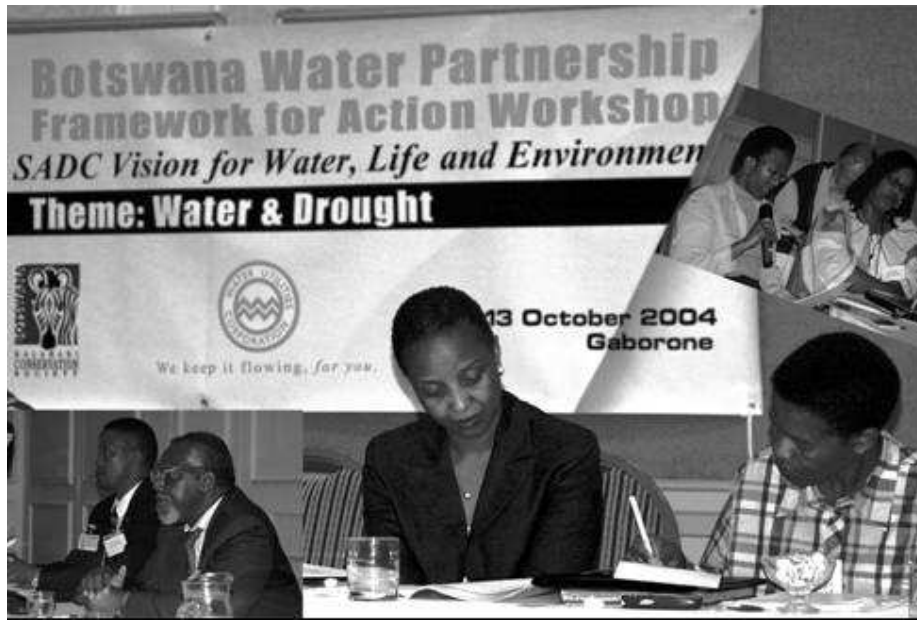


PROCEEDINGS

PRELIMINARY CONSULTATIVE WORKSHOP

SADC VISION FOR WATER, LIFE AND ENVIRONMENT AND FRAMEWORK FOR ACTION



GLOBAL WATER PARTNERSHIP – SOUTHERN AFRICA

COUNTRY WATER PARTNERSHIP – BOTSWANA

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Workshop Organisers:



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Abbreviations and Acronyms

BNWMP	Botswana National Water Master Plan
CBNRM	Community Based Natural Resource Management
CBO	Community Based Organization
CWP	Country Water Partnership
DSWM	Department of Sanitation and Waste Management
DWA	Department of Water Affairs
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
FFA	Framework for Action (FFA).
GWP-SA	Global Water Partnership Southern Africa
IWRM	Integrated Water Resource Management
KCS	Kalahari Conservation Society
MEWT	Ministry of Environment Wildlife and Tourism
MFDP	Ministry of Finance and Development Planning
MMEWR	Ministry of Mineral Energy & Water Resources
MoA	Ministry of Agriculture
NAMPAADD	National Master Plan for Arable Agriculture and Dairy Development
NCSA	National Conservation Strategy (Coordinating) Agency
NDMO	National Disaster Management Office
NDP9	National Development Plan 9
NGO	Non-Governmental Organization
NPWWSM	National Policy on Wastewater and Sanitation Management
OKACOM	The Permanent Okavango River Basin water Commission
RSAP	Regional Strategic Action Plan
SADC	Southern African Development Community
SATAC	Southern Africa Technical Advisory Committee
SEA	Strategic Environmental Assessment
UB	University of Botswana
WDM	Water Demand Management
WSSD	World Summit on Sustainable Development
WUC	Water Utilities Corporation
ZAMCOM	Zambezi commission

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Opening session

Introduction

Mr F Monggae - CEO of Kalahari Conservation Society (KCS),

Mr Monggae welcomed the participants to the workshop co-hosted by KCS who are the Secretariat of the Country Water Partnership (CWP) – Botswana and the Global Water Partnership – Southern Africa.

Welcoming remarks and introduction of CWP-Botswana

Mr O Katai - Deputy Director Department of Water Affairs

Botswana has been and is participating in several regional meetings and workshops organized by SADC Water Division, GWP-Southern Africa and other cooperating partners, mainly to contribute and move towards what the Water Vision for Southern Africa and the SADC Revised Protocol on Shared Watercourse Systems are advocating for. The Protocol provides the legal and broad policy framework for cooperation on water issues in the region, aiming at the sustainable management, development and utilisation of the region's water resources, and their equitable sharing for the mutual benefit of all, and for the upliftment of the quality of life.

As part of the process, a Regional Water Policy has been adopted by Member States and its Strategy is still being developed. The Policy will not only provide a longer-term perspective for the development and management of the region's water resources, but will also guide and give strategic direction to short-medium term intervention such as the Regional Strategic Action Plan (RSAP). The RSAP for Integrated Water Resources Management and Development is being used to operationalise the SADC Revised Protocol on Shared Watercourse Systems. Its main focus is to create an enabling environment for joint management of the regional water resources. The Regional Strategic Action Plan – IWRM is being reviewed now to assess the progress and impact that has been made. Also, to provide strategic guidance to secure accelerated implementation.

IWRM has been defined by the GWP as “*a process, which promotes the coordinated development and management of water, land and related resources in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems*”. GWP is an international network open to all organisations involved in the management of water resources. Its mission is to support countries in the sustainable management of their water resources.

With the above mission of GWP and its definition of IWRM, it should not come as a surprise to note that when SADC's Vision for Water was being developed, it was through the able facilitation of GWP-SA, who went even further to start the process of the Vision's related regional Framework for Action (FFA). This is why we find the IWRM principles neatly embedded in the SADC Vision for Water. GWP-SA also provides support on IWRM promotion through information gathering, dissemination and bringing the stakeholders together to debate regional water issues and share experiences. The Country Water Partnerships are expected to rollout the Regional Water Vision at national levels through the national Framework for Action (FFA) where individual SADC countries are expected to develop their roadmaps, strategies and actions for achieving the vision.

At one of the workshops in Pretoria, South Africa, organized by GWP-SA in January 2003 to discuss the SADC Water Vision Framework for Action, the organizers impressed upon Member States to initiate the process of national FFAs if the SADC populace was to realise the Water Vision for Southern Africa. Knowing that a meaningful FFA can only be

developed with proper consultation and participation of stakeholders and the public, the Ministry of Minerals, Water and Energy Resources looked outside the government enclave for a partner who could facilitate this process better. Negotiations with the Kalahari Conservation Society were successful and they became the focal organisation.

In order to start consultations to the FFA process up and running in Botswana, there was a need to have a Country Water Partnership (CWP)- Botswana. There was none, so the first assignment of KCS was to form and launch the CWP-Botswana, which KCS did in October 2003 with the participation of most of the water stakeholders. The CWP was launched under the theme **Water and Drought**, which provides the 'environment' through which the FFA consultations may take place.

The CWP-Botswana is a network of interested partners (including government institutions, private sector, civil society, institutions of learning, parastatals etc.) concerned with water and the environment in the country, directly and indirectly. A multi-sectoral National Steering Committee was later constituted to spearhead CWP-Botswana and the FFA process. This is in line with the KCS drawn up plan that was endorsed by MMEWR on the way forward with the implementation of the FFA process. It requested the establishment of CWP-Botswana that will then implement the FFA process in the country as part of its programme.

We are here now to initiate the FFA process. Thank you.

Briefing on purpose and theme of the workshop

Mr F Maunge – Chief Executive of Water Utilities Corporation

My task is to outline the purpose of the two-day workshop. As the topic suggests, the workshop essentially forms a platform for preliminary consultations on the Framework For Action (FFA), which should lead to the achievement of the SADC Vision for Water.

Background

It is now exactly eight years since the Global Water Partnership was established in 1996. Its primary purpose was to translate into practice, the Integrated Water Resources Management principles agreed in Dublin and Rio.

The Global Water Partnership in Southern Africa started operations in 1998 through its Southern Africa Technical Advisory Committee (SATAC). This Committee, together with the SADC Water Sector, worked tirelessly to create the SADC Vision for Water, Life and the Environment in Southern Africa in the 21st Century. At the time the Vision for Water was created, the Region had a population of approximately 180 million people.

Our Regional Vision and Framework for Action essentially formed Southern Africa's contribution to the global process of creating a World Water Vision and Framework for Action guided by the World Water Council and Global Water Partnership.

One of the major aims of the Vision was to change the way water is viewed by the users as well as how it is managed in order to ensure sustainability. The question to ask is "*Is the Region making progress in this regard*"? It was also concluded at the time that the continuation of "*business-as-usual*" could not address squarely the region's current social, economic, environmental and institutional problems and was therefore unlikely to deliver significant improvements in the quality of life to the majority of the population. A new approach was called for at the time. Again the question, which I believe is relevant for this workshop is that "*Is there progress in this regard*"?

We are all aware of the harsh climatic conditions in the region. We are also aware that the region is undergoing rapid urbanization. Our economies are arguably dependent on agriculture, which has some major impact on land and water resource management. When all this is considered against the historical background of inadequate water supply and sanitation coverage, it becomes evident why we have problems of poverty and food security. Some of the resultant problems, such as pollution of water resources due to unregulated waste disposal practices, are created by us. We have talked more than we have acted on improving or creating new legislation to address these issues. In my view, the Framework for Action in the Region should mean nothing else but face such challenges squarely.

Framework for Action – Botswana Context

Perhaps one should come nearer home and commend the progress made in institutional reforms for the water sector. Government, through the privatisation agency (PEEPA) is seriously considering the creation of an economic regulator for the water and energy sectors. It is also expected that reforms aimed at optimising the numbers of institutions required dealing with the entire process of water supply and sanitation will be developed and implemented in due course.

However, I would like to propose that this workshop should consider as part of the Country's Framework for Action whether it is appropriate for institutions such as Water Utilities Corporation and Department of Water Affairs to continue to be the ones monitoring the quality of water they produce and distribute. Perhaps we need an independent regulator for this aspect.

Vision Statements

Following the adoption of the Region's Vision for water and the launching of the Country Water partnership - Botswana, under the theme "Water and Drought", in 2003, it has become critical that the National Framework for Action should proceed with its major challenge of facilitating the development of road maps, strategies and actions for achieving the Vision.

The National Steering Committee has now taken this principle further by selecting the relevant Vision statements for further consultation with stakeholders at this workshop. The Vision statements selected for Botswana are as follows:

- i) Equitable access to water of acceptable quantity and quality assigned to the Department of Water Affairs and Water Utilities Corporation;
- ii) Proper sanitation for all and safe wastewater disposal assigned to the Department of Sanitation and Waste Management;
- iii) Food Security for all households assigned to the Department of Crop Production and Forestry;
- iv) A sustainable environment assigned to the National Conservation Strategy Agency and Okavango Research Centre;
- v) Security from National disasters assigned to the Office of the President and Vision 2016 Council; and
- vi) Integrated water resources development and management assigned to the University of Botswana.

Other Vision statements on the “development of sustainable and economically prosperous Southern African population” and that on “energy for all households”, though important, will not be considered for the time being.

The principles of Integrated Water Resources Management are essentially to ensure that environmental sustainability; social equity and economic efficiency are maintained. It is apparent in my view that all these factors call for some form of regulatory framework such that water authorities such as Water Utilities Corporation and Department of Water Affairs cannot continue to be players and referees at the same time. I would therefore encourage participants to seriously consider the questions I asked earlier.

I wish to remind participants that the SADC Vision for Water was drafted and concluded in Botswana in this hotel before it was presented to the SADC Council of Ministers in Tanzania and subsequently submitted to the international conference in The Hague. It is therefore unfortunate to note that all other SADC countries have since made significant progress while we have tended to lag behind. However, it is better late than never.

Participants may be aware that the Global Water Partnership, Southern Africa is currently drafting the Framework for Action for the Region. It is expected therefore that resolutions from this workshop will form part of the overall regional document, which should be completed by end of November 2004. The overall objective is that this workshop should produce a preliminary Framework for Action document for Botswana. It is also expected that this workshop will help promote awareness on water conservation as well as principles of Integrated Water Resources Management in the country. As always all stakeholders should take this opportunity to voice their opinions and therefore ensure that the consultation process is successful.

Ladies and Gentlemen, I thank you all for your attention.

Official Opening

Dr A Tombale – Permanent Secretary Ministry of Mineral, Energy and Water Resources

It gives me great pleasure to have been given the opportunity to officiate at this important occasion as Botswana moves to develop a Framework for Action (FFA) that will guide her in realising the Water Vision for Southern Africa.

Director of Ceremonies, Ladies and Gentlemen, the SADC region has identified seven (7) key priorities to be addressed in order to enhance the region’s ability to move towards a more integrated approach to the management and development of water resources. These are: improving the legal and regulatory framework, institutional strengthening, sustainable development policies, information acquisition, management and dissemination, awareness building, education and training, public participation and infrastructure development. Looking at these priorities, we are not doing well at ‘awareness building’ and ‘public participation’ as part of our activities.

The vision of ‘equitable and sustainable utilisation of water for social, environmental justice and economic benefits for the present and future generations’ is made more explicit by its themes. These are: social and economic development, equitable access to water of an acceptable quality and quantity, proper sanitation for all and safe waste management, food security for all, energy security, sustainable environment, security from disasters and integrated water resources development and management. Some of these themes will be discussed at this workshop.

We are gathered here today to give effect to our local action on water, by engaging on a preliminary consultation that will lead to our national Framework for Action that will take us towards SADC’s Water Vision. I would like to commend all of you for having found

time and the need to have a say in the delivery of water to the peoples of Botswana. Our Vision 2016 calls for a national water strategy that will make water affordable and accessible to all, including those who live in small and remote settlements. This is a tall order for a water scarce country like Botswana but interestingly, it can be achieved through proper planning.

Ladies and gentlemen, we expect that through an effective forum like Botswana Water Partnership you have a platform to address water issues in the country. For many years, most governments, especially in semi-arid areas, have been concerned with basic supply of potable water to their people, and less attention was given to other sectors that influence water availability and water quality, such as sanitation and environment. This was mainly due to scarcity of water and the desire to provide. Therefore, we hope that you will use Botswana Water Partnership to ensure that water development is made sustainable and water resources are protected from contamination, excessive demand that lead to over exploitation, and more importantly wastage of this precious resource.

The SADC Vision for Water Life and Environment is a regional vision. Each and every country in the region has its own country-specific needs, constraints and opportunities in water and water resources. We hope that by country-specific strategies and action we can identify specific country limitations. Your work today is going to be part of the regional Framework for Action on realizing this Water Vision. Botswana should be in the fore front for water conservation and water demand management issues and other non-conventional water sources such as rainwater harvesting, recycling and proper sanitation to conserve the limited water resources that we have from pollution. In Botswana, the challenge is on conserving the limited water that we have and maximizing the retention of rainwater so that we may sustain our water demand. Currently the country is experiencing a potential shortage of water. And we appreciate the encouragement that the water institutions are making to the public for water conservation and wise use.

Director of Ceremonies, Ladies and Gentlemen, I now take this opportunity to declare your workshop officially opened. Thank you. PULA!!



Plate 1: Dr A Tombale, PS MMEWR (R) & O Katai, Deputy Director DWA (L)

Introducing the FFA process and the SADC Vision for Water Life and Environment

Mr A Takawira – Global Water Partnership – Southern Africa (Harare)

GWP facilitated the development of a Southern African Vision for Water on behalf of SADC and the vision document *Water for the 21st Century: Vision to Action* was adopted by SADC Ministers of Water in December 1999 before presenting it to World Water Forum 2 in The Hague, Netherlands in March 2000.

An FFA is required to give effect to the Vision (by 2025) for every country and to take account of existing initiatives. GWP views this process as a *living process* and the organisation is there to '*support countries in the sustainable management of their water resources through IWRM*'. GWP's goal is the '*equitable and sustainable utilisation of water in Southern Africa*'. The vision's eight sub-vision need to be translated into reality through the preparation of a Regional FFA and Country FFAs.

The Regional FFA process has been underway for some time and included a review of social, environmental and institutional initiatives, which fed into a Regional Desktop Study. In agreement with SADC a review of policy and strategy was undertaken as well as a cross sectoral review of policies related to water. Key issues identified through the desktop study for inclusion in the FFA process are:

- policy and institutional arrangements for effective implementation of IWRM
- effective stakeholder participation
- effective and reliable information system for the region
- indicators and targets to achieve the Vision
- understanding the economic value of water
- regional strategy to recognise ecological and social issues, and
- regional cooperation and management of shared watercourses.

Three countries (Malawi, Mozambique and Tanzania) served as pilot cases for in-depth reviews of initiatives and consultations, whilst other countries were urged to develop FFAs on a less intensive basis. The country FFAs would inform and feed into the Regional FFA. A regional workshop discussed a regional FFA (as well as a regional water policy) in April 2004 and the Regional FFA is scheduled for completion in draft form in November 2004.

Almost all countries have completed their preliminary consultations and an emerging lesson is that the CWPs have created an enabling environment. Commitment of governments has been crucial and ownership of the FFA process requires commitment and resources! However, countries do indicate that the Vision is relevant. Actions proposed need to be fine-tuned with ongoing activities, and the scope of activities is virtually unlimited. By the end of 2004, GWP aims to have completed country consultations in all SADC countries, have had a regional workshop on the Regional FFA, and have finalised the regional FFA as well as the country FFAs of the three (3) pilot countries.

Discussion

Participants discussed the morning presentations. Explanations were provided for the FFA preparation process and the role of GWP-SA and the CWP focal point. Various interventions emphasized the need to make strategic choices concerning the utilisation of the country's water resources e.g. water efficient industries and agriculture (limited irrigation potential), reuse and recycling (dual system?), water storage and evaporation (aquifers vs dams), economic value of water, and cost of water (which will make water demand management practices, rainwater harvesting, recycling etc. more economical).

Current reality of potential water shortage will provide incentive for recycling. Participants agreed with speakers who had indicate that more effort needs to be put into education (educate legislators) and training. Supply-oriented building-more-dams approach is not necessarily the way to go and more effort is required to use the water already in the system more wisely (as well as to keep it in the system by reducing leakage and improving on maintenance). The issue of 'virtual water' was mentioned by one of the speakers indicating the need to see water within a bigger regional / international context as the concept refers to the issue of comparative advantage and best economic use of water in relation to 'importing' water through food crops and other products required by a country which may have better access to water. IWRM practices were supported within the context of water being essential to development, water as an economic good, and the need to address poverty (individual countries and within SADC regional context).



Plate 2: F Monggae, CEO KCS (R) & A Takawira, GWP-SA (L)

Introduction of sub-vision group sessions

Mr R Jansen – Workshop facilitator and rapporteur

The workshop programme (see annex) provided for a series of presentations and small group discussions on the selected sub-visions of relevance to the preparation of the CWP-Botswana Framework for Action and the preliminary consultations therefore.

The methodology used was as follows:

1. Presentation by country expert on sub-vision theme;
2. Discussion of major issues raised (emphasis on explanation);
3. Group work on sub-vision;
4. Report back and discussion in plenary (incl. way forward)

For the group work participants were requested to take the expert plenary presentations and the SADC / GWP document *Water for the 21st Century: Vision to Action* as the bases for their small group deliberations.

The group work was structured by the following leading questions:

- a. Which major issues / strategies are relevant for Botswana?
- b. Which actions are necessary?
- c. Who would be the role players?
- d. Which linkages with existing activities are relevant?



Plate 3: One of the Working Groups during Discussions

Presentations and discussion on sub-visions

Sub-vision 2: Equitable Access to Water of Acceptable Quality and Quantity

Presenters: Ms B Mathangwane (DWA) and B Molale (WUC)

Botswana's vision document *Vision 2016* states that '*Botswana must develop a national water development and distribution strategy that will make water affordable and accessible to all, including those who live in small and remote settlements*'.

Within this context, the ratio of private connections to individual residential plots allocated has improved substantially over the last 3 years. In 2001/02, almost 90% of plot owners in Gaborone had a private water connection (32 910), since then private connections have increased to 36 315. Other towns are following suit although progress seems to be slower in Lobatse compared to Francistown and other towns. Urban water supply is generally of good quality (international standards). The Gaborone Dam spilled over in 2001 but is currently only about 30% full; water supply is augmented by water pumped from the Molatedi Dam in South Africa (administered within an existing agreement).

The situation is rather diverse in major villages (17). In general, two-thirds of water consumption in major villages is supplied through private connections (2003/04); this implies a substantial shift from standpipe use to private connections (measured in terms of water consumption). Water loss figures indicate that about 30% of the water supplied to major villages is lost to leakage! Some villages such as Ramotswa, Kanye and Maun report losses in excess of 40%. Recent water quality tests indicate that water quality is below acceptable, albeit high standard, quality in 11 out of 17 villages. Piped water supply makes up about 75% of water supply to rural areas / major villages; the national average stands at 87.7%.

Critical issues in the water sector in Botswana include:

- (a) an integrated approach to water resources management is required to ensure proper development, utilisation and protection of water resources
- (b) need for adequate water supply and improvement in sanitation and wastewater management
- (c) cooperative instruments on shared water resources required to curb problems of water depletion and pollution
- (d) need for efficient and sustainable use of water resources and appropriate technologies.

DWA's Water Conservation and Water Demand Management Project aims to 'develop and manage the water resources of Botswana in an equitable, economic and social manner without compromising the sustainability of the resource and the vital ecosystems it supports'. The main objective is to create an enabling environment for improved water conservation and demand management practices and measures at national and local levels as an integral part of the implementation of the reviewed Botswana National Water Master Plan (BNWMP) and National Development Plan 9 (NDP9). Interventions so far have included the introduction of pre-paid water meters, work on tariffs, advice and support, and information technology.

The presenters concluded by indicating that there is a need for the creation of close ties with government stakeholders, district councils, private sector, NGOs, youth and children for consultative purposes during the planning and implementation of water resources' development and management in the country as well as a dire need to involve the youth in early stages of planning through to monitoring and evaluation. A specific note was made of the critical role played by women (and children) in looking after our water resources.

Discussion

Participants discussed the need to have more aggregated data (per capita daily use in rural and urban areas, gender disaggregated data etc.) to have a better appreciation of the overall situation in the country. Women play a key role in water (demand) management issues and issues related to tariffs, usage, awareness and educating children relate directly to women. Concerns were expressed regarding the quality of water in certain areas and whether purification kits could be used. Water as a social and economic good brought up discussions around equitable access and poverty but also the ecological needs of the environment ('environmental reserve'). Prepaid meters are currently operational in 4 major villages but are scheduled to be operating in all 17 villages by the end of NDP9. Villagers are getting free tokens in order to draw water from the standpipes; as a result, wasting and misuse has been greatly reduced. Dam management practices do currently not include measures to be undertaken when water levels reaches critical levels; water restrictions and rationing (as a last resort) occur as and when required. Building more dams will result in higher tariffs as the investment costs need to be recovered (Botswana already has the highest tariffs in Southern Africa). Water conservation measures and widely accepted water demand management practices would postpone the need for additional supply infrastructure. The participants further emphasized the need to involve communities in IWRM and integrated catchment management citing South Africa's initiative to form community Water Management Areas and groups as a possible way of engaging communities.

Sub-vision 3: Proper Sanitation for All and Safe Waste Management

Presenters: Ms D Rakaisa and Ms B Sechele (DSWM)

In the late 1980-ies water issues became a top national priority and the government embarked on enormous water supply infrastructure investments. The National Water Master Plan (1991) however, observed that there was a need for concurrent programmes aiming at improved sanitation. The lack of attention to sanitation and wastewater management resulted in the pollution of the Ramotswa aquifer and the contamination of open watercourses due to overflowing septic tanks.

The Department of Sanitation and Waste Management was established in 1998 and a policy on Wastewater and Sanitation Management was drafted in 2001. The latter aims to promote the health and well-being of Batswana through provision of appropriate and sustainable wastewater and sanitation management and to introduce mechanisms for the protection and conservation of water resources.

Rapid urbanisation, poverty in the rural areas, and 'improved' sanitation facilities associated with the successful development of a national "sanitation culture" created a mammoth task for the new department. On-site sanitation efforts concentrated on the building of VIP latrines (ventilated improved and closed latrines) and to a lesser extent on improved sewerage coverage. According to GoB definition (high standard, pit latrines not adequate) approx. 39% of the population has access to adequate sanitation (53% urban / 18% rural), and 23% has no access to sanitation at all! Hence, what is required includes prioritising population without sanitation, convert pit latrines into VIP latrines, and raise target of population with adequate sanitation to 75% by 2030.

Population growth in major centres and extended sewerage systems have led to exponential increase of return flows of wastewater. Inappropriate designs of treatment facilities have resulted in spillage and damage to the environment. Nationwide there are approx. 75 treatment facilities using different technologies (pond systems, activated sludge, trickling filters, RBC, and wetlands) and each with varying quality, treatment and discharge compliance rates. Urban centres have good sewerage coverage; focus should be on rural areas. National policy on WWSM highlights link between wastewater and

potable as well as other grey water uses. Also, the amount of wastewater is to increase significantly within the next 25 years and reuse strategies need to be developed (incl. commercial agriculture – link with NAMPAADD). Other requirements include trade effluent standards and agreements, licensing of sewer networks and treatment facilities, proper legislation, and monitoring protocols.

Solid waste generation and dumping grew rapidly because of the country's economic growth and changing life styles starting in the 1980-ies. Potential harmful developments for quality of underground water resources led to the formation of a GTZ-funded waste management project in 1992. The project resulted in a strategy for waste management (1998) and a Waste Management Act (passed in 1998) as well as DSWM established that same year. Work included vulnerability mapping, case studies on hazardous wastes, landfill studies, and Botswana's accession to the Basel Convention. To-date most major centres have landfills and major villages have dumpsites.

Used oil (annual input 10 mill litres) is recovered at 35% rate through Tshole Trust who runs 40 depository tanks (5000 litres) and uses 2 companies for collection. Recovered oil is transported to South Africa for processing. In future, 65% recovery rate should be attainable; also, there is a need to change disposal level to prevention level interventions. National Master Plan on Wastewater and Sanitation Management will be required to deal various wastes (character, volume, prominence etc) and their recycling potential.



Plate 4: Ms Dineo Rakaisa (R) and Ms Tshenolo Sechele (L)

Discussion

Participants discussed efficiency and (discharge) compliance rates of wastewater treatment technologies and were informed about the relevance of trade effluent discharge standards for efficient wastewater treatment. Currently, 65 000 cubic metres of effluent is being treated daily by the country's wastewater treatment facilities. Oil disposal has no monetary incentives; the master plan exercise will look into this matter. There is no practice of selected waste collection; waste gets separated at the landfills and some private companies are doing in pursuance of recycling. DSWM are looking into providing incentives to enhance recycling.

Sub-vision 4: Food Security for All

Presenter: Mr W Kapele – Department of Crop Production and Forestry / MoA

The share of the agricultural sector in the country's GDP has declined from 40% at Independence in 1966 to 3.1% to-date. Despite incentive programmes such as ALDEP, SLOCA, ARAP, AE-10 and FAP, the country does not produce enough food to feed its own population and is such is neither food self-sufficient nor food secure at national level.

Traditional rainfed agriculture is characterized by low input small scale farming cultivating crops such as sorghum, millet, peas, beans and melons. Yields are low at 300 kg/ha or less. Commercial rainfed farming is practiced mainly in the Pandamatenga farms with main crops such as sorghum, sunflower and some cotton. Yields are around 500 kg/ha. This sector grows 20% of the country's grain requirements. Horticultural production (vegetables and citrus) is limited in area (1200 ha) and production (50 t/ha and 25% of national requirement).

The National Master Plan for Arable Agriculture and Dairy Development (NAMPAADD) seeks to improve the performance of the agricultural sector by,

- (a) introducing mechanized rainfed farming on 150 ha or bigger holdings
- (b) large farmers buy machinery and hire out to smaller holdings
- (c) group farms maybe formed to meet 150 ha size requirement for investment
- (d) expanding and improving infrastructure in Pandamatenga area
- (e) introducing irrigated farming using groundwater, surface water and treated water.

Water requirements are estimated at 16 million cubic metres for 2000 ha under intensive management. Groundwater resources in the Molopo River and Orapa and Ramotswa well fields have potential. Dikabeya, Thune, Lower Shashe and Lotsane multi-purpose dams as well as water from the Zambezi River provide potential. As for treated wastewater, the potential exists around towns and some major villages; Glen Valley Irrigation Scheme in Gaborone (203 ha) is nearing completion and a 60 ha scheme in Francistown is under construction.

Discussion

Participants discussed water requirements for irrigated farming vis-à-vis current drought situation, irrigation schemes that failed in the past (Kobong), small scale efforts in rainwater harvesting (ALDEP tanks no longer used or rehabilitated), priority setting for water allocation from multi-purpose dams (potable vs water for agriculture) and need for some control over the allocated land to assure results are achieved. Female farmers and female-headed households would require special attention as women do a lot of the farming. Participants expressed concern for Northern Plains expansion plans for Pandamatenga whilst current farms are neither fully operational nor efficient.

Sub-vision 6: Sustainable Environment

Presenter: Mr L Tshukudu – National Conservation Strategy (Coordinating) Agency

The National Conservation Strategy, adopted in 1990, identifies the growing pressure on water resources (due to rapid urbanisation and population growth) as one of the key environmental issues whilst mention is also made of water pollution.

The concept of sustainable development is premised on the three concepts of ecological sustainability, social acceptability and economic sustainability. Operationalising sustainable environment would entail recognition that the environment is a legitimate user

of water, the protection and enhancement of ecological diversity, the restoration of degraded water systems incl. wetlands, and the protection of ground and surface water systems from contamination (mainly from poor waste management practices).

Current threats to our water systems involve invasive alien species, declining freshwater quality due to upstream activities, over-harvesting of water-based (veld) products, ill-conceived infrastructure development, siltation of dams, inadequate allocation of water for ecological functions ('environmental' or 'ecological reserve') and conflicting policies in resource management. In order to attain a sustainable environment issues such as poverty, access to resources / resource rights, population growth, gender and industrialization need to be addressed.

The presenter identified the following issues as needing attention in order to move forward:

- (a) adopt ecosystem approach towards attaining a sustainable environment
- (b) harmonise existing policies and legislative instruments
- (c) enact and enforce environmental legislation (EIA, EMA)
- (d) pursue integrated planning
- (e) promote regional cooperation
- (f) strengthen stakeholder participation in resource management
- (g) improve environmental awareness and education
- (h) introduce incentives / disincentive for resource management
- (i) undertake research to fill information gap and create basis for informed decision-making.

All of the above can be done with proper political commitment and willingness!

Discussion

Participants discussed the issue of 'uncontrolled' extraction of sand from riverbeds; this not only damages the riverfront but also affects the water levels and source of water for the villagers using the river as their water supply. More control, monitoring, rehabilitation and compensation measures are required. CBNRM has great potential but communities also need to be training in proper conservation and natural resource management. The Strategic Environmental Assessment (SEA) of the Gaborone Dam should be repeated for other dams.

Sub-vision 7: Security from Natural Disasters

Mr N Moyo – National Disaster Management Office

Water provides life but also causes deaths and disasters. Floods and droughts occur regularly and the effects are cross-cutting though generally the rural poor, elderly, women and children seem to be worst affected.

A disaster is defined as a progressive or sudden, widespread or localized, natural or human induced occurrence which causes or threatens to cause death, injury or disease, disrupts life of a community, and of which the magnitude exceeds the ability of those affected to cope using available resources.

Floods are caused or exacerbated by poor planning and poor drainage systems, inadequate storm water systems, environmental degradation / poor land use, and few (or absence of) mitigation or preventive measures. There is need for more effective disaster mitigation and preparedness methods, accurate and authoritative early warning, improved drainage for public works incl roads, enforced land use regulations, and more public awareness and information campaigns.

Drought management tends to be hampered by food shortages and lack of potable water, which in turn might lead to unsanitary conditions and disease outbreak. Water quality and livestock watering from standpipes exacerbate the situation whilst in forested areas veld fires become a threat due to extreme dry conditions. Relief programmes typically include supplementary feeding of vulnerable groups, free seed and vaccines (botulism), and a labour intensive public works programme.

Improvements are required in the areas of decentralized structures dealing with disasters, integrating disaster management into development planning, intensifying public information campaigns, legislation, land use regulations, and forecasting and early warning systems.

Discussion

Participants discussed issues related natural flooding (in the Okavango) vs floods that potentially cause human tragedy and distress. Auditing of NDP9 was done to infuse disaster management issues into development planning. Poverty is not considered a disaster as it affects individuals and is the result of a suite of factors (generally not specifically nature-induced). No earmarked contingency funds available for disaster relief measures other than small-scale assistance to individual families affected. The Botswana Defence Force's aquatic unit provides assistance in case of drowning (dams) and flooding. Appropriate non-degenerating land use in catchments should be pursued rather than the channelling of rivers when it comes to flood mitigation and avoidance measures.

Sub-vision 8: Integrated Water Resources Development and Management

Mr P Kenabatho – University of Botswana / Chairperson CWP-Botswana

The vision on IWRM calls for efficient utilisation, equitable access, and sharing of the region's water resources to ensure sustainable social, environmental and economic benefits for all.

Key IWRM principles include:

1. effective public consultation and involvement of users in IWRD&M
2. integrated people-centred planning
3. efficient use of water through water demand management, conservation and re-use, and efficient use of water for agriculture
4. recognition of the environment as a legitimate user of water
5. ensuring protection of the environment through user-pays and polluter-pays principles
6. integration of water supply, sanitation, and health and hygiene education programmes
7. capacity building
8. safe management of water close to point of generation
9. prevention of export / import of harmful wastes within and across borders.

The main players in water resources management are DWA (national authority, policy making, major villages water supply, water conservation / WDM), Geological Surveys (groundwater, borehole registry), WUC (supply and distribution), MLG (rural village water supply) and MoA (small dams, irrigated agriculture).

WUC's Strategic Plan 2004-2007 sets targets for performance monitoring and aligns WUC with international standards and Vision 2016. It relates to IWRD&M principles through efforts in water demand management, stakeholder consultation, health and safety, training and communication, technological advancement (monitoring, data

provision), infrastructure development and financial management. Customer oriented service improvements (billing, reminders, installations, response time to call-outs for pipe bursts etc) provide a constant challenge as do recurring droughts, lowest levels of Gaborone Dam (30% full end of Sept 2004), water conservation strategies, and operation and maintenance. Sound financial management could contain future tariff increases (last increase Nov 2003 was 16%).

DWA's major undertaking in water resources identification and development include collection of base data, assessment of potential (dams, groundwater) and availability with future demand, as well as the design and construction of supply and distribution schemes. Recent dam projects include Dikhathong, Lotsane and Thuni whilst in Boteti, Maun, Tsabong and Maitengwe major groundwater investigations took place. Sedimentation of dams is an issue and Shashe and Nnywane (Lobatse) Dams have had 14.6% and 23.5% reductions in capacity respectively. About 90% of rural villages and settlements receive water from boreholes. In remote settlements a number of desalinization plants are operating.

The Water Conservation and Demand Management Unit in DWA deals with such matters as water demand management, recycling, water saving appliances and technologies, rainwater harvesting, re-use of wastewater and prevention of water pollution. The unit has produced a draft Water Conservation and Water Demand Management Policy.

The roadmap to improved IWRD&M would include the following:

- (a) capacity building: better staff ratios, long-term investment, staff turn-over
- (b) institutional reform: more outsourcing, involvement of communities, gender;
- (c) water resource information systems: accessible databases, websites, information sharing;
- (d) policies and legal framework: National IWRD&M Policy required, harmonizing with regional and international policies, practices and conventions;
- (e) set and strengthen performance targets: strategic plans, Vision 2016, annual monitoring;
- (f) promote cooperative research programmes: reservoir performance, flood studies, climate change, HIV/AIDS and water resources, and
- (g) align initiatives with SADC policies, strategies, protocols: RSAP, Regional Water Policy, Revised Protocol on Shared Watercourse Systems.

Summary of Group Discussions

Sub-vision 2: Equitable Access to Water of Acceptable Quality and Quantity for All

Discussions focused on institutional issues, water conservation and water demand management matters. The issue of an independent regulator was discussed, as WUC is 'player and referee' in urban water supply and distribution; water quality would be better monitored by an independent institution. Institutional fragmentation was aired as a concern. Improved operations and maintenance would be highly desirable since water leaks constitute one of the bigger, if not biggest, water users in urban areas and major villages. Merging (development and operational) cost recovery with social equity through tariffs was considered crucial though not an easy task; a suggestion was made that an initial monthly allocation (say 5 to 6 kilolitres) could be made available free of charge. The group was concerned about dam construction and the tendency to provide more water when demand goes up whilst water conservation and demand management options exist to control water use and hence postponed costly infrastructure development (which would potentially push up tariffs and compromise social equity considerations). Underground water storage in aquifers could reduce water loss through evaporation. On water conservation and WDM the group reported that more efforts are required to introduce appropriate technologies. Rainwater harvesting, re-use / recycling, automatic sprinkler systems, pre-paid standpipes need further investigation. Introductions could be facilitated through incentive packages (subsidized retrofitting of old water inefficient devices / appliances). Training, education and awareness raising need constant attention and more efforts are required.

Sub-vision 3: Proper Sanitation for All and Safe Waste Management

Deliberations concentrated mainly on matters of education, public awareness and training, and institutional fragmentation and policy. The inclusion of integrated educational programme in school curricula (starting at primary school) was reported as a priority issue (extra curriculum activities offered by NGOs should also be supported). Activities for sanitation / health related public awareness and training of cadres working in these areas (Family Welfare Educators, public / environmental health workers) were discussed as well. The group reported further that rationalizing and harmonizing of policies and legislative instruments should assist in reducing institutional and policy fragmentation. The current review of the Botswana National Water Master Plan and the National Master Plan for Wastewater and Sanitation provide opportunities to pursue these issues.

Sub-vision 4: Food Security for All

Discussions were geared towards a number of practical suggestions on how to improve the current national food (in)security situation. Actions were suggested to promote irrigated and mechanized farming (including subsidized mechanic ploughing), urban and peri-urban agriculture, and improve agricultural extension (need for integrated programme which guides farmers from input to output level) and farming systems. Rural-urban migration reduces interest in arable farming in rural areas and local markets and job creation needs to be stimulated. Dairy farming could be improved by importing appropriate foreign breeds, improve local breeds, establish processing industries and improve local fodder production.

Sub-vision 6: Sustainable Environment

Deliberations focused on biodiversity and integrated water use, community involvement and transparent water development scenarios. International cooperation through river basin commissions and the implementation of protocols and conventions was considered crucial in pursuing the cross-border nature of promoting a sustainable environment. On

the financing front, the group proposed the establishment of a sustainable funding mechanism that would make sufficient funds available for maintaining and enhancing ecosystem integrity. The enactment of environmental legislation (including EIA, EMA and Water Act) and the implementation of such through guidelines, regulations and sheer enforcement were deemed long overdue. Community involvement could be pursued through considering the reinstatement of certain natural resource management responsibilities of Tribal Authorities. Water development needs to become the domain of an expanded interest group. Open access to data and research findings, as well as more research and regional exchange programmes would assist in getting more stakeholders involved in the planning and implementation of water development scenarios.

Sub-vision 7: Security from Natural Disasters

Discussions concentrated specific disaster related matters. Contingency funds for easy non-bureaucratic disbursements need to be established for use during disasters. Also, more public awareness and education about disasters is required. In as far as disasters and poverty, more efforts should be undertaken to use disaster interventions (e.g. labour based relief schemes) and mitigation to address long-term developmental issues and poverty. There is further more need for risk assessments, flood studies and improved early warning. As some businesses are more vulnerable than others (tourism, crops), a plea was made to establish an insurance policy for enterprises vulnerable to disasters.

Sub-vision 8: Integrated Water Resources Development and Management

Deliberations focused on critical IWRM issues. One such issue is stakeholder participation and the group suggested that, after clearly identifying the end users of a water development facility, broader and more effective stakeholder participation would be need to be pursued through effective communication strategies. The planning per se also needs to be more people-centred with regard to gender, community involvement, and the pursuance of innovative and appropriate technologies, as well as alternative pricing structures. IWRM would greatly benefit from the enforcement of EIA legislation, the harmonisation of environmental policies and effective environmental monitoring. For IWRM to be effective, more capacity building, training and education programmes are required (incl. infusion of IWRM thinking into school curricula), and easily accessible information network systems need to be established.



Plate 5: IUCN Ms Guthu (Left), Mr P Kenabatho (Middle) and B Mathangwane (R)

Closing Session

The Way Forward

The meeting agreed on two specific actions:

1. Issues raised in Group Discussions will be submitted to GWP-SA (Harare) no later than October 20th so that these may be taken into consideration when GWP-SA finalises the Regional Framework for Action document which is due end of November 2004.
Action: Facilitator to capture all group discussion points and send to KCS (CWP Botswana Secretariat) for forwarding to GWP-SA and CWP-Botswana Steering Group.
2. The Proceedings Report (draft) will be prepared and submitted for approval to the CWP-Botswana Secretariat (KCS) within two weeks from the date of the workshop for onward distribution to members of the CWP-Botswana Steering Committee. The Proceedings Report is expected to inform the process of the review of the Botswana National Water Master Plan as well as form the basis for Botswana's preliminary Framework for Action (FFA).
Action: Facilitator to produce Proceedings Report and submit to KCS for distribution to and approval from CWP-Botswana Steering Committee.

Closing Remarks

Mrs M Keaikitse – Chief Environmental Officer Debswana

Mrs Keaikitse thanked KCS and the CWP-Botswana for organizing the workshop and for giving the participants the opportunity to contribute to these important deliberations on preparing a Framework for Action. She specifically thanked the Permanent Secretary MMEWR, the Deputy Director DWA, the Chief Executive WUC, and Mr Takawira from GWP-SA for their presentations and input. All presenters were valued for their critical, meaningful and thoughtful comments. Mrs Keaikitse expressed appreciation for the fact that, by attending this workshop, all participants were part of creating a vision for water in Botswana and hoped that the ideas would be implemented as water should never be taken for granted. She called for clear targets and continued commitment.

ANNEXES

Annex I

PROGRAMME FOR THE FRAMEWORK FOR ACTION WORKSHOP- BOTSWANA PRELIMINARY CONSULTATIONS

12 & 13 OCTOBER 2004

GABORONE INTERNATIONAL CONVENTION CENTRE

Day 1

0745-0800	Registration	
0800-0810	Introductions of Guests	Mr. F Monggae Chief Executive Officer Kalahari Conservation Society
0810-0820	Opening Session Introduction of CWP-Botswana & Welcoming remarks	Mr. O Katai Deputy Director, Department of Water Affairs
0820-0840	Briefing on Purpose of workshop, Theme of the workshop and Focus Sub Visions for Botswana	Mr. F Maunge, Chief Executive - Water Utilities Corporation
0840-0910	Official Opening Address	Dr A. T. Tombale, Permanent Secretary- Ministry of Mineral Energy & Water Resources
0910-1040	Introducing the Framework For Action (FFA) process & The SADC Vision for Water, Life & Environment	Mr A Takawira Global Water Partnership – Southern Africa
1040-1100	T E A	
1100- 1130	Discussions and Introduction of Group Sessions	Mr R Jansen Facilitator
1130-12 20	Sub vision 2-Equitable Access to Water of Acceptable Quality and Quantity for All	Ms B. Mathangwane & Ms B Molale Department of Water Affairs & Water Utilities Corporation
1220-1310	Sub vision 3- Proper Sanitation for All and Safe Waste Management	Ms D. Rakaisa & Ms B Sechele Department of Sanitation and Waste Management
1310-1400	L U N C H	
1400-1630	Group Discussions on Presentations for Sub-visions 2 and 3	Mr R Jansen Facilitator

**PROGRAMME FOR THE FRAMEWORK FOR ACTION WORKSHOP-
BOTSWANA PRELIMINARY CONSULTATIONS**

12 & 13 OCTOBER 2004

GABORONE INTERNATIONAL CONVENTION CENTRE

Day 2

0800-0805	Opening Session	Chairperson
0805-0940	Plenary session Group Presentations from Day 1	Mr R Jansen Facilitator
0940-1030	Sub-vision 6: Sustainable Environment	Mr L. Tshukudu National Conservation Strategy Agency
1030-1045	TEA	
1045- 1135	Sub-vision 4: Food security for All	Mr W. Kapele Department of Crop Production and Forestry
1135- 1225	Sub-vision 7: Security from Natural Disasters	Mr N F Moyo National Disaster Management Office
1225-1315	Sub-vision 8: Integrated Water Resources Development and Management	Mr P Kenabatho Chair Botswana Water Partnership / University of Botswana / Department of Environmental Science
1315-1400	LUNCH	
1400- 1600	Group Discussions on Presentations for Sub-visions 4,6, 7 and 8	Mr R Jansen Facilitator
1600- 1700	Plenary session Group Presentations and Discussion	Mr R Jansen Facilitator
1700-1715	The Way Forward	Mr R Jansen Facilitator
1715-1725	Closing Remarks	Mrs M Keaikitse Chief Environmental Officer Debswana Diamond Company

Annex II – Report back notes from group discussions on sub-visions¹

Sub-vision 2: Equitable Access to water of acceptable quality and quantity for all

Critical issues:

- fragmentation in the water sector (DWA, WUC, MLG / District Councils, Debswana, BPC, individuals)
- tariffs: balancing cost recovery with social equity
- water supply authority: both provider and monitor
- lack of community empowerment / participation
- maintenance of schemes by water supply authorities
- uneven distribution of quality and quantity of water
- lack of integrated planning / development: planning is sectoral
- topography: few available good dam sites
- dam construction
- lack of appropriate technologies: rainwater harvesting, recycling of waste water, desalination, automatic sprinkler systems, pre-paid standpipes
- public standpipes
- lack of control measures for water supply: households +institutions
- inadequate education & awareness campaigns
- lack of skilled personnel: maintenance + ministerial level
- lack of accountability re water conservation practices

Action:

- ongoing review of BNWMP to address fragmentation; pursue better coordination and planning amongst water supply authorities and other stakeholders
- introduce measures that balance cost recovery with social equity i.e. 1-6 cubic metres free of charge?
- Develop independent auditors (regulators) who monitor the quality of water
- Promote community empowerment in water resource planning (i.e. water management areas and groups)
- Improve maintenance of water schemes, both urban / peri-urban and rural (ensuring water reaches intended targets)
- Improve water distribution by linking schemes to (reviewed) settlement policy and water treatment and transfer plans
- Promote integrated water resources management and planning amongst water supply authorities and other stakeholders
- Consider underground water storage and other appropriate recharge techniques
- Consider dam construction (small /medium) where appropriate
- Introduce appropriate technologies (incentives, retrofitting)
- Gradually phase out free public standpipes and promote pre-paid systems
- Investigate / introduce pre-paid household supply (quota system)
- Introduce water conservation measures and demand management practices and raise awareness / educate to encourage informed decision-making
- Provide mobile skills training clinics
- Provide borehole pumper training in MLG / District Councils.

¹ The format of the report back notes as used by the groups in presenting their discussion was not consistent among the groups. This annex captures the actual unedited and unabridged wording of the reports.

Sub-vision 3: Proper Sanitation for all and safe Waste Management

Issue: lack of integrate educational programme

Action: inclusion of integrated educational programmes in school curricula starting at primary schools (environmental education)

Role players: MoE, MLG, District Councils, MEWT (DSWM, NCSA), MoH, MLHA, NACA, civil society (extra curricular activities) and education institutions

Linkages: RNPE – environmental education curriculum, NCSA - environmental education strategy and action plan

Issue: lack of public awareness and training

Action: public awareness and training programme

Role players: MEWT, NGOs, CBOs, media, private sector, MoH, MLG, MMEWR, tertiary institutions, MLHA, NACA

Linkages: no identifiable national strategies but link with practice of public health (FWEs – family welfare educators, and other health educators) and fragmented awareness campaigns

Issue: institutional fragmentation and policy

Action: rationalize /harmonise policies and legislative instruments

Role players: DWA, DSWM, NCSA, MLG, WUC, AG's Chambers, MLHA

Linkages: Botswana National Water Master Plan, National Master Plan for Waste Water and Sanitation, National Conservation Strategy

Other issues to be addressed:

- technical and financial support
- identifying appropriate sanitation technologies
- lack of monitoring of facilities
- lack of supporting structures incl. separation of waste (at source)

Sub-vision 4: Food Security for all

Arable farming

Issue: unreliable rainfall

Action: irrigation agriculture – infrastructure development

Role players: MoA, DWA, Water Apportionment Board, DSWM, Dept. of Lands and Local Authorities (Land Board, District Councils, Town Councils)

Linkages: NAMPAAADD, CEDA, NDB, NMPWWS, BNWMP

Issue: inappropriate / inadequate farming methods

Action: promotion of mechanized farming / commercialised farming and urban / peri-urban agriculture

Role players: MoA, CEDA, NDB, NWMP, NGOs

Linkages: NAMPAAADD, NMPWWS

Issue: ineffective and inefficient framing outreach programmes

Action: introduce integrated programme which guide farmers from beginning to end (from traditional hands-on extension to assistance in selling end products)

Role players: MoA, NGOs etc

Linkages: see above + SMU

Issue: poor soils

Action: improved farming systems (manuring, composting, fertilizers)
Role players: MoA, private sector, NGOs
Linkages: NAMPAADD

Issue: lack of adequate draught power

Action: subsidized mechanic ploughing
Role players: MoA, private sector
Linkages: NAMPAADD

Issue: rural-urban migration (resulting in reduced interest in arable farming)

Action: introduce income-generating activities in rural areas / encourage local markets
Role players: MoA, private sector, civil society
Linkages: NAMPAADD, CEDA

Dairy farming

Issue: indigenous breeds have low milk output

Action: improve breeds / import suitable breeds
Role players: MoA / APRU, private sector
Linkages: NAMPAADD

Issue: insufficient dairy industries

Action: establish processing industries
Role players: private sector, BDC, Cooperatives, MoA
Linkages: NAMPAADD

Issue: lack of dairy feed

Action: fodder production
Role players: MoA, private sector, CEDA
Linkages: NAMPAADD

Sub-vision 6: Sustainable Environment

Issue: biodiversity protection and integrated water use

Action: establish international protocols for water use in river basins / catchment management and cooperation in international commissions
Role players: MMEWA, SADC Water Sector, NCSA, IUCN, KCS, Dept of Tourism, HATAB, mining companies / private sector, river basin commissions
Linkages: OKACOM, ODMP, ZAMCOM

Action: establish sustainable funding mechanisms for maintaining and enhancing ecosystem integrity
Role players: MEWT, NGOs, MFDP, HATAB, MMEWA
Linkages: Environmental Trust Fund (NCSA, IUCN, UNDP)

Action: enact environmental legislation (EMA, EIA, Waste Water Act) and formulate guidelines and regulations; pursue enforcement.
Role players: AGs, MEWT, MMEWR, and civil society
Linkages: EMA and EIA draft legislation, Waste Water Act to be reviewed by BNWMP

Issue: enable local communities to manage their own environment

Action: considering reinstatement of certain natural resource management responsibilities of Tribal Authorities

Role players: MLG, MEWT

Linkages:

Issue: ensure all water development scenarios reflect constraints imposed by natural systems in maintaining resource base integrity

Action: facilitate open access to data and research findings, undertake inventories of research activities and identify research gaps

Role players: MEWT, NCSA, MLHA, National Archives, UB, NGOs, CBOs

Linkages:

Action: inter / intra regional exchange programmes

Role players: all stakeholders incl. CBOs, NGOs, GoB and private sector

Linkages:

Sub-vision 7: Security from Natural Disasters

Issue: contingency planning and funding

Action: establish funds for centralized and decentralized decision-making whereby conventional bureaucratic disbursement protocols may be circumvented.

Role players: National Disaster Management Office (NDMO)

Issue: inadequate public awareness

Action: embark on multi-sectoral education and publicity campaigns (national programme to cascade down to district and local levels)

Role players: NDMO

Issue: definition of 'disaster'

Action: review and redefine definition on the basis of clear and all encompassing criteria

Role players: NDMO

Issue: poverty not included yet poverty alleviation is critical path in the attainment of the aspirations of other sub-visions

Action: disaster interventions should be sustainable to address long-term aspects of disaster (e.g. drought) management

Role player:

Issue: flooding

Action: carry out flood studies and EAP in all major rivers and dams

Role players: NDMO, DWA, WUC

Issue: inadequate early warning systems

Action: improve efficiency and effectiveness of weather forecasting technology and information dissemination

Role players: Dept. of Met Services

Issue: risk assessment

Action: conduct a comprehensive national risk assessment to identify all potential sources of disasters

Role players: NDMO

Issue: high vulnerability of some businesses to disaster risks

Action: establish insurance policy for businesses vulnerable to disasters (e.g. tourism and crop production)

Role players: NDMO, MoA, Dept of Tourism, HATAB

Sub-vision 8: Integrated Water Resources Development and Management

Issue: minimal public consultation and involvement e.g. policy formulation, project development and implementation.

Action: Identify end users to enhance broader and effective stakeholder participation through effective communication strategies

Role players: WSA, VDCs, Private sector, NGOs, CBOs and individual communities

Issue: lack of Integrated, people-centred planning

Action: incorporate gender specific needs in Water resource planning, promote Community Based Natural Resource Management (CBNRM), and promote innovative and appropriate technologies and pricing structures for basic water needs and sanitation

Role players: WSAs, NGOs, CBOs, VDCs and communities

Issue: lack of water conservation and inadequate water demand management measures and practices

Action: Intensify EAT regarding WC and WDM and promote innovative and efficient water practices for domestic and agricultural uses (precision agriculture and automatic sprinklers)

Role players: WSA, MoA, farmers, NGOs, CBOs, legislators

Issue: inadequate environmental protection policies

Action: Enforcement of EIA policy and implementation of the recommendation, harmonisation of environmental protection policies, effective monitoring of EIA and inclusion of policies that prevent export and import of harmful waste

Role players: Legislators, MEWT, NGOs,

Issue: inadequate capacity in IWRM

Action: Promote capacity building, through appropriate training programmes, do training needs assessment and infusion of IWRM into the secondary school environment curriculum

Role players: as above, including tertiary institutions, MoE

Issue: inadequate Integrated water resources information systems

Action: establish accessible information network systems

Role players: as above

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