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Evaluation of water resource management practices

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IN 1996, THE International Water and Sanitation Centre (IRC) in collaboration with the United Nations Development Programme (UNDP) initiated a project to assess water resources management practices in developing countries against a set of key principles. To qualify for participation in this initiative, projects needed to have a unique component, such as being the first of its kind in its area. Umgeni Water, a Water Services authority in KwaZulu-Natal, South Africa, put forward the Mgeni Catchment Management Plan, which was initiated in 1993 jointly by Umgeni Water and the Department of Water Affairs and Forestry. The Mgeni was the first major catchment in KwaZulu-Natal to implement integrated catchment management strategies.

More than ten international projects and countries participated in this initiative, including, Ghana, Zambia (Kasama and Mbala Districts), Zambia (Kalomo District), South Africa (Mpumalanga), South Africa (KwaZulu-Natal), Nepal, India (Madhya Pradesh), India (Maharashtra), Cambodia and Colombia.

Eight key principles for *effective water resources management* had been identified by the IRC and UNDP and agreed upon internationally. These were:

- Water source and catchment protection are essential;
- Water must be adequately allocated;
- Water must be used efficiently;
- Management must be delegated to the lowest appropriate level;
- All stakeholders need to be involved in decision making;
- There should be gender equity in water resources management;
- Skills and capacity should be built; and
- Water should be treated as an economic and a social good.

This paper describes how implementation of the Mgeni Catchment Management Plan and water resources management (WRM) in South Africa can be aligned with the above principles. A number of lessons have been learned during implementation which can be used for future WRM projects nationally and internationally

Study area

The Mgeni catchment (4 397 km² in area) is the most developed catchment in KwaZulu-Natal, serving over

3.5 million people and supporting 65 per cent of the total economic production. 20% of the population in KwaZulu-Natal however, is still without proper water supply and sanitation. The Mgeni is impounded at five points and the major land uses in its catchment area are urban & rural settlements, agriculture, forestry and industry.

Methodology

Methods used to evaluate the Mgeni Catchment Management Plan against the IRC principles included, workshops, interviews at both national and regional levels, participatory surveys at district and local levels, questionnaires, personal communications and literature review.

Results and discussions

Responses to the leading questions attached to the eight principles are summarised below.

Water source and catchment protection are essential:

There is a multitude of land use and water user activities throughout the Mgeni Catchment, each of which has some impact on the quality and quantity of water. The major problems are:

- Faecal contamination in the major cities and dense rural settlements. As many as 2 000 deaths occur each year through waterborne diseases.
- Eutrophication (high nutrient inputs) arising from urban, informal and agricultural practices around the catchment. Algal blooms affect the water supply to the coastal region and increase water tariffs.
- Soil loss is the third key pollutant and affects the aquatic ecosystem, storage capacity of key dams, water treatment costs and sustainability of the land itself.
- Water quantity has dwindled due to loss in vegetation with over-grazing, clearing and urban developments and due to lack of demand management practices

As a result of this decline, integrated water resource management and protection has been identified as a high priority in the Mgeni system. Many initiatives have been launched at various local, catchment and sub-catchment level. A number of catchment management forums have been initiated to identify the key issues, collate information and provide advice to planners and developers.

Lessons

- ☺ Physical and environmental data for the Mgeni catchment are well documented.
- ☺ Initiatives are catchment based.
- ☺ There is significant monitoring and restriction of afforestation, farm dams and irrigation, indicating co-ordination with respect to resource quantity.
- ☺ Point and diffuse pollution has been identified and greatly researched.
- ☺ Although enabling legislation for non-compliance exists, polluters do not compensate adequately for the environmental damage caused.
- ☺ Demand has been satisfied by building costly infrastructure instead of reduction in use.
- ☺ Participatory approaches are used but needs to be expanded.
- ☺ Information sharing should be emphasised through more co-ordination and collaboration between institutions at the different levels of operation.

Water must be adequately allocated

The Water Act of South Africa recognises that the first deduction for water use is for *basic human need*.

- The first 25 l per capita per day will be made available free of charge to 2nd and 3rd tier suppliers to promote the application of lifeline tariffs at the 3rd tier level and ensure fair access to basic services could be achieved.
- The second deduction will be for *long-term ecological sustainability*, which refers to the water quantity and quality required for protecting aquatic ecosystems. In some catchments it may be necessary to reduce other uses of water below their present levels to provide the required ecological reserve.
- The third deduction will be to meet South Africa's *international obligations*. The water that is available thereafter will be allocated within and across catchments and between competing water users.

The new legislation has not been tested in the Mgeni system as yet. Current abstractions include domestic (63%), industry (19%) and irrigation (18%). Stream flow reduction activities (Forestry) will soon be taken into the equation.

Lessons learnt

- ☺ Enabling policies and legislation for water allocation exist and will be implemented in a phased approach.

☺ Water has been successfully imported across catchments (Mooi-Mgeni Transfer Scheme) and country borders (Lesotho Water Scheme) to meet demand where resources are scarce.

☺ There is growing need for experts in the field of resource economics in South Africa to assist in allocating water equitably and help identify environmental reserve requirements.

Water must be used efficiently

The limitations of conventional water resources development approaches such as building more dams and exploiting more resources has been recognised and water resource development is now being considered in conjunction with catchment management and demand management initiatives. Umgeni Water's efforts to encourage water conservation have included:

- Awareness campaigns on water saving; Surveying water consumption patterns to identify target groups for water conservation campaigns; Holding water conservation workshops with employees, customers and other stakeholders.
- Undertaking feasibility studies for the Working for Water Programme and identifying a pilot for implementation in the next year. This programme focuses on the removal of alien invasive plants from riparian areas and catchment areas to improve river health increase stream flow, while providing employment opportunities for the country.
- Playing an active role in the review of applications for afforestation permits. Through this, some critical catchments within the operational area have been completely closed to new afforestation projects.

Lessons learnt

- ☺ Effective means of measuring the efficiency of water use is still lacking.
- ☺ Rationalising water use has been successful so far during droughts. This needs to be extended to all year round to use the resource more efficiently.
- ☺ For water use efficiency to be effective, public awareness would have to be significantly enhanced.

Management needs to be delegated to the lowest appropriate level

In the Mgeni catchment and in SA in general, water resources are considered as national assets and central government is the custodian of this resource. Water supply however, is delegated to regional or local agencies.

Water boards, such as Umgeni Water were established by the Water Act and largely undertake bulk water supply. Recently, Provincial Water Committees have been established in response to a Water and Sanitation Policy of 1995.

In urban areas, the responsibility of water service delivery lies with the local government, metros and local authorities. The establishment of Local Water Committees (LWC) is a pre-requisite for government funding of basic needs, and there are close to seventy LWC within the Mgeni catchment. Umgeni Water has developed and is already implementing its Rural Areas Water and Sanitation Plan, the principles and objectives of which match those laid down by the Governments Reconstruction and Development Programme (RDP).

Lessons learnt

- ☺ Regional councils, Water boards and metropolitan councils play an important role in water resources management.
- ☺ The new constitution and policy have paved the way for delegating water resource management responsibilities to lower levels of government.
- ☺ The RDP requires community level of management of resources.
- ☺ Delegation of responsibility to lower levels goes hand-in-hand with capacity building and support from well established institutions such as water boards.
- ☺ There is a lack of capacity to manage water resources in areas previously excluded from the main political and economic stream.
- ☺ Inefficient management at some levels exists due to relaxed record keeping.

All stakeholders need to be involved in decision making

The successful implementation of the Mgeni catchment Management Plan strategies ultimately depends on commitment of stakeholders. Stakeholders for the Mgeni Catchment have all been identified and include: *Domestic User Groups; DWAF; Umgeni Water; Durban and Pietermaritzburg Metropolitan and Local Councils; KwaZulu-Natal Provincial Government; Other National Government Departments; Other Organisations; Industry, Commerce and Agriculture.*

Lessons learnt

- ☺ Enabling legislation is in place for stakeholders to participate in decision making and catchment management.
- ☺ Catchment management agencies made up of key stakeholders will be set up for *water management areas*.
- ☺ Catchment management forums and committees will empower the agencies with the key issues.

- ☺ Stakeholders are currently actively involved at forum level.
- ☺ Water courts are able to address disputes relating to water apportionment.

Gender equity should be practised

DWAF	10
Umgeni Water	22
Durban Metro	5
Vulindlela Water Supply	11
Water Committees	25

Affirmative gender action is outlined in South Africa’s legislation and gender sensitisation programmes are widespread. The percentage of women currently involved in water resource management in the Mgeni Catchment is:

Lessons learnt

- ☺ There is lack of corporate will to implement gender equity.
- ☺ There are insufficient female graduates in most technical and scientific fields.
- ☺ There is lack of definition by women on the role that they feel they should play in improving the water resource sector.
- ☺ There is lack of gender sensitive designs in water engineering.
- ☺ A cultural mindset exists where women are still intimidated by the force (emotional and physical) of men.
- ☺ Lack of facilities e.g. acceptable local day-care to facilitate women’s involvement.

Skills and capacity should be built to ensure sustainability

The RAWSP philosophy at Umgeni Water includes the following items referring to capacity building:

- The introduction of labour intensive construction using local labour.
- The provision of training in basic principles of business and construction management so as to encourage local labour to develop as sub-contractors.
- The training of the community and the development of local water committees to maintain, operate and administer the schemes as to be able to run it independently.

Until very recently Umgeni water has not built capacity but rather provided a community liaison role through existing structures perceived to be building capacity. The net result is that several people in a community may be well informed regarding the project, but in no community thus far has the information dissemination process equipped people with the confidence and enthusiasm to want to run the project. At best, 2% of a total budget is dedicated to capacity building.

Lessons learnt

- ☺ In order for capacity building to take place there needs to be a dedicated budget allocated to this task.
- ☺ In anticipation of handing over the management of RAWSP schemes, there must be some institutional capacity in place that will co-ordinate capacity building and training to ensure that the scheme is sustainable and monitor the hand over process.
- ☺ A special effort needs to be made to ensure that the community develops a sense of ownership for the scheme and a sense of the importance of the scheme to the well being and enrichment of the community as a whole
- ☺ There is a need to develop policy so that all projects, whether RDP financed or not, are governed by criteria similar to the RDP projects.

Water should be treated as an economic and social good

The new water legislation proposes that the full financial cost of supplying water, including the cost of capital be recovered from water users. Water use charges are to be used to fund the direct and related costs of water resource management, development and use, and to achieve an equitable and efficient allocation of water. In addition, the user charges may also be used to ensure compliance with prescribed standards and water management practices according to the user pays and polluter pays principle. Waste charges will be used as a means of encouraging reduction in waste, and provision is made for incentives for effective water use.

Lessons learnt

- ☺ The traditional financial arrangements for water resource development in South Africa have not been adequate, but a new approach 'rate of return' is being implemented.
- ☺ Enabling legislation is in place to recover the full financial cost of water.
- ☺ Water tariffs are due to rise steadily over the next 10 years to recover the full costs.
- ☺ Users feel charges for the use of water are more than what they should pay and awareness regarding the true cost of water needs to be built.
- ☺ Water markets will be established in water scarce catchments.

- ☺ Umgeni Water has been implementing catchment management principles for many years and has subsidised this out of the water tariff while raising low interest loans through trading on the stock exchange.

Conclusions

A range of methods was used to evaluate the Mgeni Catchment Management Plan against the IRC principles. Results identified strengths and weaknesses in the implementation of each principle. In the past conflict resolution between the different water users has been problematic due to the lack of proper fora and structures, but catchment management fora and agencies will now address these. Although gender equity legislation is described for the water resources management sector, implementation strategies are not yet in place. Capacity building has been identified in some schemes, but educational disparities have retarded initiatives at this level. Water is recognised as having both an economic and social value with a shift towards full cost recovery and demand based management systems. Overall, the eight principles have proved to be applicable and efficient in the evaluation of management practices in implementation of the Mgeni Catchment Management Plan.

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