometimes the same one who had come before — and have their own point of view prioritised. Here, fault has to be apportioned to the government officials. Their involvement was indecisive. They were given to aligning with whichever faction was in their office, and when on the ground, they appeared to say what each of the sponsoring factions wanted to hear. This further complicated the situation. What is clear, is that the underlying deteriorating situation was not appreciated by the officials, who also were of a lower calibre than some of the people engaged in the struggle. These were lawyers, successful industrialists, factory owners, medical doctors and others mostly from middle management and higher working backgrounds.

Secondly, the Full-Time Residents group, who had constituted themselves into a vigilante Action Now group, managed to attract some of the people with a natural tendency towards neutrality. These neutrals were held prisoner by the extremism of the natural leaders of the activists. Plot holders mobilised their workers and started marching up and down the stream and enforcing the law , as they understood it. This involved invading private property, destroying raised dam levels , and demolishing illegal catchment areas constructed to facilitate the sucking pipes of diesel or electric pumps. The result was that the trapped water seeped through the parched riverbed and soon dried up before reaching the plots below. For those engaged in fish farming lack of water spelt the immediate closing down of operations. In the event, neither the illegal owners nor the vigilantes benefited.

Upon learning of this intrusion, many of the absentee landlords contacted the police, who were thus brought into the crisis. No arrests were made, but warnings were issued. However, the invaded property owners also responded in kind. Armed with duly registered weapons, they reconstructed their contraptions under armed guard. The stakes were set for open warfare over water. The water shortage problem, which was clearly not of anyone s own making, was viewed subjectively by those involved. On seeing the immediate impact of a neighbour s newly installed diesel pump or illegally expanded weir or raised dam wall, they felt these actions were the cause of their discomfort.

Here was a classical case for intervention by those engaged in conflict management and resolution.

Exploring the possibility of a solution

The above process had been going on for two years before the Centre for Defence

Studies (CDS) at the University of Zimbabwe, following a chance meeting with one of the neutrals , was invited to try and provide a solution to the unending crisis.

The methodology was firstly to undertake library research in order to understand problems related to accessing water and the legal requirements surrounding this issue. This revealed that everyone could exercise Primary Rights for basic requirements and apply for Secondary Rights for small scale or entrepreneurial purposes (Water Act of Zimbabwe 1996:594-595). This also defined the amount of water authorised to be abstracted without prejudicing those downstream. A list from the Ministry showed that most of the people concerned had complied with the requirements, but that the granting of water rights had exceeded the capacity of the small river. It also became clear that officials were aware of some of the illegal contraptions built to increase individual plot holder water holdings, but that they had come across this reaction elsewhere across the country and chose to ignore this because of the harsh drought conditions, unless they were forced to intervene. The result was therefore a reluctant official response to what was perceived as life threatening by those making the reports.

This was then followed by fieldwork. On the one hand, interviews of persons concerned with the Pangara River conflict were undertaken. The opportunity was used to generate confidence and trust. Several visits to the site were made, initially to physically inspect the river against the claims and counter-claims and later to tentatively suggest the way forward. Based on preliminary conclusions drawn from the library research as well as from early indicators gleaned from the ongoing interviews, a possible resolution agenda began to take shape. During the initial visits, the researchers took the opportunity to portray neutral credentials and build confidence with the community. This was achieved by adopting a very visible presence and by assuring the people that their plight was being listened to. It was also at this early stage that expectations of resolving the conflict were identified and lowered, stressing that any resolution would require the active participation of the community itself.

On the other hand, the researchers engaged all the likely key stakeholders who had been brought in by parties in conflict and therefore had by implication a role in ensuring compliance with any solution to be suggested. *Exactly what role the Police, the Ministry of Water and Development officials and the Pangara River Community had to play was also deliberately outlined to them by the researchers. This was to constitute the defining aspect in eventually arriving at a solution*. It was suggested that everyone had to get under one roof in order to thrash out modalities

for a permanent solution. In all the divided groups mentioned above, no one appeared conscious of the fact that the problem lay in environmental factors and unpredictable rainfall pattern changes. Everyone appeared set on blaming the other party.

Research revealed several anomalies. The second walking of the river by the researchers in the company of Ministry of Water and Development officials with the police in attendance revealed that the officials had lost the respect of the two factions of water abstractors they were supposed to preside over. It was suggested to the officials that they needed skills to deal with such types of problems in future and that they had to be exposed to basic conflict management training and techniques. The office agreed with this observation and left it to the CDS to arrange relevant courses and training to which they would release officials. After the two factions had interacted with each other for a while they soon realised that the solution did not lie with the government water agents. There was therefore an air of disdain for each other and frustration at the failure of the government officials, who were legally empowered to address problems around water, but had failed to live up to expectations.[15] In the case of the police, the nature of the problem was baffling. A group of affluent people armed with legally registered weapons, threatening to shoot at each other for a vague cause that apparently disappeared during the short rainy season, presented the police with a dilemma. The best they could do was to caution participants who had violated private property and were already taking each other to court. In their view, the courts would soon settle matters once and for all. This perspective only reflected how the police are trained and which duties they expect to deliver. Undertaking a complex conflict resolution exercise was beyond their terms of reference and experience. Apart from keeping the peace, the police did not wish to be involved, as they were clearly not equipped. However, as far as the researchers were concerned, the role of the police at this stage was to convince the Pangara River Community that the initiative enjoyed the support of the law and any options put forward would also be fully supported by the government agency. The second highly visible survey had the double purpose of demonstrating the team s attempts to understand the nature of the problem outside the involvement of the community, and of making plain that any findings would be brought back to a forum in which they as community would be fully represented.

A local hotel had seen its patronage seriously affected as the factions in the previously close community sought to avoid coming into contact with one another. Secondly, the establishment was now supplying water to some of the residents. Business had become a casualty of the water crisis.

After several visits to the area, including at least two week-ends designed to catch the Absentee Landlords , and establishing physical contact as well as wide ranging consultations with the community, there appeared a consensus that they were prepared to sit and discuss the way forward. During the visits, it was patiently made clear:

(1) that no solution imposed by officials could be made binding; and
(2) that no solution was possible without the participation of the enemy .

In discussions with either faction, the researchers also made it clear that they would be conveying the substance of the talks to the other side. This immediately introduced transparency and removed rumour in the evolving process. By so doing, negotiations already got underway as different points of view, previously privy only to the community, became known and were deliberately repeated by the CDS team. Already the team was gaining confidence and asserting itself in the intimate affairs of the Pangara River Community with their acceptance.

From the deliberations mentioned above, and certainly from the confidence that had been generated by the involvement of the CDS team, the consensus emerged that each faction would be amenable to a meeting of all concerned. This meeting would try and find a permanent solution. Astonishingly, the Absentee Landlords and the third neutral group were in the forefront of this initiative. The Full-Time residents group was ambivalent about the idea at first and had to be worked upon to see its value. Furthermore, business grabbed at the opportunity and donated its conference room as a neutral venue.

An extensive advertising campaign of the impending meeting was undertaken. Invitations in the form of CDS circulars outlining the basic agenda were dropped at each plot entrance or left with anyone at home. Placards were placed at the local hotel, which was the venue for the meeting. The author also wrote to both government departments of the Police and the Water and Development Ministry advising them of the intention to intervene and the suggestions that were going to be put forward.

The Meeting: Goals and achievements

Several objectives were to be achieved by the meeting[16] and this called for careful planning and execution. First, the way forward lay in coming up with a solution that would be supported and be in accordance with the Water Act. Secondly, the implementation of the solution had to be community based. Participatory incentives

were to be explored. The question of water being provided by government for the whole community or establishing a dam through donor support was to be investigated. Thirdly, a policy evaluation mechanism — which would ensure compliance once agreement was reached and understood by all — would be agreed to at the meeting.

In presenting the above suggestions, it was the view of the author that it was important to demonstrate knowledge about and sensitivity to the crisis as well as the predicaments of each of the key players, i.e. the three factions alluded to above, the police and Ministry officials.

Eighty per cent of the plot holders turned up at the meeting. A fair number of those unable to attend had passed on their voting powers through proxy notes that were handed to the convening authority and chair, the CDS. As agreed, government officials from the departments involved attended in their unofficial capacity .

The meeting started off with a presentation by the author, which was designed to allay fears that the process would be one of merely finding scapegoats. The research findings on environmental and ecological changes that gave rise to the problem were therefore stressed. Everyone was reminded that no meaningful progress would be made if fingers were pointed at culprits before elaboration of all the factors influencing their predicament. Then mention was made, without being specific, of the impact of increased population brought about by the community s practices. No reference was made to the personal clashes or existing divisions tearing the community apart, which the audience knew the presenter was aware of. With the police and the Ministry of Water and Development officials sitting in, it was evident that some of the more quarrelsome characters had their natural disposition reined in, thus allowing for an informed and constructive criticism. In conclusion, it was pointed out that the divisions in the community could not solve the problem, but that the full co-operation of everyone was needed. Mention of a possible donor funded dam project to benefit the community and the adjacent Communal Area was made following preliminary investigations which showed that government could support such a venture if properly put together.

Meanwhile, one of the vociferous characters, with a sheaf of proxy votes left to her by absent supporters, was made responsible for taking minutes. Not only did this make the person one of the organisers of the meeting, but a considerable number of votes already passed under the proxy rule were also brought into play almost by default.

By the end of twenty minutes, some of the poor listeners were beginning to fidget — a clear sign of loss of concentration. The presentation was then quickly summarised and the meeting moved into an interactive seminar mode.

The next hour was spent allowing suggestions from the floor to come through. Most took the opportunity to vent long held frustrations and to score cheap points over the other faction . After a while it was clear that even this was not going to produce a solution. The initiative was once again taken up to drive the process towards committing individuals present to reach a solution.

The most obvious solution was the setting up of a River Board composed of all factions . According to the Water Act, a river board can be established to operate under the authority of the Minister of Water and Development. Such a board may be constituted by any people who consider themselves stakeholders and interested in the equitable access to and distribution of water, and development of a river system. They are then simply required to inform the Minister of their existence. A River Board so established is empowered under the Act to formulate, based on majority decisions, any development plans related to water issues. The plans so mooted are then incorporated into the regional and national plans if they are in line with the general thrust of government development policy.

What the meeting agreed upon, can be summarised as follows:

- With suggestions from the floor, after prominent members of each faction had been put forward by the researchers, the Pangara River Board was appointed. The last laugh was to be had by the participants who overwhelmingly voted for the Board to be chaired by the CDS for a year. This, it was indicated, would continue to build confidence amongst the key players.
- It was decided that from that moment on all would begin to observe the limits of their Water Rights in a process that was going to be policed by the new Board with the help of government officials. Water gauges were recommended to be attached to the diesel or electric engines in order to monitor levels of abstraction.
- It was agreed that all illegal contraptions would be removed without questions asked either by their owners or by the Board.
- The Board through the support of the Ministry of Water and Development was to organise the deployment of water bowsers at strategic points along the dividing road in cases of severe water shortages in future.

- In order to reduce costs the Board was expected to come up with fund-raising proposals and to administer bore-hole requests from the community as a group. Government would also be approached on behalf of the community to solicit cheaper ways of sinking bore-holes or wells.
- The Board was to consider the possibility of establishing a water purification plant on the nearby hilltop to serve the whole community.

A follow-up meeting was then scheduled to take place at the Centre for Defence Studies, University of Zimbabwe, which members of the Pangara River Board would attend.

This was a milestone in diffusing a potentially explosive situation and developing a new situation which saw all hands on board pulling together. Initially only a few neighbours had a dispute on amounts of water drawn from the same source. The conflict escalated when a couple of parties became involved, and when government agencies responsible for the administrative and legal upkeep of public behaviour over water failed to bring about a permanent solution to the Pangara water crisis.

It is our contention that the neutrality of the research team and their contribution in clarifying the underlying problem went a long way in enabling the Pangara River community to overcome their water shortage predicament.

4. RECOMMENDATIONS

This paper seeks to raise awareness of the potential for conflict surrounding access to water *which is going to be in short supply by 2020* and to suggest some approaches to the problem. From the foregoing it is clear that some states in Southern Africa are better prepared for the eventuality than others. In a bid to introduce balance and provide ameliorating anticipatory mechanisms for diffusing conflict, especially in the unequal states, the following recommendations are put forward:

(1) That SADC should establish a Regional Water Authority with adequate powers to co-ordinate the equitable abstraction of water by member states from the basin — or regional Water System (see Water Act of Zimbabwe 1996:588-589).
(2) That SADC be responsible for co-ordinating national water-related development or initiating planning at a regional level.
(3) That SADC raise funds or mobilise resources for the technical and material

requirements of those states unable to muster these as a result of their economic conditions. This should act as an incentive inducing them to co-operate.

(4) That a Regional Water Authority be formed, and empowered with the mandate to arbitrate and have the final say in disputes involving water use.

SOURCES

ACCORD 1998. Water resources in Southern African river basins: A selection of potential conflict issues, in *Conflict Trends 1* (October 1998).

Chenje, M. & Johnson, P. (eds) 1996. *Water in Southern Africa.* Harare/Maseru: IUCN/SADC/SARDC.

Guardian Mail 18 December 1998. Global warming — 1998 hottest on record, p 11.

Water Act of Zimbabwe 1996. Revised edition. Harare: Government Printer.

Zimbabwe Conference on Reconstruction and Development (ZIMCORD), Salisbury, 23-27 March 1981. Salisbury: Government Printer.

NOTES

1 The author firstly wishes to express sincere appreciation for the kind invitation, reception and hosting of the Research Team from the Centre for Defence Studies, University of Zimbabwe, by the Pangara River community. This comprised Research Assistant Colonel Herbert Chingono, BA Honours graduate, and the writer. Secondly, the writer wishes to thank SAREC Funding on Human Rights and Democracy for enabling the team to conduct research as well as practical conflict management reflected in this case study on water conflict amongst the Pangara River community. While those involved in the Pangara River community, government officials from the Ministry of Water and Development, and the Police will no doubt recognise themselves from the discussion, a deliberate decision to withhold names of participants for the sole reason of protecting their identities has been taken. The author also wishes to acknowledge the sterling efforts of Colonel Herbert Chingono to bring all the parties together and facilitate the smooth conduct of the project.

2 Executive Director of the Centre for Defence Studies at the University of Zimbabwe, and Lecturer in War & Strategic Studies, after having served (until 1989) as Lt Col in the Zimbabwe Defence Forces. Nearing the completion of a PhD thesis on The Development of the Southern Rhodesian Defence Forces from the Defence Act, 1926, until dissolution of the Federation in December 1963 .

3 Given the impasse currently obtaining within the Southern African Development Community s (SADC s) Organ on Politics, Defence and Security.

4 Hydrologists define drought as periods of rainfall shortfall affecting the surface and sub-surfaces supplying reservoirs, stream flows and lake levels of ground water. Meanwhile, economists erroneously included the meteorological, hydrological and agricultural elements as the basis of the level of dryness and duration of the dry period.

5 Interview, Innocent Balemba Zahinda, Bradford, UK, December 1998, referring to the 1935 drought in the former Zaire.

6 As well as later public statements by the political leadership.

7 Malawi s fishing industry employs more than half a million people.

8 Where a UN Ground Water Survey of Easter, Central and Southern Africa, completed in 1989, is cited.

9 As pointed out in the same source, the illustrated and scientifically accurate work is meant to serve as a tool for decision-makers in developing appropriate agendas that relate to water as a security and conflict issue in the region. Extensive use of its data has therefore been relied upon in this article. The same source also provides an average indicating that the rural community uses 25 litres per day per individual while the urban community lap and gulp over 500 litres per day per individual.

10 Wilson Ncube, Water: Lesotho s major export , Story 2.2, in Chenje & Johnson 1996:42.

11 The Water Factor in DRC and Lesotho , *SARDC News Features*, 15 October 1998 (in which *African Business* was cited by P. Johnson).

12 Because of the prevailing adverse economic situation in Zimbabwe, one of the major dam and road construction concerns has not been tendering for any work in the last 18 months and is preparing to relocate.

13 Also known as Rodel Township. Map reference: *Zimbabwe — Juliasdale, [Second Edition] 1832B3, Scale 1:50 000*. Area under discussion within enclosure: Grid Ref. from 5473 going East to 5773 then South to 5770 and then West to 5470. See map sections attached.

14 Water Rights issued by the Administrative Court authorise abstraction from 14 December until 1 April every year.

15 This is a salutary lesson for those in authority who fail to carry out functions allocated to them.

16 Held at the Brondersbury Hotel on 12 April 1996, and attended by about 30 people. (The attendance list has been submitted to ACCORD.)