The Place Where the Sun Rises: An Application of IWRM at the Village Level

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Abstract

The multi-dimensional approach to poverty, with specific reference to the Capability Approach, is a useful development framework that can be used to consider development achievements in the water sector. Drawing on notions of social justice and human capabilities, the case study develops the argument that the enhanced capabilities of self-respect, empowerment and agency are critical attributes that enable individuals to gain control over their social and physical environments. The discussion in the study considers the practical application of IWRM at a village level, Mpumalanga Province (South Africa), within a broader development framework where enhanced capabilities contribute not only to improved human development but also to improved management of the ecosystem.

Introduction

At the onset of the 1990s, with the fall of the Berlin Wall, there were profound reforms, proposing better solutions and a framework of good governance. Deep reforms and changes extended to the water sector where global discourse on water resources management, no different from discourse in other sectors of development, aimed to narrow the gap between the rich and the poor and strengthen democratic processes. Despite the rhetoric for change, the anticipated reforms did not take immediate effect and the process of deepening democracy has been slow to take root.

The rhetoric for change and for a new approach to water resources management had been voiced prior to the 1990s and it was Selznick who, as early as 1949, had already proposed a fledgling integrated water resources management (IWRM) paradigm. It took almost more than 50 years for the amplified voice of IWRM to resound and to become the central voice for water resource management. The concept of an integrated approach, that espouses management at the watershed level, has been problematic because this approach has been formulated largely by technicians and water experts with a skew towards the technical aspects of ecosystem management. Furthermore, this paradigm has been supply rather than demand-driven and this is one of the reasons that the 'good principles' that are put forward are not so readily applicable at the practical level (Ostrom, 1996; Goldin, 2003, 2005b, 2008; Turton *et al.*, 2007). The Department of Water Affairs and Forestry

(DWAF, 1994) notes that the continent of Africa and the rest of the developing world are littered with failed good intentions implemented by specialists.

Participation and its Importance to IWRM

As a replacement for failed top-down efforts whose benefits did not reach the poor, there has been a new focus on a bottom-up dynamic of development. The phasing out of top-down strategies and the growing popularity of participation and bottom-up processes encourages greater cooperation from local users. One advantage of decentralization and participation of local citizens in decision making is that this process, in the ideal, provides an opportunity to obtain knowledge of local resources. Localized systems can also be more easily flexible to adjust to these conditions.

This participatory approach supposedly involves water users at all levels and developing countries have come to realize that water is a multi-stakeholder issue. As Ostrom (1996) contends, bringing communities who are closest to the resource into decision making is essential for achieving sustainable solutions for natural resource management. Non-participation has an effect on the way in which the larger systems and institutions are constructed to manage the resources on which citizens depend.

Multi-stakeholder involvement and decision making and management devolved to the local level is a core principle of IWRM. But in order for this process to be effective, local level institutions must not only have multi-stakeholder representation but these stakeholders should be able to make choices and to voice these choices. Knowledge is critical to participation and poor people are unable to take control over their environment and to participate in decisions to improve the quality of their lives without knowledge about the resources on which they depend. Insufficient attention has been given to what conditions are necessary for stakeholders to make informed decisions. There are obvious links between water and poverty, but the poverty aspects and notions of human development remain underdeveloped. What human attributes are necessary to ensure meaningful participation of stakeholders in IWRM? What aspects of human development will enable social systems to better manage their eco-systems? The discussion presented below proposes the Capability Approach (CA), as a framework well suited to this inquiry.

The Case for a Better Analytic Toolkit for the Water Sector

The multi-dimensional approach to poverty, and in particular Sen's (1999) CA approach, has only recently been applied to the water sector (Anand, 2007), but it is a useful developmental framework within which to consider the extent of achievements in the sector. As a framework that centres on enhancing choices and human freedom to live 'the good life' (Clark, 2002, 2007), it can provide insight and value to the development debate

in general, and in particular to that surrounding IWRM. Meaningful participation is a process that is about improved capabilities and functioning of individuals, and it enables citizens to take control over their environment and to participate in decisions to improve the quality of their lives and to maintain ecosystem equilibrium for future generations. At all levels, the consequences of degradation of social and natural environments hinder deep changes that are required at this time in the history of South Africa. Evidence shows that where governance mechanisms are too fragile or inadequate, the sustainability of water resource management is threatened (Goldin, 2007; Turton, 2002). If ecosystem health is to be operationalized then an investment in social strengthening must follow.

The current analytic toolkits for measuring success or lack thereof of IWRM have inadequately measured achievements in terms of people and have focused mainly on infrastructure and hardware as a measure for success or failure.1 A better analytic toolkit is required to give an amplified voice to the broad developmental aspects of IWRM that are pertinent to the complex socio-economic systems, and not only ecosystems. Empowerment and enhanced opportunities, human freedom and greater choice are multi-dimensional aspects of well being, and achievements in these domains are necessary for the advancement of environmental sustainability. The discussion that follows is about the achievements of the Sivukile Women's Group in the Mjejane Village, Mpumalanga Province,[2] and the significance of these achievements within this broader developmental framework.

The discussion is divided into three sections: (1) introduction to the multi-dimensional approach to poverty and its relevance to the water sector; (2) the case study which is organized in two parts (of which the first part presents the background and socio-system profile of the community while the second part addresses the water issues in Mjejane; (3) a conclusion which synthesizes the empirical evidence and the theoretical notions contained in the multi-dimensional approach to development with the principles of IWRM.

Multi-dimensionality and the Capability Approach: Its Relevance to the Water Sector

CA has emerged as the leading alternative to standard economic frameworks for thinking about poverty inequality and human development (Clark, 2002). The multi-dimensional poverty approach, in general, with particular reference to the Sen's (1993, 1999) CA, embraces notions of development that focus on the expansion of human capabilities. The expansion of human capabilities is built on principles of social justice and equity and includes the just allocation of scarce resources. This approach encourages an expanded set of poverty indicators and this will be of great use to the water sector because it brings to the fore important 'functionings' or capabilities that are necessary for human systems if they are to be capable of managing the ecosystems on which they depend. Selected indicators tap into constructs such as self-esteem, empowerment and agency. A better analytic toolkit would measure achievements in IWRM that address social development and well being within this broader development framework. The approach has everything

to do with improving well being and providing a social basis of self-respect, freedom of occupation, liberties and opportunities (Rawls, 1993; Nussbaum, 2000), dignity and social well being (Narayan, 1997). These expanded aspects of development should be considered over and above the measures applied by one of the most common instruments used to measure poverty, the Human Development Index (HDI) that measures access to services, bodily health (mortality), physical well being, education, income and wealth. Sen's CA considers social justice: fair treatment and opportunities, such as universal access to adequate education, sanitation, water supply and necessary goods that are required to make this possible.3 Examining development achievements within the CA framework places the emphasis on fair treatment and opportunities that would ensure that the lives of the poor would be as good as possible. When people are unable to influence decision-making processes that affect their everyday living, they do not have agency. Ibrahim & Alkire (2007) note that, "the opposite of agency is someone who is coerced, oppressed or passive" and therefore their opportunities and access to public goods can be restricted.

Adam Smith, the father of capitalism, promoted the free market and principles of class stratification in the 18th century, yet he believed that the most worthwhile social goal was the pursuit of happiness and that a good society was one where people obtained happiness through fulfilling basic human needs. Smith (1776) also reflected on the right of people to appear in public without shame. Being free of shame, a notion not well explored in development literature, has been argued elsewhere with regard to deprivation of water and sanitation services (Goldin, 2003, 2005b, 2007)[4]. Shame is something a person carries around in his/her head that makes that person feel bad about him/herself. It entrenches social exclusion because it is a restrictor for appearing in public places where an individual might experience ridicule or embarrassment. What is important within the context of this discussion is that shame does not sit comfortably with dignity, pride and self-esteem, which are important attributes of social justice and anticipated outcomes of the equitable distribution of resources.

The introductory paragraphs considered the significance of participation and the central role that participatory processes take in driving the successful application of IWRM. This is not easy to put into practice, but the consequence of managing and adapting to an ecosystem in ways that best preserve and maximize resource use is a better social environment. When there is greater control of the socio- and ecosystem environments, the social basis for self-respect—and other desired attributes critical to human development—is improved. For this reason, water resource management can have a positive feedback loop on human freedom and capabilities. This positive feedback loop increases agency as people learn about what works, what does not work and how to get what they need to improve their lives.

IWRM and Principles of Social Justice

Principles of IWRM engage head-on with notions of equality and a socially just society. This is pertinent within the context of deep changes that have taken place in South Africa since the release of Nelson Mandela and the adoption of the Constitution of South Africa

(RSA, 1996), Act 1993 that recognizes water as a basic right. The water sector policy framework includes a complex set of rules and procedures for identifying participatory approaches to achieve its goals. Where well implemented, IWRM provides an opportunity for both experts and ordinary water users to mobilize social justice.
It is not uncommon for our thinking to be biased towards familiar ideas, and as IWRM has become all too familiar a concept for scholars and practitioners of water resource management, engaging with new theoretical concepts (such as social justice and the CA to development) adds new meaning and a fresh approach to IWRM discourse. The approach amplifies notions of social justice, empowerment, self-esteem and agency that improve an individual's functioning to engage at the lowest possible levels in matters of protection, use, development, conservation, management and control of water.

Case Study

Background and Socio-system Profile

The case study of the Mjejane community demonstrates how issues of social justice, self-esteem, empowerment and agency improve the functioning of individuals to manage water within an IWRM paradigm.

Mjejane is a rural village near Malekutu, located in the Ehlanzeni District in northern Nsikazi, in the former homeland of KaNgwane, now Mpumalanga, in the North East of South Africa. KaNgwane was the last of the homelands to be granted self-governing status in 1982 (Holden & Mathabatha, 2007) and was initially intended as a homeland for Swazis outside Swaziland.

The village is situated about 1500 m from the renowned Kruger National Park in the Lowveld region of Mpumalanga and is roughly 50 km east from White River, its nearest urban centre. There are 177 households in this remote rural village with only a few scattered settlements around the village. Most of the land surrounding Mjejane is undeveloped grassland. In the early 1950s, the Tswati Chief Khumalo took control of the area and established a local tribal authority where the village of Mjejane is situated.
The Mpumalanga province possesses an environment endowed with a natural beauty, but its natural beauty and historic value contrast with extreme poverty and deprivation. Approximately 76% of residents who live in the province and lack adequate water or sanitation, live in rural areas (Goldin, 2005a), and the area where the village is situated is no different. Households rely heavily on government grants, and on average each household earns a meagre R700 per month (less than 1 dollar a day per individual). Approximately 30% of those living in the region are employed, mostly in the nearby town of White River or in the more vibrant economic hub of Nelspruit. Like many of the former homeland regions, for the unemployed, it is the inadequate cash flows from small-scale agriculture that provides any form of livelihood. The majority of dwellings do not have access to electricity, nor do they have running water within 200 m of their homes. Toilets are unventilated pit latrines. The village is isolated and there are few tarred roads. Allegiances with the Swazi culture are apparent and this is, according to Delius (2007) unsurprising because of historical bonds between the Swazi and Tswati people. Women

in the community partake in customary Swazi and promote traditional aspects of Tswati culture, nurturing cultural ties with the Swazi.

The church provides a central focus of everyday living and religion is a vehicle for social cohesion (Goldin, 2004). Sports events, in particular soccer games, link this village to other nearby villages and also play an important role in building social cohesion and fostering a sense of pride and belonging.

Economically, Mpumalanga is predominantly centred on commercial agriculture or/and subsistence small-scale farming. There are many backyard gardens that do not produce enough surplus produce to generate income. A few of the households are able to sell their excess produce as a source of supplementary income. Carruthers (2007) notes that in 1956 the African subsistence farming was expanding and writes about a study of land-use patterns in the Crocodile-Komati catchment area that exuded optimism about the area's boundless agricultural possibilities.

Water Resource System Profile

The Inkomati catchment is one of the 19 Water Management Areas (WMAs) established in South Africa[5] and is situated in the north-eastern part of South Africa, bordering on Mozambique and Swaziland. The Crocodile sub-catchment, together with the Komati and Sabie-Sand sub-catchments, form the Inkomati catchment which is an international river catchment and includes parts of Swaziland and Mozambique. The Crocodile sub-catchment is the most important sub-catchment of the Inkomati catchment from an economic point of view and has the most potential for economic growth. The regularity of water flows and quality of river water are important management issues.

Access to and quality of water in the Mjejane community, that is part of this sub-catchment, is inadequate and even though there are a number of alternative sources, there is a water problem. An electronically operated borehole supplies water to the community through communal taps that were installed by the KaNgwane government before 1990. Many households have illegal connections to the borehole, resulting in unnecessary volumes of unallocated water and leakages. Dwellings that are on higher ground experience low supplies due to pressure difficulties exacerbated by illegal connections. The borehole is often out of use because the pump breaks and the borehole water cannot be used for months on end until it is repaired. The stream is therefore the main source of water supply for both domestic and productive use. Carrying buckets to and fro for the gardens is time consuming and hard labour, but for those relying on the stream for domestic consumption, access is even more difficult because the source is 800-1000 m from their dwellings. Although the onus is on the Mbombela Local Municipality, the water service authority, to supply water to their constituents, water users in Mjejane experience water stress that affects both domestic and productive consumption and the problems have to do with both quality and quantity of water.

Women's Role in Improving their Living Standards

It is against this setting that, in 1993, 18 women from Mjejane came together to find ways in which they could enhance their household cash flows and improve their living standards. Most of the women were unemployed, although some of the household members had occasional seasonal work on nearby farms. These occasional jobs were unpopular because the distances, typical of the rural area, meant that women or other household members were absent from home for long periods.

Recognizing the nutritional value of home-grown food and the potential for income generation, the women approached the local chief for land so that they could grow food. The local traditional chief ceded four hectares at no cost. The plot was cleared of brush and unwanted vegetation and three-and-a-half hectares were allocated for food production and a half-hectare for a nursery.

In April 1993, after the project had started, the women identified obstacles that impeded their development. For example, a fence was needed to protect the food gardens from livestock and human interference. Through a collective decision-making process the group contacted the Spring Ministries for aid. This proactive approach was successful and the women's group received a donation of fencing material, poles and a gate. Planting took place in May 1993 and ground nuts and maize were harvested. At this stage the problem of water availability had not yet been solved and the only access to water was the stream from where water was carried in buckets for irrigation.

In the meanwhile, training in organizational and business skills was provided by a local non-government organization (NGO) and the formal Sivukile Women's Group was established. The objectives of Sivukile were first, to ensure fair use of the land and agreement over what should be cultivated and harvested—what quantities, when and how and second, to achieve a sustainable livelihood without leaving Mjejane. The organizational structure would provide a just system through which they could best govern the food garden project. Sivukile is made up of 24 members who meet three times per month. Each member pays an annual membership fee of R150.00. As a disincentive for attrition, one of the rules is that each member must attend a minimum of one meeting per month and must send a representative if they are unable to attend themselves. A fine of R10 is levied in the case of absenteeism and these funds are deposited in the Sivukile bank account and used to purchase seeds or seedlings or to help absorb any unexpected shock to the households.

In May 1997 Sivukile requested training in agricultural techniques because they realized that their garden could produce surplus food if it was managed more efficiently. Training was provided in permaculture techniques, environmental awareness, nutrition and hygiene as well as household budgets, organizational management and HIV/AIDS awareness. In order to address problems of endemic poverty, agricultural concerns cannot be separated from the management of household budgets, HIV/AIDS awareness, health and hygiene as well as bereavement counselling or/and organizational skills. This integrated approach strengthens the community's ability to respond to outside stress and

to take control over their lives.

Self-esteem, Empowerment and Agency

Because of the obvious links between food production and water security, one of the most urgent requirements to ensure the success of the communal food garden was to secure water, but the question of water quality and assurance of supply remained. Household members were falling ill and Sivukile approached the NGOs Quawater and Ecolink to test the water from the source. The water contained faecal coliform counts and turbidity, indicating sewage pollution that exceeded the government's allowable limit as stipulated in their guideline for safe drinking water. Water quality was not the only problem because food security was dependent on regular supplies of water. In order to address the problem of quality and quantity, Sivukile and three NGOs, Quawater, Ecolink and KAP, collectively designed a project to harvest, store and purify water from the unprotected source so that it could be used for both irrigation and drinking water. The resource had to be protected and the women dammed the stream with sandbags and built a fence around the source. Water was pumped to four 5000 litre Jojo water storage tanks above the garden using a petrol pump. Water in the tanks is purified using a mixture of chlorine and flocculent and passing through the sand filter, it is distributed through a short pipeline to two units of six taps. The water purification system takes approximately 30 minutes to travel from the Jojo tanks, through the sand filter to the taps. The sand in the filter is flushed every three months.

Transfer of technical knowledge took place over a three-month period. There were impediments to the smooth running of the system. For example, the water source was not deep enough to prevent the pump from clogging with reeds, mud and debris from the stream. In late December 2006, a cement dam approximately 5 m wide and 60 cm high, was constructed so that the pump could work effectively. The dam contains approximately 10 000 litres when filled to capacity. A small pump house was also erected to protect the pump from theft and damage. Today, the water purification system provides for approximately 70 households, although some of these household members travel up to 3 km to get access to this safe drinking water.

Food security training has resulted in an increased production of cash crops that earns each member around R500 per month. Income generation is one of the outcomes, but this achievement does not carry more weight than enhanced capabilities such as pride, dignity, self-esteem and social relations.

The trainers helped us to have a better life. Now we can grow our vegetables and we know when to plant them and how to find water for the gardens. We know how to help each other and we put better food on the table. Our children can see that we are proud and that we don't have to wait anymore for someone to tell us how to feed ourselves and look after our bodies (Sivukile Chairperson: Interview July 2007).

In terms of infrastructure advancement there are now: two communal water stands with six taps, four Jojo tanks, a Ventilated Improved Pit Toilet, a chicken coop, a petrol-

powered pump and pump house, a reinforced protected source, a water purification system, and reticulation pipes that carry water from the stream to the tanks.
The tribal authority has engaged head-on with this project, first through the provision of land, but importantly through the Chief Nduna's regular social visits to the project. DWAF has given advice and support. The Department of Land and Agriculture provided materials to build the 10 000 litre dam.

Conclusion

The effectiveness in performance of Sivukile deepens our understanding of the nature of institutional solutions that are likely to mitigate for poverty and give more wealth, and that, in so doing, lead to improved ecosystem management. When people are unable to influence decision-making processes that affect their everyday living, they do not have agency and therefore their opportunities can be restricted. The multi-dimensional poverty approach, in general, and the CA in particular, embrace notions of development that focus on the expansion of human capabilities. The expansion of human capabilities is built on the principles of social justice and equity and includes the just allocation of scarce resources. Enhanced human capabilities can impact positively on conventional technological approaches to IWRM. One of the resounding lessons to emerge from this case study is that the pillar stone for successful implementation of IWRM principles is the responsiveness at the scale of the village, of stakeholders who are dependent on the resource.

Multi-stakeholder participation is a central feature of IWRM and international best practice has demonstrated that communities who are involved in the decision-making process are willing to commit to the maintenance and operations involved with water management. This includes responsibility for financial aspects of the service and institutional reform that embraces the notions of political-administrative capacity and democracy at the local level. This focus has the potential to enhance co-operation and to consolidate shared norms and values about water resources.

Governance and the ability to develop mechanisms for accountability is a recurrent theme in IWRM and it has been well argued that it is the single greatest obstacle to achievements in human system sustainability. Although the institutional arrangements of the Sivukile Women's Group are in some regards imperfect, the broad concepts, on which the group functionings depend, are intact. The relationship with local authorities and the formal system linkage to government is imperfect, but there are informal ties that have emerged with government who 'approve' and 'endorse' the water management system. Regulation and self-governing principles of accountability to group members, for example, are sound.

Governing bodies acknowledge water as an asset and a strategic resource for economic and social development. IWRM is imperative, especially in light of South Africa's susceptibility to climate variations including drought and flooding, which require proactive planning and management. Capacity building is a critical output of IWRM and

as communities engage in water management they discover a voice in water governance and can influence the way that water is protected and used. The spin-offs are not just achievements in the water sector but enhanced opportunities for a better life.

Signs of success in practical application of IWRM application include:

- improved health and socio-economic well-being;
- an increase in feelings of social cohesion, pride, dignity, self-esteem and trust;
- improved agency, empowerment and capability to make decisions and control everyday living;
- improvement in water management skills;
- improved communication with local government;
- greater understanding of the link between food production and water; and
- an improvement in the ability of local communities to respond to harsh and unpredictable weather conditions and climate change.

It is not certain that a voice in the formal institutions, such as the Inkomati CMA, is needed because one of the reasons for failure to apply IWRM at the practical level is the issue of scale. Water users at the local level have local concerns that require local site-specific solutions. Nonetheless, a voice in the formal institutions would add value to learning about how things work and success stories at the local scale add to the learning process. Achievements at the local level should not be measured in terms of scale and whether or not Sivukile have engaged in the 'big' catchment management discourse, but rather in terms of the achievements of capabilities, for example, social justice, self-esteem, pride, dignity, empowerment and agency. Improved responsiveness and autonomy strengthens communities and this has consequences for policy. Policy makers are informed by scrutinizing 'better ways to do things' as they gain understanding of the survival strategies of the poor and in this case the distinct strategies that were used by poor women with experiences of harsh conditions and deprivation of water.

This case study presents an example of practical application of IWRM that is (1) demand rather than supply-driven development, (2) where the emphasis on human and eco-systems is in equilibrium. Social well being, self-respect and dignity have been achieved and community relations strengthened. Freedom of occupation and enhanced opportunities as well as social justice and equity are achievements that go hand-in-hand with improved health, income and better economic security.

At all levels, the consequences of degradation of social and natural environments hinder deep changes that are required at this time in the history of South Africa. Evidence shows that where the governance mechanisms are too fragile or inadequate, the sustainability of water resource management is threatened which is why achievements in the social system are so critical for the ecosystem. If ecosystem health is to be operationalized, then an investment in human capabilities and social strengthening must follow.

In the case of Mjejane there is a positive feedback loop between enhancement of capabilities and good practice in water resource management, human freedom and opportunities for that better life. As communities are strengthened the 'masterplan'

becomes a template where each and every community makes its mark as individually and collectively they shape the way in which water is protected, used, developed, conserved, managed and controlled.

Because of improved water quality and quantity in Mjejane, residents are likely to enjoy healthier living and to be part of the positive feedback loop where they live long, are well nourished and escape avoidable morbidity. Importantly, there is an absence of shame—and the negative cycles of exclusion that shame perpetuates—and trust has been brokered. There are tangible gains that have made women feel good about themselves. The practical application of IWRM has brought dignity, pride and self-esteem.

Issues with the Implementation of IWRM in South Africa

The dominant organizational culture in the domain of water is technical, scientific and universal (Goldin, 2003, 2005a, 2005b) and the specific, domestic or 'everyday' is not brought to the fore. Bereavement counselling, HIV/AIDS awareness, life skills training is not commonly acknowledged as being relevant to IWRM but these inputs address issues that are part of the everyday experience of women. Meaningful participation involves more than just having a toolkit with which to solve problems and is about a process through which power is made more equal and dialogue is encouraged between the parties, in this case Sivukile, KAP, Quawater and Ecolink.

Empirical evidence suggests strongly that those who do not have the language and knowledge remain silent in order to avoid being embarrassed or shamed. In the case of Mjejane the process of equal relations of power ensures that there is no fear of insult or criticism and this lack of fear reinforces capabilities and agency. The experiences at Mjejane add force to the standards that are being set by local agents as opposed to those being set by technical experts.

IWRM has been criticized as a Western notion of development that has little relevance within the African context. The 'big picture' of IWRM can become relevant when it is lodged at the local level within the developing country context and it can be scaled up but only when each experience is anchored in its own local level logic. The decade beginning in 2010 is likely to 'get it right' in terms of balance between humans (society) and ecosystems to ensure an integrated water resource management implementation process. Bridging the divides between technologies (e.g. pipes, pumps) and people (e.g. governance, participation) is slow and matching all the diverse voices—those of agriculture, health, land, business and so forth might take years. What is refreshing is the input of those who are not in the sector—the non-experts who bring expert insights. The role of the 'amateur' should not be underrated.

It is unrealistic to expect that users should all gain the same level of technical expertise or that water users should necessarily become involved in broad issues of catchment management. However, it is realistic that water users should discuss water matters

amongst themselves and become involved in the process of water supply and management at the local level.

In Mjejane, they are 'getting it right' by responding to external stressors, combating water stress and building resilience to ecosystem limits. The Capability Approach emphasizes the necessary balance between human opportunities and development and empowerment, self-esteem and agency that are key ingredients to successful development and enhanced human opportunities. When there is a healthier human environment and where there are human attributes of empowerment, self-esteem and agency then the health of an ecosystem is also enhanced. In other words, a better life advances not only human systems but also ecosystems.

The success of the Mjejane case lies in the equilibrium between the human and ecosystems. All too often the consumption needs of the ecological reserve are adequately and eloquently represented through specialists in the water management institutions but the human voice has been muffled. This balance has had a positive effect on the building of trust between water users and there is an absence of shame and embarrassment at not being good enough or of being poor in knowledge and resources.

Whether or not the IWRM paradigm endures in its current form remains to be seen, but what will endure is the continued pursuit of goals of social equity and justice. When the eco-systemic and socio-systemic mechanisms are protected, used, developed, conserved, managed and controlled the society flourishes. For this to happen there needs to be improved functioning or capabilities where there is enhanced self-esteem, empowerment and agency to take control over social and ecosystem decision-making processes.

Notes

1. In recognition of the importance of the socio-systems in sustainability of water resources, some attempts have been made by scholars in the water sector to identify measures for the social component, see for example Sullivan (2002); Heintz (2004); Krantz *et al.* (2004). Examples of indicators include human health, recreational indicators, technical capacity of communities, institutional structures etc.

2. The place where the sun rises.

3. Sen's evaluation of well-being or human development includes agency and it also recognizes that individuals often have values such as preserving the environment.

4. Goldin (2005a, 2005b) examines the relationship between knowledge, power, agency and shame and proposes that unequal relations of power and knowledge restrict agency and may perpetuate feelings of shame. Shame seriously jeopardizes the building of trust. See also Diego Reyles, University of Oxford, Oxford Poverty & Human Development Initiative, (OPHI) who proposes internationally comparable indicators on shame and humiliation. Goldin (2003, 2005b) refers to the shame of being associated with poverty and in particular being deprived of water and sanitation facilities.

5. In 2000, the Inkomati catchment was identified as one of the 19 water management areas. The first CMA proposal was formulated for the Inkomati catchment. In the future the Inkomati CMA (ICMA) will be the most important institution in relation to water management for the region. The Minister Ronnie Kasrils officially launched the Inkomati CMA on 30 March 2004 in Nelspruit. Although not yet fully operational, the ICMA is the first to be established in South Africa.

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