

PARTNERSHIP FOR AFRICA WATER DEVELOPMENT II

(PAWD II)

The Integrated Water Resources Management (IWRM) Demonstration project in Swaziland

DOCUMENTING EXPERIENCES, LESSONS AND RESULTS

FINAL REPORT

25 JANUARY 2010

LIST OF ACRONYMS

- **ACAT-** Africa Cooperative Action Trust
- **DWA-**Department of Water Affairs
- GWP-Global Water Partnership
- **IWRM-Integrated Water Resources Management**
- IWRM/WE- Integrated Water Resources Management/ Water Efficiency
- **MDG-**Millennium Development Goals
- MHSW-Ministry of Health and Social Welfare
- **MOA-**Ministry of Agriculture
- MNRE-Ministry of Natural Resources and Energy
- PAWD-Partnership for Africacs Water Development
- SFDF-Swaziland Farmers Development Foundation
- SWSC-Swaziland Water Services Corporation (SWSC)
- SZWP-Swaziland Water Partnership
- **WSSD-** World Summit on Sustainable Development

Executive Summary

In the mid nineties Southern Africa embraced the concept of Integrated Water Resources Management (IWRM) through several initiatives, these included the SADC Regional Strategic Action Plan for IWRM, policy and legal reforms. IWRM is actually a process for better management of water resources and encompasses governance, stakeholder participation, and balancing development for resource sustainability. In Swaziland a consultative process led to the formulation of a National Water Resources Management Strategy and the Water Act of 2003. The Act gave rise to the establishment of multi-stakeholder and decentralised institutions such as the National Water Authority, Department of Water Affairs, River Basin Authorities, Irrigation Districts and Water Users Associations. Global Water Partnership was established around the same period with the aim of promoting and facilitating the understanding, adoption and implementation of IWRM. In 2002 the World Summit on Sustainable Development adopted a resolution to the effect that countries should develop Integrated Water Resources Management and Water Efficiency (IWRM/WE) plans so as to achieve Millennium Development Goals (MDGs). In 2006, the Global Water Partnership (GWP) established a partnership with the Government of Swaziland known as the Swaziland Water Partnership (SZWP). The IWRM/WE planning project work plan for Swaziland includes a component that aims at demonstrating the applicability of IWRM at the Makhondvolwane (Mvutjini) reservoir/ earth dam which was constructed by the Ministry of Agriculture in 1973 with the intention to supply water to a 100ha farm and for livestock purposes.

The dam is faced with complex problems that range from water level diminishes, lack of maintenance, conflict over uses and users, water quality deteriorating, siltation. Overall, there is lack of a comprehensive water management approach at KaLanga. SZWP therefore identified the need for using the dam as a model for IWRM demonstration. The main objective is to develop the Mvutshini dam and maximize its use for the benefits of the community and the Lubombo region in the Lowveld of Swaziland. The project is aimed at integrating water resources planning, use and management in an efficient, equitable and sustainable use as advocated by IWRM principles and through the application of IWRM tools developed by GWP. It is further aimed at up-scaling implementation of IWRM from local user level to national level thereby contributing towards MDGs. In implementing the project, SZWP works in collaboration with partner organizations that include government ministries of Health and Social Welfare (MoHSW); Agriculture and Cooperatives (MoA); and Natural Resources and energyq s (MNRE**\$**) Department of Water Affairs (DWA) as well as Non-Governmental Organizations (NGOs) that include Africa Cooperative Action Trust (ACAT)- Lilima, and Swaziland Farmer Development Foundation (SFDF).

Through its facilitative role, SZWP assisted the community to prioritise about 8 activities trimmed down from a long wish list and they include the following; construction of a low level bridge across the earth dam for purpose of access to opposite reaches of the earth dam; construction of drinking troughs for cattle to eliminate the current water pollution caused by sharing water use with livestock; construction of sanitation facilities viz. laundry areas, showers and pit latrines to control other polluting activities by the community; setting up of an irrigation infrastructure and rehabilitation of the agriculture scheme that the dam was originally intended for; prospecting and drilling of boreholes in suitable sites to enhance potable water supply in the communities; protection of a spring at the earth dams head waters by fencing it to minimize pollution and prevent access by animals; setting up of standpipes for the supply of potable water at the dam site depending on whether the water from the dam meets safe water quality standards; capacity building through training and awareness creation, and skills transfer on issues of water and institutional management.

The report is an outline of how selected tools from the IWRM Toolbox were applied during₃ project implementation. The tools discussed were selected according to their relevance and

applicability to the project. The selected tools include the following: Policies, Legislative framework, financing and incentive structures, creating an organisational framework, institutional capacity building, water resources assessment, plans for IWRM-combining development options, resources and human interactions, social change instruments, conflict resolution, regulatory instruments, Additionally, a video was produced that captures the main project features with remarks on successes, challenges and lessons learnt expressed by project stakeholders

The IWRM Demonstration Project has yielded lessons to be learnt for projects of a similar nature locally, regionally and globally. It was concluded that collaboration and partnering between institutions involved in water resources management is vital and tends to be efficient as these tend to share different skills, experiences and knowledge as much as resources. This was observed when various implementing partners comprising of SZWP, Government Ministries and NGOs worked in partnership forging alliances for the success of the project. Whilst recognizing the role played by the different implementing institutions and key players, the early inclusion of local area traditional authorities cannot be overlooked as they ensure project acceptance, ownership and they are crucial for enforcing disciplinary measures against non-compliance and defaulters. This indicates that local knowledge is also important to build upon including the use of existing institutions. Adequate stakeholder capacity building is vital prior to and during project implementation ensures ownership and commitment. IWRM implementation if associated with local needs and priorities is vital in the projects success and acceptance by the intended beneficiaries. It is useful to start implementing IWRM at small scale because outcomes are easy to realise and project is easy to manage since it becomes easy to build upon lessons learnt. Financial resources mobilisation is still an issue that requires attention since it becomes an impediment to development initiatives as observed in the KaLanga IWRM project in the effort to construct a cross over bridge. Urban migration has a significant effect on local user participation and project sustainability implies the importance of mobilising resources and promoting development initiatives at rural area level. Meetings, training sessions and workshops provide a strong foundation for dialogue, sharing lessons, conflict resolution, planning, report back and information dissemination.

INTRODUCTION

In the mid nineties Southern Africa embraced the concept of Integrated Water Resources Management (IWRM) through several initiatives, these included the SADC Regional Strategic Action Plan for IWRM, policy and legal reforms. IWRM is actually a process for better management of water resources and encompasses governance, stakeholder participation, and balancing development for resource sustainability. In Swaziland a consultative process led to the formulation of a National Water Resources Management Strategy and the Water Act of 2003. The Act gave rise to the establishment of multi-stakeholder and decentralised institutions such as the National Water Authority, Department of Water Affairs, River Basin Authorities, Irrigation Districts and Water Users Associations.

Global Water Partnership was established around the same period with the aim of promoting and facilitating the understanding, adoption and implementation of IWRM. In 2002 the World Summit on Sustainable Development adopted a resolution to the effect that countries should develop Integrated Water Resources Management and Water Efficiency (IWRM/WE) plans so as to achieve Millennium Development Goals (MDGs). In 2006, the Global Water Partnership (GWP) established a partnership with the Government of Swaziland known as the Swaziland Water Partnership (SZWP). The IWRM/WE planning project work plan for Swaziland includes a component that aims at demonstrating the applicability of IWRM on the ground. The SZWP in implementing this component has conducted reconnaissance surveys to identify a site for IWRM demonstration in the country in line with principles of IWRM (from the Dublin/Rio United Nations Conference on Environment and Development (UNCED) in 1992). A site at KaLanga, the Mvutshini earth dam was identified as suitable for the needs of the SZWP project and to support one of SZWP¢ objectives of advocacy for sustainable water resource development, management and allocation for environmental health, basic human needs and food security.

The Documenting Process

The report is aimed at sharing lessons learnt in implementing the KaLanga IWRM Demonstration Project. The report unpacks how the IWRM Toolbox was applied outlining how each tool was used during Project implementation. It further gives a highlight on the challenges and successes faced in the application of IWRM principles at the lowest appropriate level on the ground. In documenting how the IWRM tools were applied in carrying out the KaLanga project several meetings were held with SZWP Manager and staff to discuss the documentation approach, a review of documentation provided by SZWP, mini-survey of 20 households, consultations and interviews with project implementing partners was carried out.

This report outlines how some of the tools selected from the IWRM GWP Toolbox were applied during the project implementation. The tools discussed were selected according to their relevance and applicability to the project. Additionally a video was produced that captures the main project features with remarks on successes, challenges and lessons learnt by project stakeholders

A. The Enabling Environment

- A1 Policies setting goals for water use, protection and conservation
- A2 Legislative framework-the rules to follow to achieve policies and goals
- A3 Financing and incentive structures

B. Institutional Roles

B1 creating and organisational framework-forms and functions

B2 institutional capacity building-developing human resources

C. Management Instruments

- C1 Water resources assessment . understanding resources and needs
- C2 Plans for IWRM-combining development options, resources and human interactions
- C4 Social change instruments-encouraging water oriented civil society
- C5 Conflict resolution . managing disputes and ensuring sharing of water
- C6 Regulatory instruments-allocation and water use limits

The Need for IWRM at KaLanga Community

The Makhondvolwane (Mvutjini) reservoir/ earth dam was constructed by the Ministry of Agriculture in 1973 with the intention to supply water to a 100ha farm and for livestock purposes. Efforts were made to provide safe water through a water scheme by Rural Water Resources Branch but financial constraints rendered the efforts ineffective as only a few households benefited. The scheme was transferred to Swaziland Water Services Corporation however, only about 23% of the total households are currently supplied. With time, the 100 ha farming scheme was given to the community people of KaLanga to run, however, the people failed in their operations and the scheme collapsed. When this project collapsed, there was already a pumping station; pipes lined out for irrigation and even balancing dams had been constructed to retain the water from the dam before its distribution within the fields. The area also had and still has a supply of electricity, which made the pumping of water from the reservoir to the smaller holding dams possible.

According to a recent study conducted by AfroGIS in 2008, the water resource in the dam is limited and relies on annual precipitation. According to the same study water quantity is estimated at 515 000 m³ at 270m above sea level, with an average depth of 6 m. The available water is affected by high evaporation rates and result in very limited quantities for use.

With increased drought in recent years compounded by lack of maintenance, the quantity of the water resources in the dam has significantly reduced giving rise to potential conflict among the different users. The water quality has also been severely polluted with human beings taking turns with livestock (Cattle, Pigs, etc) in % trinking+from the only water source available in the area, the KaLanga earth dam. There is an apparent lack of awareness among the KaLanga community on the need for improved water quality, the water is not treated and incidences of diarrhoea diseases are common. According to the database developed by AfroGIS incidences of water-related diseases are estimated at 39% of the 216 surveyed households in the area had members who had been treated for water illnesses in the past year. While water quality tests run on water sampled from the dam revealed that coliform counts ranging from 650-1980 per 100 ml were found in the samples. Although it is required herein that faecal coliform count in water samples should never exceed 10 bacteria per 100 ml, and no more than 25% of samples should contain faecal coliforms, The Ministry of Health

and Social Welfare has set a threshold limit of 0/100 ml faecal coliform counts at all times. The results gave an indication of the direct hazard posed by human and livestock faecal pollution in rural water supplies.

Tourists from outside the community use the dam for recreation purposes like swimming, camping and leave the dam and surrounding environment dirty, exposing the KaLanga community members to health risks as they use this water for domestic purposes such as cooking, and drinking. Tourists (and some community members) also fish in this dam, for leisure, and deplete the fish resources that community members rely on as a source of food. Buildings in the school and nearby homesteads are constructed through the use of water from the dam leaving the water polluted. The dam is also used for religious purposes such as baptism and traditional rituals.



A truck collecting water from Mvutshini dam A woman carrying domestic water from Mvutshini dam

Overall, there has been lack of a comprehensive water management approach at KaLanga. Consequently, the dam had become heavily polluted, silted and had been % hrinking in size+ over the years.

A baseline survey conducted by AfroGIS revealed that about 65 % of the household population used unimproved sources of water a reason attributed to no availability of other sources of clean water. Women and children have been at the receiving end of the lack of a comprehensive approach to managing the KaLanga water resource with most of the women walking distances to fetch the polluted water from the dam while competing+with livestock for the same water. Children treat the earth dam as a commission pool+while drinking from the same source. On another note, women spend additional hours attending to children and other family members suffering from diarrhoea diseases. The baseline survey indicated that about 48 % of the total population most of whom are located upstream had no access to proper sanitation facilities and instead they use the bush.

Conflicts had arisen with various stakeholder groups accusing each other of either % tealing+ the water, polluting or depleting the fish resources in the KaLanga dam. There has been no formal mechanism for management of the water source and stakeholders had not met to address the problem.

The KaLanga IWRM Demonstration Project

Swaziland Water Partnership is a national chapter of Global Water Partnership (GWP) which is a network forum that promotes Integrated Water Resources Management (IWRM). The⁷

SZWP is currently in partnership with the Government of Swaziland in developing the National Water Policy and IWRM Plan that is pronounced as a key requirement for water resources development and management in Swaziland through the Water Act of 2003. The National Water Policy and the IWRM Plan is developed within an IWRM project known as the %Rartnership for Africac Water Development+(PAWD) which is a programme of implementing National IWRM and Water Efficiency (IWRM/WE) Plans (declared a prerequisite at the World Summit on Sustainable Development (WSSD) in 2002) in African countries including Swaziland with support from the Netherlands government.

Swaziland Water Partnership embarked on an IWRM demonstration project to % est+ the applicability of IWRM principles on the ground. This is with the context of the National IWRM planning process facilitated by the Swaziland Country Water Partnership with support from the Dutch government. The project area is located in the central Lowveld of Swaziland with the Lubombo Escarpment on the eastern border and the lower Middleveld on the eastern border and the lower Middleveld on the western border. The kaLanga project site was chosen as one of a total of three sites that were short listed after a reconnaissance survey conducted to evaluate a site seen to have potential for learning on IWRM demonstration. The three communities evaluated for IWRM Demonstration Project included Nhlambeni, Somntongo and KaLanga. KaLanga was chosen as the more suitable site for this demonstration. The demonstration project is an initiative to integrate water into poverty reduction at a local and practical level. The project targets various stakeholders whose livelihoods depend on the KaLanga earth dam built by government of Swaziland in 1973 for agricultural purposes. The entire KaLanga community has more than 9 600 people and about 1700 homesteads. However, according to the baseline survey conducted earlier on, the Makhondvolwane project beneficiaries are slightly more than 200 households made up of households around the dam catchment.

The community traditional leadership / authority was approached prior to the beginning of the project to have their buy in to the project. Then the first community meeting was conducted on 23 June 2007 upon which the Member of Parliament for the area, Honourable Ntshingila was also invited including the traditional authority as well. In this meeting the concept of IWRM was introduced, a seven-member committee was elected to be the contact point between community members and CWP project office, prevailing water management issues and possible ways of solving them were discussed.

The main project aim is to develop the Mvutshini dam and maximize its use for the benefits of the community and the Lubombo region in the Lowveld of Swaziland. The project is aimed at integrating water resources planning, use and management in an efficient, equitable and sustainable use as advocated by IWRM principles and through the application of IWRM tools developed by GWP. It is further aimed at up-scaling implementation of IWRM from local user level to national level thereby contributing towards MDGs. In implementing the project, SZWP works in collaboration with partner organizations that include government ministries of Health and Social Welfare (MoHSW); Agriculture (MoA); and Natural Resources and Energyq s (MNREs) Department of Water Affairs (DWA) as well as Non-Governmental Organizations (NGOs) that include Africa Cooperative Action Trust (ACAT)- Lilima, and Swaziland Farmer Development Foundation (SFDF).

The project involved:

- The construction of drinking troughs for cattle to eliminate the current water pollution caused by sharing water use with livestock
- The construction of sanitation facilities viz. laundry areas, showers and pit latrines to control other polluting activities by the community
- Setting up of an irrigation infrastructure and rehabilitation of the agriculture scheme that the dam was originally intended for

- Prospecting and drilling of boreholes in suitable sites to enhance potable water supply in the communities
- Protection of a spring at the earth damos head waters by fencing it to minimize pollution and prevent access by animals
- Setting up of standpipes for the supply of potable water at the dam site depending on whether the water from the dam meets safe water quality standards.
- Capacity building through training and awareness creation, and skills transfer on issues of water and institutional management
- The construction of a low level bridge across the earth dam for purpose of access to opposite reaches of the earth dam

The Need to Document the KaLanga IWRM Demonstration Project

The Swaziland Government enacted a National Water Act in 2003 that enshrines IWRM principles and promotes decentralisation of water management from government to the lowest user on the ground. The ka-Langa demonstration project is viewed as a pilot study whereby lessons on best IWRM implementation need to be documented to enable up-scaling of the same to other areas in the country and even other countries. In implementing the IWRM paradox it is essential that countries adopt a practical paradigm shift in translating the IWRM definition and unpacking the IWRM tools and their applicability in day-to-day management of water and related resources as is discussed below.

NB: The author wishes to advise readers that this report was compiled at the end of the project period for SZWP and is therefore a synopsis of what took place between 2007 and 2009. It is not an exhaustive record of all the activities that the IWRM demonstration project will achieve in the final analysis.

UNPACKING THE APPLICATION OF THE WIRM TOOLBOX IN THE KALANGA PROJECT

A. ENABLING ENVIRONMENT

A proper enabling environment ensures the rights and assets of all stakeholders (individuals as well as public and private sector organizations and companies, women as well as men, the poor as well as the better off), and protects public assets such as intrinsic environmental values. Basically the enabling environment is determined by national, provincial and local policies and legislation that constitute the % les of the game+and facilitates all stakeholders to play their respective roles in the development and management of water resources. It also includes the forums and mechanisms, information and capacity-building, created to establish these % les of the game+ and to facilitate and exercise stakeholder participation.

From top to bottom: In order to achieve efficient, equitable and sustainable water management within the IWRM approach, both top-down and bottom-up approach for the participation of all stakeholders needs to be promoted \cdot from the national-level down to the catchment or watershed level. Decision-making in this context needs to be governed by the principle of subsidiary, which drives down action to the lowest appropriate level.

A1. Policies:

Policy development gives an opportunity for setting national objectives for managing water resources and water service delivery within a framework of overall development goals.

Policy formulation is a core government role. Through its policies, government can delimit the direct and indirect activities of all stakeholder groups, including itself. Government can be a direct provider, or regulate and support other providers. Appropriate policies can encourage participatory, demand-driven and sustainable development. Policies that encourage IWRM include reference to the nation's wider social and economic objectives that make up the development goals of the society. Policies lead to the development of laws and rules and policv regulation designed to achieve the overall qoals (A2). Areas to target for change:

Swaziland Case

Recognizing the three basic components of IWRM, i.e., enabling environment, institutional roles, and management tools, in the 1990s Swaziland started the process by building consensus among the various stakeholders including government officials, academes, private sector, various water user groups, and non-government organizations, by holding water dialogues, seminars and workshops. Awareness creation campaigns on the concept of IWRM and capacity building initiatives have also been promoted by both Government and other NGOs such as GWP-through SZWP. The main objective was to put the key elements of the three basic components into the national water resource management system, and thus institutionalize the IWRM into the government machinery. SZWP helped promote an enhanced understanding of the importance of IWRM in National Economic Development among non-traditional water sectors, such as the Ministry of Economic Planning and Finance, Media, Private sector (Sugar Corporations), etc. Furthermore SZWP has played a pivotal role in raising the profile of IWRM by involving water related Ministers, Members of Parliament and members of the Diplomatic missions and Donors within the country during the launch of IWRM planning by the Prime Minister.

A2. Legislation

The required water laws cover ownership of water, permits to use (or pollute) it, the transferability of those permits, and customary entitlements. They underpin regulatory norms for e.g. conservation, protection, priorities, and conflict management.

The Swaziland case

Swaziland adopted a new Water Act in 2003 which provide for the establishment of five river basin authorities, irrigation districts and water users associations. Some of the country legislation used to form the basis of the management of the IWRM Demonstration Project and its operation include the following:

- Swaziland Environment Management Act of 2002
- The Water Act of 2003
- The Swaziland National Trust Commission of 1972 as amended
- The Natural Resources Act of 1951
- The Protection of Fresh Water Fish Act of 1937

A3 Financing Options: I. Grants and internal sources

Water projects tend to be indivisible and capital-intensive, and many countries have major backlogs in developing water infrastructure. Countries need smart national and international financing approaches and appropriate incentives to achieve development goals. Financial resources need also be allocated to public sector financing e.g. for the management of the resource, not only the water services. This requires comparatively small budgets, which give huge benefits because proper resource management minimizes the risk of misallocations by applying IWRM, securing sound data acquisition etc.

KaLanga

SZWP has promoted funding opportunities for IWRM planning. The Government contributed about USD 270,000 in 2006 as additional domestic resources for overall IWRM planning. Furthermore, SZWP contributed significantly to the implementation of the 2003 Water Act by leading on elaboration of enabling legislation. The kaLanga project was made possible through a grant from GWP through SZWP. The project has benefited from grants from international aid agencies and local NGOs for technical assistance and capacity-building. Local funding organisations include the Government of Swaziland, UNICEF, (GoS) and the German Embassy. Swaziland Farmer Development Fund (SFDF) and Africa Cooperative Action Trust (ACAT) provided expertise. SZWP played a major facilitation role and assisted community members to access other sources of funding. SZWP assisted the community to draft letters and proposals to solicit funding. Interviews with community members has revealed that there will be a fee charged for use of water from boreholes, and for use of the dam facility so that a fund is maintained for maintenance and operation of the water infrastructure.

B. INSTITUTIONAL ROLES

Institutional development is critical to the formulation and implementation of IWRM policies and programs. A number of factors determine what is appropriate in a given context: stage of development, financial and human resources, traditional norms and other specific circumstances. Flawed demarcation of responsibilities between actors, inadequate coordinating mechanisms, jurisdictional gaps or overlaps, and the failure to match responsibilities with authority and capacities for action are major difficulties in implementing an IWRM approach. The agencies involved in water resources management have to be considered in their various geographic settings, taking into account the political structure of the country, the unity of the resource in a basin or aguifer and the role of community organizations and other interest groups in decisions over water use and management. Institutional development is not simply about the creation of formally constituted organizations (e.g. service agencies, authorities or consultative committees). It also involves consideration of a whole range of formal rules and regulations, customs and practices, ideas and information, and interest or community group networks, which together provide the institutional framework or context within which water management actors and other decision-makers operate.

B1 creating an organisational framework-forms and functions

Starting from the concept of reform of institutions for better water governance, the practitioner needs to consider the required organizations and institutions . from Transboundary to basin level, and from regulatory bodies, to local authorities and civil society organizations.

KaLanga

Initial to project commencement, SZWP and the other implementing partners engaged in a community mobilisation and stakeholdercs identification exercise to ensure full participation and ownership of the project. In this regard they would be assisted in forming a formal institution which would lead the proposed development in liaison with the community. Activities directed to the assistance of this institution included the capacity building on drafting of a constitution, outlining and detailing an activities work plan, with set time frames and schedules, the election of a committee, and starting a maintenance fund to sustain the different activities under the project in the long run.

A **multi-sector project advisory team** was established to provide technical guidance on the project, comprised mainly of government officials, academes, private sector, traditional leaders, and various water user groups. The election of a **7-member executive committee** was supported with the election of **sub-committees** to administer the day-to-day on the ground project activities. All the committees report to the wider community as it is central to the identification and implementation of solutions to the issues identified in the project area.

SZWP facilitated the participation of other organisations called **implementing partners** (nongovernmental organization (NGO), and non profit-making) to improve project support. The initial steps included building consensus on clear roles and responsibilities for each agent to avoid conflict and ensure smooth operation.

The Swaziland Farmer Development Foundation (SFDF): focuses on farming i.e. gardening and livestock production; sourced funding from other organizations, contributed towards the construction of livestock water troughs, protection and fencing of the garden scheme, spring and dam.

Africa Cooperative Action Trust (ACAT): that helped promote the KaLanga communitiesq livelihoods to alleviate poverty, provided training on water conservation methods, crop farming and household water harvesting and construction material and training on rainwater harvesting. ACAT also facilitated the establishment and training of project committees.

Youth Employment Summit (YES): facilitated needs assessment, awareness creation, and capacity building on water resources management for the youth of the area.

MNRE, MOA, MHSW through their regional, local and national offices were involved in guiding the implementation of activities under the project. These will continue to provide support to the project beneficiaries even after the exit of SZWP and the other implementing partners.

B2 Building Institutional Capacity - developing human resources

Institutional capacity building is a means of enhancing performance. In the context of IWRM it represents the sum of efforts to nurture, enhance and utilise the skills and capabilities of people and institutions at all levels, so that they can work towards the broader goal. Capacity is needed at two levels: capacity to plan and develop IWRM programmes, and operational capacity. Capacity in institutions is needed to plan, to regulate, to provide services and to allocate resources. In the context of IWRM capacity building represents the sum of efforts to nurture, enhance, and utilize the skills and capabilities of people and institutions at all levels, so that they can work towards a broader goal. Conceptually, building capacity involves empowering and equipping people and organizations with appropriate tools and sustainable resources to solve their problems.

KaLanga

The community members were trained on the concept of IWRM, its potential benefits and how best to put it into practice. The training was aimed at providing participants with incentives to change their practices and approaches. Specially designed and tailor-made courses were delivered to the community to help improve change in water management approach. Modules for on-the-job training to keep beneficiary up-to-date were also included. The community was trained by SFDF and ACAT on various courses including:

- Leadership and club formation principles, club committee and its duties;
- o Introduction to conflict resolution,
- o Club constitution and its items,
- Introduction to planning and its benefits,
- Vegetable production, dam maintenance planning,

• Sanitation and hygiene.

On the job training / hands-on training and technology transfer courses included:

- o protection and fencing of dam, gardens and springs,
- o constructing water harvesters and VIP toilets,



Community members during the training sessions



Constructing a water harvester

C. MANAGEMENT INSTRUMENTS

Management instruments are the elements and methods that enable and help decision makers to make rational and informed choices between alternative actions. These choices should be based on agreed policies, available resources, environmental impacts and the social and economic consequences. Systems analysis, operations research and management theory offer a wide range of quantitative and qualitative methods. These methods, combined with knowledge of economics, hydrology, hydraulics, environmental sciences, sociology and other disciplines pertinent to the problem in question, help define and evaluate alternative water management options and implementation schemes. The art of IWRM is about knowing the available elements and methods and consequently selecting, adjusting and applying customized tools to the given circumstances.

C1: Water Resources Assessment – understanding resources and needs

It is imperative to assess the quality and quantity of water resources holistically in an area in relation to the users. This is mainly to identify and evaluate the different development options, potential conflicts as well as any risks involved. A proper water resources assessment needs to be based on hydrological, physiographic, demographic, and socio-economic data and setting up system for routine data assembly and reporting. Socio-economic aspects include analysis of usersqbehavior, demand, and the potential effects of demand management. The holistic nature of IWRM necessitates constant knowledge sharing of data by water stakeholders, and cross-sectoral water practitioners. Moreover, appropriate indicators need to be developed to show how well IWRM objectives are being met. These indicators support transparency and judge performance.

KaLanga

In the KaLanga project an inventory of elements of the physical environment (natural and constructed) within the dam catchment and downstream of the dam, through mapping current and planned land use based on the project activities was conducted. A bio-physical and socio-economic situational study that included the collection of hydrological, physiographic,14 demographic and socio-economic data, through setting up a geographic information system

(GIS) for routine data assembly and reporting was conducted by AfroGIS a local consultant funded under the PAWD project. Information generated for the study was intended to guide decision-making on the zoning of the dam to cater for current and future uses, guide water supply and sanitation service delivery within the project area and indicate possible sites for irrigated agricultural use. Furthermore, a household pre-survey was undertaken to establish the baseline socio-economic and sanitation status. Study results were presented to community members and it helped concretize prevailing water quality and quantity challenges and point areas that needed urgent attention. A holistic database of results of the environmental analysis of the area exists in the SZWP PAWD office.

C2: Plans for IWRM- combining development options, resource use and human interaction

In comparison to traditional plans, IWRM planning is more flexible and dynamic in water resources development and management. IWRM takes a holistic approach in the systemq planning whether itos a basin, catchment watershed, where terrestrial anthropogenic activities are also taken to consideration. IWRMqprominence is on the process of establishing priorities and actions for integrated management of water resources. Moreover, IWRM allows flexibility and are non-prescriptive thus they should be continuously monitored and adjusted in order to take account of recent development trends. Scenarios for development should be explored as well as relations between other sectors e.g. tourism and health and other affected parties including the private sector, community groups and disadvantaged stakeholders should be an integral part of the planning process. Furthermore, it is imperative to include analysis of risks (climatic variations, economic, political factors) during the planning process to manage and reduce the risks.

KaLanga

Scenarios for water resources development in the KaLanga Project were explored together with the community members an exercise that resulted in a %wish list+which was later reduced through prioritization with the assistance of SZWP, in collaboration with partner organisations (MOH, MOA, ACAT, SFDF, YES, DWA).

The community wish list was comprised of the following items

- Provision of clean water 1.
- Dam expansion to increase water storage 2.
- 3. Gardening for food security and income generation
- 4. Dam fencing
- 5. Area for animal watering (water troughs)
- Construction of a bridge 6.
- 7. Revival of failed agriculture scheme
- Supply of potable water to school 8.
- Building a secondary dam 9.
- Payment of levy by those who cruise on water and fish for entertainment 10.
- Building of a guest house 11.

After considerable discussions the wish list was reduced by taking into consideration financial issues, evaluating feasibility of each of the development options within project timeframe and an assessment / evaluation of readily available water for consumption by the community. The executive committee is the focal point with support from several sub-committees. The wish listq was reduced to a few initiatives administered by sub-committees headed by the executive committee and they include: 15

- 1. The construction of a low level bridge across the earth dam for purpose of access to opposite reaches of the earth dam
- 2. Prospecting and drilling of boreholes in suitable sites and water harvesters to enhance potable water supply in the communities
- 3. The construction of drinking troughs for cattle to eliminate the current water pollution caused by sharing water with livestock
- 4. The construction of sanitation facilities (VIP toilets) to control other polluting activities by the community
- 5. Establishing a garden scheme for income generation
- 6. Protection of the spring and the earth damos head waters by fencing it to minimize pollution and prevent access by animals

UBUKELA

Summary of community prioritized interventions during one of the meetings held with the community

Youth Involvement

Generally in Swaziland youth participation in water resources development and management has been relatively low hence SZWP engaged Youth Employment Summit (YES) - Swaziland to involve community youth in the project for sustainability and youth empowerment purposes. YES started by mobilising the youth, carrying out a needs assessment exercise, assisted in election of a youth committee, held capacity building workshops on the IWRM concept and water management principles and how the youth can take part in the project. However, this initiative did not yield expected results as youth participation has dwindled during project progress due to several factors. An interview with one youth representative indicated that migration due to employment and educational reasons was the major setback in youth participation. The other reason cited was that youth lose interest in holding series of meetings and trainings without practical activities since the young people are interested in initiatives that yield results within a short period of time. Involvement of other youth partners who are at tertiary level was also undertaken. Students from the University of Swazilandos Geography, Environmental Science and Planning departments society were part of the project. They assisted in soil sampling around the area thereby gaining practical experience of their subject matter. Since then the youth society has shown interest in water resources management activities.



Youth facilitators and participants (elected into the community youth committee) during the community youth workshops



Youth from the University during a soil sampling exercise and an expert training them how to use a GPS tool

Monitoring and Evaluation

The KaLanga community was assisted to formulate a Project Monitoring and Evaluation Plan. The process involved Defining indicators, establishing benchmarks, and setting mechanisms to ensure ongoing monitoring and evaluation. The main objective of the exercise was to help community members to see whether the implementation process is on track, to measure both short- and long-term impacts, and to evaluate impacts to determine if actions are indeed contributing to the larger development goals defined during project commencement.

C4: Social Change Instruments – Encouraging a Water-Oriented Society

For IWRM to be achieved there has to be changes in water practices through attitudes of individuals, institutions, professionals and the civil society. These changes have to be through joint ventures in vision creation, diagnosis, creation of options, implementation and monitoring. Thus, broad stakeholder participation is inevitable in water resources planning, which is an influential instrument for social change. The most deprived social groups need to be fully involved in the participatory approach. Participation does not deal away with conflicts of interest but can open doors to conflict resolution. Hence education, training, and awareness creation are important tools in water education for social change. The level of knowledge between the stakeholders is crucial, knowledge asymmetry, where one group is much more aware of issues and data than another, breeds lack of trust. So, there is need to empower groups.

KaLanga

To help the KaLanga community embrace the concept of IWRM and its applicability, the implementing partners engaged in awareness creation towards attitude change, knowledge & skills transfer and also in technology transfer. The water resources assessment reported on under C1 helped paint a picture of the water quality and quantity situation (amidst the socioeconomic factors in the community) and encouraged members to realise the urgency of constructing VIP toilets and water harvesters. The project meetings between stakeholders and project implementing partners provided a platform for learning, dialogue and for information dissemination and report-back.

On another note, the establishment of the constitution played a big role in giving guidance on participation and effecting disciplinary measures against defaulters. The constitution was developed by the beneficiaries as a governing document and it made specifications to deal with elections, meetings, participation and disciplinary mechanisms. It was revealed that the payment of E10.00 (=R10/USD 0.70) helped a great deal in compelling a positive behaviour against absenteeism resulting in improved participation in terms of meeting attendance.

C5: Conflict Resolution – Managing Disputes, Ensuring Sharing Of Water

IWRM should have procedures for conflict management and consensus building. Conflicts can occur for many reasons e.g.; functional overlap; competition for scarce resources; differences in organizational status and influence; incompatible objectives and methods and others. However, conflicts may help in bringing about change, build new relationships, and identify new important things. Thus there is need to come up with conflict management tools for parties involved in the project to identify what may lie on each sideq position and meet everyones interest. Trade off and compromise is necessary in conflict management. These tools are applicable in all IWRM aspects.

KaLanga

Conflicts experienced in the project area include tension over water abstraction by a water service provider known as Swaziland Water Services Corporation (SWSC) which the community complained it was being carried out without their prior knowledge and that the Dam water was shrinking as a result of the abstraction. SZWP facilitated a meeting that helped the community and the utility company to discuss the problem. During the meeting it transpired that both parties (community and SWSC) had accusations against each other and the need for a third party was obvious. On the other hand, the discussion meeting helped SWC voice out concerns over infrastructure vandalism and misuse by community members. The dialogue promoted by SZWP led to a positive result whereby SWSC and the18

community reached a win-win solution. The community recommended that SWSC should install a flow meter to measure the volume of water abstracted and that water abstracted from the dam to supply other communities must comply with dam management set rules and must be communicated to the community traditional authorities and project executive committee The meeting helped both parties to set up rules to be followed and as such cooperation and a win- win solution was realised.

The other conflict experienced was that over land for the development of a garden scheme. The Traditional Authority (*Umphakatsi*) allocated land where community members were supposed to establish the gardens, however, this same place is currently used as %grazing land+ and some people had started their personal gardens. The people have already fenced some part of their personal gardens and have installed some pipes for irrigation. These people refused to remove their pipes and fencing to make way for the new project and as a result the matter was reported back to the traditional leaders. The traditional authority convened several meetings in an effort to solve the issue and finally most of the people agreed to remove the materials and join the new project while one has refused to either remove his fence or to be part of the new project. This issue has resulted in the delay in starting the garden scheme.

Members are supposed to subscribe to join, however not everyone involved in the project joined. Only those who are close to the place where they are going to have their garden, while other people did not join because they felt they were far from the place to be able to maintain the garden.



Discussion in progress on issue about SWSC's extraction of water from the earth dam using an unsecured pipe as shown by community representatives and a technician from SWSC

C6: Regulatory Instruments – Allocation and Water Use Limits

There are four basic types of regulatory instruments which have a role to play in integrated water resources: Direct Regulations, Economic or market regulation, Self regulation, and Social regulation. However, all four of these sets of instruments will need to be employed within a mixed regulatory system. Each instrument requires different expertise and different timescales for implementation. An appropriate regulatory tool is likely to vary markedly depending on the socio-economic, political and environmental conditions prevailing in a country. Direct regulation can only be effective if the agency involved has enforcement capacity and if it does not other instruments have to be used suitable in that society.

Regulatory instruments used in the Ka-Langa project included self and social regulation which were applied concurrently. During project inception, the community drafted and adopted a project constitution (self regulation) with facilitation and assistance from ACAT, a document that served as an overall regulating and governing document. The constitution provided rules of the game and prescribed fines and penalties for non- compliance. On the other hand small fines were charged for absenteeism and late coming for meetings or project work. The imposition of fines resulted in positive change on behavior towards project participation and meetings attendance.

SUMMARY OF LESSONS LEARNT

The KaLanga demonstration project reflects the application of IWRM in sustainable water management. For IWRM to be adequately implemented, the three Eqs have been vital in changing livelihoods and socio-economic development. Objective indicators were set during the planning process and were used as guides during the implementation process and identifying progress of deliverance. Two years down the line the KaLanga Demonstration project has yielded successful tangible deliverables as planned from the onset of the project with the community and they include the following:

- 1. Three boreholes (all with funding sources outside the PAWD II project)
- 2. Homestead water harvesters-108
- 3. Two livestock drinking troughs
- 4. Homestead VIP toilets- 96 (only about ten homesteads still had not constructed toilets)
- 5. Fencing a garden scheme
- 6. Protection and fencing of a spring at the earth damos head waters
- 7. Fencing of the Dam to fend off livestock

Key Concepts for IWRM Implementation

The IWRM Demonstration Project has yielded lessons to be learnt for projects of a similar nature locally, regionally and globally.

- Definition and agreement on the roles and responsibilities of all the parties involved in the planning process improves coordination and builds commitment. Collaboration and partnering between institutions involved in water resources management is vital and tends to be efficient as these tend to share different skills, experiences and knowledge as much as resources. This was observed when various implementing partners comprising of SZWP, Government Ministries and NGOs worked in partnership forging alliances for the success of the project.
- Whilst recognizing the role played by the different implementing institutions and key players, the early inclusion of local area traditional authorities cannot be overlooked as they ensure project acceptance, ownership and they are crucial for enforcing disciplinary measures against non-compliance and defaulters. This indicates that local knowledge is also important to build upon including the use of existing institutions.
- Adequate stakeholder capacity building is vital prior to and during project implementation and it ensures ownership and commitment. IWRM implementation if associated with local needs and priorities is vital in the projector success and acceptance by the intended beneficiaries. For instance members of the KaLanga20

project committee were able to persevere through hardships posed by fellow community members or committee members in a few cases without opting out due to the initial leadership training they received.

- Quick wins+ help in creating commitment and ownership, but the participatory planning process cannot be done without facing challenges! It is useful to start implementing IWRM at small scale because outputs are easy to realise and project is easy to mange since it becomes easy to build upon lessons learnt.
- Financial resources mobilisation is still an issue that requires attention since it becomes an impediment to development initiatives as observed in the KaLanga IWRM project in the effort to construct a cross over bridge. The bridge initiative is still pending funding for design and construction.
- Urban migration has a significant effect on local user participation and project sustainability implies the importance of mobilising resources and promoting development initiatives at rural area level. The organized youth participation initiative could not take off due to young people migrating to urban areas for employment and educational purposes.
- Meetings, training sessions and workshops provide a strong foundation for dialogue, sharing lessons, conflict resolution, planning, report back and information dissemination. The meeting between SWSC the private water supplier and the community helped solve the contention over water abstraction and also played a vital role in promoting relationships.

Challenges:

- The Project faced difficulties in promoting stakeholder engagement especially with those people from other communities outside the dam area but who also derive benefits from the Makhondvolwane dam.
- There is still a need to up-scale the formed institutions (local committees) to feed into the wider water institutions at regional (administrative) and river basin (catchment) levels. On the other hand the Swaziland Water Act establishes River Basin Institutions which should work in collaboration with grass-root level water management institutions, and this in turn helps in managing the water resources in an integrated manner.

Recommendations:

- Awareness creation for IWRM requires more time and it should be pushed with strong support from the National Policy-makers level so that the people who do not take such initiatives seriously may understand the significance attached to such and develop a positive attitude.
- The fact that DWA and other government ministries were involved in this project makes it easier for the RBAs to be notified about the existence of such committees and the need to develop communication and cooperation mechanisms. It would be important for the coordination and funding of proposed actions / activities in the IWRM project to explore possibilities of incorporating these actions as components of other government programmes / projects underway and planned.

Conclusion

The project demonstrates that multi-stakeholder dialogue is a basic requirement for the solution of problems involving different perspectives and priorities. The process of developing consensus is difficult to build, but is usually the most important. The Water Act and Water Policy including the IWRM Master Plan already contain IWRM principles, but still, practical implementation of these principles has encountered several challenges. The IWRM demonstration Project provides a good illustration of how effective co-operative links / partnerships can be established between the government and the non-government organisations for the solution of water related problems involving, by definition, different perspectives and priorities. This indicates that there is always a need for a group of key players who can act as catalysts for change, motivated and influential enough to obtain government endorsement of the project.

The SZWP as a neutral platform has proven to be instrumental in winning and maintaining community interest, involvement and support because of the participatory approach used. Public awareness and multi-stakeholder participation is a must to ensure acceptance by the public and the various government levels. The case of KaLanga demonstrates that IWRM is actually a process for better management of water resources and encompasses governance, stakeholder participation and balancing development with resource sustainability.

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