

# ZAMBEZI



## **TODAY**

## Water-Energy-Food nexus Integrated planning essential

by Egline Tauya

Innovative and integrated approaches to water, energy and food security management in the Zambezi Basin are required to optimize use of resources, balance competing demands and maximize benefits.

As the three sectors are inextricably linked, uncoordinated development and management in one area has the capacity to negatively impact on others.

Food production, for example, requires water and energy; while water extraction and distribution require energy; and energy production requires water.

This water-energy-food security nexus, therefore, demands that riparian states come up with innovative ways of finding a balance between competing needs to promote socio-economic development, while at the same time ensuring that development of one of the needs has minimum impacts on the other.

With impressive socio-economic development in the Zambezi Basin States as well as impacts of climate change, the pressure on water, energy and food security resources has increased.

According to the Southern African Development Community (SADC) Early Warning and Vulnerability Assessment Systems, at least 27 million people – about nine percent of the population of the region – are food insecure this year as a result of low rainfall in the 2015/16 farming season; largely caused by the strongest and worst El Niño weather phenomenon ever in southern Africa in 35 years.

Large parts of the basin recorded very low reservoir water levels affecting energy generation.

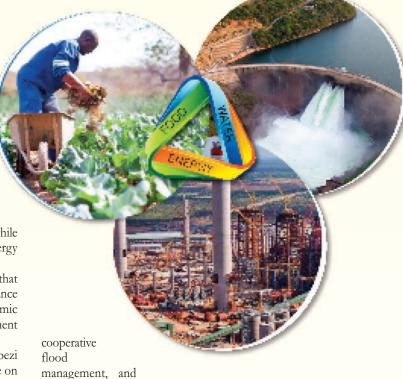
For example, the Zambezi River Authority reported that water levels in Kariba Dam between Zambia and Zimbabwe had reduced to only 12 percent of capacity on 1 February compared to the 53 percent recorded on the same date in 2015.

As a result, potential annual power generation was reduced by more than 50 percent.

In October 2015, the United Republic of Tanzania was forced to switch off all its hydropower plants due to low water levels in the country's dams.

As a result of the low water levels, hydroelectricity generation had fallen to 20 percent of capacity, making it difficult for the dams to operate. Tanzania has since converted some of its hydroelectricity plants to natural gas.

Expert studies have shown that riparian countries could achieve short- and long-term benefits through integrated and coordinated operation of existing and planned hydropower facilities,



irrigation development. With full cooperation of the riparian countries, a reasonable balance between hydropower and irrigation investment could result in firm energy generation of some 30,000 Gigawatt hours (GWh)/year and 774,000 hectares of irrigated land.

In the past most large dams were built to meet one specific purpose. Nowadays dams are usually designed for multipurpose use.

In some cases existing dams are being retrofitted for multipurpose use, for example, the Itezhi-Tezhi Dam in Zambia, which is used for both hydropower and irrigation.

Although Kariba Dam was primarily commissioned for hydropower generation, other major uses of Lake Kariba include aquaculture, urban water supply tourism, support to national parks and wildlife, lake transportation and mining activities.

Experts have observed that the Zambezi Basin and its rich resources present ample opportunities for sustainable, cooperative investment in water, energy and food security.

An integrated approach to water, energy and food is one of the key issues to be discussed during the first Zambezi Basin-wide Stakeholders Forum to be held in Windhoek, Namibia in September.

It is believed that a better understanding of water-energy -food nexus will unlock opportunities for collaboration among Member States, thereby boosting basin-wide and regional cooperation and development.  $\Box$ 











**ZAMBEZI** Today

Vol 1 No 2

September 2016



ZAMBEZI Today is published for ZAMCOM by the Southern African Research and Documentation Centre (SARDC) through its environment institute, the I Musokotwane Environment Resource Centre for Southern Africa (IMERCSA) and national partners in all basin states.

ZAMCOM

Executive Secretary Prof. Zebediah Phiri

Programme Manager Information, Communication and Partnerships Ms. Leonissah Abwino-Munjoma

Partners

National Stakeholders Coordination Committees (NASCs)

#### SARDC Editorial Team

Egline Tauya, Joseph Ngwawi, Kizito Sikuka, Admire Ndhlovu, Neto Nengomasha, Danai Matowanyika

#### Photos and Illustrations

P1 mccc.org, cctvafrica.com, trackemcomau.org, businessdaily.co.zw, NewsDay, wordpress.com, The Herald, FAO; P2 constructionreviewonline.org, academia.edu; P3 The Chronicle; P4 B Antonio, a Ndhlovu SARDC; P5 trademarksa.com, Lusaka Times, A Ndhlovu SARDC; P6 ZAMCOM, cctvafrica.com; P7 ZAMCOM, DHI; P8 peaceparks.org, B Padegimas, E Laisi, P Mapuza

Articles may be reproduced with credit to ZAMCOM and author

Contributions are welcome from individuals and organisations in and outside the Zambezi River Basin in the form of articles, news items and comments. Items will be reviewed for selection and may be edited for available space.

Correspondence should be addressed to:

ZAMBEZI Today

Zambezi Watercourse Commission 128 Samora Machel Avenue P O Box CY118 Harare, Zimbabwe Website www.zambezicommission.org

Tel +263-4-253361/2/3 E-mail zamcom@zambezicommission.org

> www.sardc.net Knowledge for Development



Stakeholder engagement is key to sustainable transboundary water resources management as envisaged in the SADC Treaty and emphasised in the Zambezi Watercourse Commission (ZAMCOM) Agreement.

Experience has shown that development programmes that are imposed on communities without appropriate and adequate stakeholder engagement have failed to take off.

For example, early warning systems that do not involve stakeholders and do not include awareness-raising components tend to fail to yield desired results.

To ensure that people respond to warnings all the links in the chain, from high-technology meteorology to low-technology warnings such as use of indigenous knowledge, and awareness raising, must be put in place if impact on people affected by disasters such as floods or droughts is to be reduced.

The members of the community know best what is happening on the ground and what is needed in their region.

There are many different groups living in the basin, each with different needs—for instance farmers, fishers, tour operators, men, women, girls and boys, the physically challenged, the marginalised, chiefs and households. All these groups have different requirements and ideas which should be considered when making decisions.

The establishment of community-based organisations and local forums is seen as a good means of encouraging public participation in Zambezi Basin management.

Activities in community-based organisations include empowering women in fish processing, marketing, pottery, rearing and livestock management.

For example, fish processing which has been dominated by men has so far contributed to increased income for wetland households.

The Chuku Women's Club in Mapungu, Zambia has even established a grocery store. In Lower Shire women are engaged in rearing guinea fowls which results in additional income.

Such organisations form a good vehicle to make communities aware of the necessity and benefits of their participation in managing and conserving the basin's natural resources.

The established National Stakeholders Coordination Committees (NASCs) incorporates these community-based activities with the national strategies and provide a vital link between the ZAMCOM Secretariat's Work Plan implementation framework and the national "thinking" on and practical contributions to basin co-operation and coordination.

The main responsibilities of the NASCs are primarily to provide a platform through which national consensus could be reached on water resources development and management issues. In return, the NASCs are expected to provide national input on decisions and issues dealt with by the ZAMCOM Secretariat, whilst serving as an avenue for disseminating the ideas, activities and outputs of the Secretariat to stakeholder institutions and interest groups in the respective countries.

ZAMCOM attaches special attention to ensure active stakeholder engagement in all its deeds. Such an approach embraces the associated spirit of ownership, inclusiveness and commitment among the stakeholders.

With the aim of strengthening stakeholder engagement and transboundary cooperation, ZAMCOM is set to convene a Basin-wide Stakeholders Forum in Windhoek, Namibia in September this year.

The Zambezi Basin-wide Stakeholders Forum is a platform for stakeholders to provide strategic inputs and advice to related activities being implemented in the basin.

The forum will, among other things, discuss the need to strengthen stakeholder engagement in early warning systems and information dissemination especially on climate related disasters as well as the need to incorporate indigenous knowledge for forecasting and early warning.  $\Box$ 

## Good 2016/17 rainfall season forecast for Zambezi Basin

## Pockets of low rains projected in some areas

by Leonissah Munjoma

MOST PARTS of the Zambezi Basin are expected to receive adequate rainfall during the forthcoming 2016/17 agricultural season, according to the Southern Africa Regional Climate Outlook Forum (SARCOF) outcome released in August.

This is expected to come as good news to the basin following two successive seasons of debilitating droughts that resulted in widespread food shortages due to crop failures.

According to SARCOF, large parts of the basin are expected to receive rainfall in high amounts - characterised as "normal to above-normal" - during the period October to December 2016. Northern Malawi, Mozambique and Tanzanian parts of the basin are, however, expected to receive low rainfall characterised as "normal to below-normal" during the same period. Some parts of the basin such as western Zambia and the Zambezi region of Namibia, formerly known as Caprivi Strip, are expected to experience a midseason dry spell around November.

Significant rains are expected between January and March 2017 in the basin, with the exception of western part of Zimbabwe and Botswana which are expected to receive low rainfall towards the end of the season.

The forecast was formulated by climate scientists from the SADC National Meteorological and Hydrological Services and the SADC Climate Services Centre who meet each year to review the rainfall season in SADC, and discuss the potential impacts of the consensus seasonal climate outlook on other socioeconomic sectors including disaster risk management, food security, health, water resources and hydropower management.

Climate trends in the basin show a recurring cycle of floods and droughts largely in response to El Niño Southern Oscillation, a naturally occurring phenomenon that involves fluctuating

ocean temperatures in the equatorial Pacific resulting in an El Niño or La Niña.

In the Zambezi Basin an El Niño event is characterised by droughts while La Niña is associated with wet conditions and floods.

Recent El Niño events in the basin were in 1991-92, 1994-95, 1997-98, 2002, 2006, 2009-10, 2015-16, with the 2015-16 being the strongest on record. La Niña events have been experienced in 1995, 1998-99, 1999-2000, 2007-08 and 2010-11.

While increased soil moisture is expected to improve crop productivity, risk of flooding could destroy crops and impact on food security. Increased incidences of malaria and water borne diseases are often associated with higher rainfall and damage to infrastructure is possible.

Mozambique, for example, faces risks of cyclone landfalls due to increased tropical cyclones forming in Mozambique Channel, with a possibility of displacement of people.

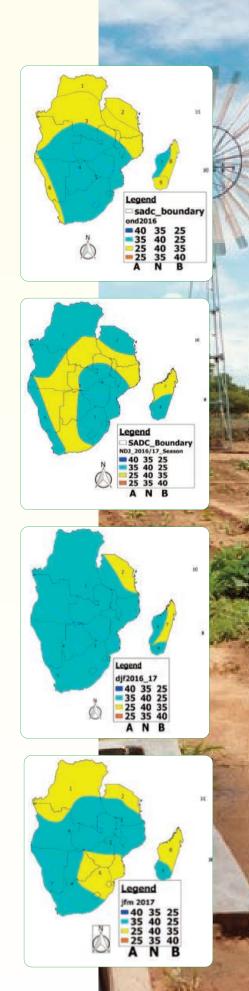
Governments in the basin are taking proactive measures to prepare for the change in the rainfall pattern and its impact on livelihoods and economic sectors.

For example, the Zambezi Basin riparian states are strengthening data and information sharing, which is crucial for early warning and preparedness, particularly in case of floods.

The Zambezi Water Resources Information System has already been set up to enhance management and sharing of information.

It is critical in development of effective drought and flood warning systems to maximize the opportunity for the implementation of response strategies aimed at enhancing the safety of life and property and reducing avoidable flood damage.

Climate events such as El Niño and La Niña are a slowly evolving phenomenon, whose peak can be predicted months in advance. Providing early advice and warning can help to reduce vulnerability to the impacts.



## Botswana stakeholders discuss fisheries protection strategies

by Botsalo Thamuku

Stakeholders in the Zambezi River Basin have agreed to take bold steps towards curbing the over-exploitation of fishery resources which has negatively affected community livelihoods.

This is one of the key outcomes of the National Stakeholders Coordination Committee (NASC) meeting held in Kasane, Botswana in July this year.

The stakeholders noted with concern the unregulated harvesting of fish resources mainly due to disparities in existing fishing regulations, particularly in Botswana, Zambia and Namibia.

It was highlighted that fishery resources remain under threat as some communities are still using improper fishing methods such as the use of illegal nets and burning of channels to create pathways for fishing boats.

The situation has been exacerbated by increased levels of water pollution as a result of inadequate pollution control measures which compromise water quality and affect fish production.

Studies undertaken in the basin show that disposal of industrial raw effluent into the water bodies has had negative consequences on the fishery resources of some sub-basins in the recent years.

A recent report published in 2015, titled "Challenges in fisheries management in the Zambezi, one of the great rivers of Africa," indicates that almost all fisheries in the Zambezi River system have experienced severe decline in catch rates, loss of most valuable fish species, and increased use of environmentally damaging active fishing gears.

The report highlights that the fisheries of the Barotse, Caprivi and Kafue floodplains, and Lake Kariba, Lake Malawi/Nyassa/Niassa and Lake Malombe are all "fished down".

However, the fishing industry, if well managed, has potential to support national economies, not only in the Zambezi Basin but the whole of southern Africa.

For example, Lake Malawi/Nyasa/Niassa, has diverse and complex fish species, with average catches of around 50,000 tonnes per year.

The Zambezi is well known to support a variety of fish species, some of which are endemic to the basin. Lake Malawi/Nyasa/Niassa alone harbours more than 500 endemic fish species.

For the local communities in the Zambezi Basin, fisheries are a key resource as they are a major source of protein and income.

Taking note of all the issues raised, the stakeholders came up with a number of strategies to address the challenges affecting the fishing industry.

First, they agreed to advocate for the harmonization of fishing regulations in the riparian states and enforce the use of suitable fishing methods which are not environmentally destructive methods.

In consultation with other NASCs, stakeholders will develop a common code of conduct that will act as a guiding tool in the utilization of the Zambezi River.

To reduce the increased levels of water pollution in the basin, stakeholders

recommended the establishment of a Pollution Control Unit at the Kasane regional office in Botswana by May 2017 and also advocated for extensive public education and awareness.

Stakeholders stressed the need to establish transboundary monitoring programmes in the basin to reduce water pollution.

At regional level, the SADC Secretariat developed a project implementation plan for the establishment of the SADC Fisheries Monitoring, Control and Surveillance (MCS) Coordination Centre (RFMCSCC) which is proposed to be hosted in Mozambique. The objective of the centre is to combat illegal, unreported and unregulated fishing through research, information sharing and coordination of regional MCS activities.

## Basin-wide Stakeholders Coordination Committee (BASC) formed

Following the establishment of NASCs in all the Riparian states, a much wider committee has since been formed.

The Zambezi Basin-wide Stakeholders' Coordination Committee (BASC) was formed during a meeting held in Nyanga, Zimbabwe in February 2016

The BASC meeting which was chaired by Zimbabwe discussed the Terms of References and formed a committee to finalize them in preparation for further processing.

The BASC which is made up of focal

persons from the eight Riparian states, ZAMCOM Secretariat and partners is chaired by Zimbabwe in an Interim position.

The partners who attended the meeting include the Institute of Water and Sanitation Development, WaterNet, Southern African Research Documentation Centre, International Union for Conservation of Nature and Global Water Partnership.

The partners presented their areas of cooperation which could add value to the operations of the ZAMCOM.  $\Box$ 

#### Zambezi Basin to hold first Stakeholders Forum

The Zambezi Basin is holding the first Basin-wide Stakeholders Forum this September in Windhoek, Namibia.

The objective of the forum is to bring together representatives of stakeholders with interests in the management and development of water and related resources in the basin so that they share knowledge and experiences; and provide general advice and inputs that contribute to ZAMCOM initiatives and basin developments.

Participants will include the NASC Representatives, ZAMCOM Partners and their constituents; Regional and International Cooperating Partners and Cross-sectoral Stakeholders.

The forum will be held under the theme "Enhancing Transboundary Co-operation through Stakeholder Engagement in the Zambezi Basin".

Key issues to be discussed include water, energy and food security; stakeholder participation and gender mainstreaming; capacity development for resilience; floods and droughts in the context of climate change; and water resources development in the context of benefit sharing.  $\square$ 

## The Zambezi Environment Outlook published

by Admire Ndhlovu

The Zambezi Watercourse Commission, together with its partners, last year published the Zambezi Environment Outlook report 2015 which highlights current state and trends of key environmental resources in the Zambezi Basin.

The Zambezi Environment Outlook (ZEO) was officially launched in September 2015 during the 7th Southern African Development Community (SADC) Multi-Stakeholder Water Dialogue held in Windhoek, Namibia.

In her foreword to the ZEO report, the SADC Executive Secretary, Dr. Stergomena Lawrence Tax said that the natural resources ranging from water, land, soils, forests, wildlife and the minerals that are plentiful under the soil are critical to regional socio-economic development and poverty eradication.

"Since most of these are shared, achieving sustainable natural resource management requires regional cooperation, an integrated ecosystems approach, and a common understanding of the natural resource base," she says.

She further states that as the most shared resource in the SADC region, the Zambezi River Basin provides an indicator in terms of meeting one of the objectives of the SADC Treaty – Article 5 which commits all among other objectives, to "achieve sustainable utilization of natural resources and effective protection of the environment".

In the preface to the publication, the Zambezi Watercourse Commission (ZAMCOM) Executive Secretary, Professor Zebediah Phiri says he welcomed the ZEO as a report that raises the base of knowledge on the benefits of cooperation on shared resources, contributing to sound policy formulation and encouraging the Riparian States to sustainably utilise the natural resources.

With the running theme "Towards strengthening basin-wide cooperation and regional integration", the Outlook highlights that there has been some notable changes to the state of the environment in the Zambezi Basin since 2000 when the last comprehensive assessment of the basin was done.

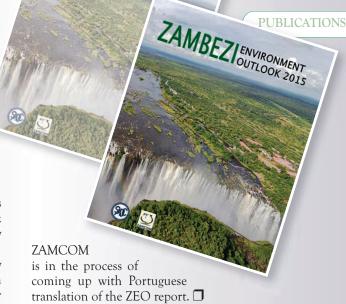
Among other changes, the report notes that the basin has been characterised by declining water quality, depletion of groundwater and a surge in aquatic invasive species.

It further notes that there will be more changes in rainfall patterns in the basin and reveals that a decrease by 10-15 percent in rainfall is expected by 2050.

The report takes a retrospective and forward-looking analysis of issues, covering cross-sectoral elements relating to human settlements, energy and atmospheric dynamics. It therefore, brings these changes into focus, presenting policy options for addressing them.

The ZEO report is in line with the principal objective of the ZAMCOM Agreement which seeks to "promote the equitable and reasonable utilization of the water resources of the Zambezi Watercourse as well as the efficient management and sustainable development thereof."

Bearing in mind that two riparian states in the Zambezi Basin namely, Angola and Mozambique speak Portuguese,



### ZAMSTRAT at a Glance in place

The Zambezi Watercourse Commission has recently published the Integrated Water Resources Management Strategy and Implementation Plan for the Zambezi River Basin at a Glance.

The document presents a summary of the Integrated Water Resources Management (IWRM) Strategy and Implementation Plan for the Zambezi Basin (ZAMSTRAT), designed to widely disseminate the conclusions and recommendations of the IWRM Strategy 2008 in an attractive, up-to-date format.

The strategy defines short, medium and long term measures to support integrated water resources management.

The measures address the main issues and challenges in the development and management of water resources of the Zambezi River Basin to enhance socio- economic development.

The four main issues and challenges to be addressed are integrated and coordinated water resources development and management; environmental management and sustainable development; adaptation to climate variability and climate change; and basin-wide cooperation and integration.

ZAMSTRAT is seen as a vital tool for cooperative and sustainable management of the water resources and is a blueprint for the implementation of the Zambezi Watercourse Commission Agreement.

In the foreword of the strategy, the ZAMCOM Executive Secretary, Professor Zebediah Phiri said that Member States are keen to work together in addressing common challenges, as defined in the strategy.

"Member States recognize the importance of the coordinated and cooperative management of the Zambezi River Basin in order to promote the equitable and reasonable utilization of the water resources of the Zambezi Watercourse as well as the efficient management and sustainable development thereof" as enshrined in the ZAMCOM Agreement," he says.

ZAMSTRAT was originally formulated within the framework of the Zambezi River Action Plan (ZACPLAN) Project 6 Phase 2 (ZACPRO 6.2).

ZACPLAN was an initiative of the Southern African Development Community aimed at achieving environmentally sound planning and management of water and related resources in the Zambezi Basin.

### **Major Consultancy Projects to Commence in October 2016**

Three major projects for the Zambezi Basin are set to commence this year. These are: An Equivalence Assessment of National Water Laws among Riparian States in the Zambezi River Basin-Legal Equivalence; Zambezi Water Resources Information System – Enhancement 3: Hydrometeorological Database and Decision Support System (ZAMWIS DSS); and the Zambezi Watercourse Strategic Plan (ZSP). The projects are financially supported by the World Bank managed Cooperation in International Waters in Africa programme.



#### Legal Equivalence

The objective of this project is to strengthen ZAMCOM's role in promoting cooperative management and development within the Zambezi Basin through institutional strengthening, improved information sharing and decision support and strategic planning. The project will assess the degree of equivalence of legislative provisions and policies among the Riparian States by undertaking the following:

- i) Compilation of a compendium and database of policy and legal instruments relating to water from the Riparian States;
- ii) Formulation of guidelines for harmonization and development of briefing notes, reviews, assessments and thematic case studies;
- iii) Conduct (regional/national level) stakeholder workshops and consultations to discuss findings and interim results; and
- iv) Publish findings and lessons from the analytical work;

#### ZSP

The objective of the ZSP is to strengthen ZAMCOM's role in promoting cooperative management and development within the Zambezi River Basin (ZRB) through institutional strengthening, improved information sharing, decision support and strategic planning. Activities include:

- Development of planning tools and processes for identification, categorization and prioritization of projects and programmes;
- Development of policy and planning tools to promote, support and coordinate efficient management, sustainable development, reasonable and equitable utilization of water resources in the ZRB.

Key reference documents for the development of the ZSP include the IWRM Strategy and Implementation Plan for the Zambezi River Basin 2008 which identifies and quantifies the water resources issues, opportunities and challenges for shared water resources management in the Basin up to 2025; Dam Synchronization and Flood releases in the Zambezi River Basin; Zambezi River Basin: A Multisector Investment Opportunity Analysis; Zambezi Environment Outlook 2015; Climate Change Assessment of the Energy-Water Nexus in the ZRB; and ZAMWIS outputs.

#### **ZAMWIS-DSS**

The overall objective of this project is to enhance systems that will support strategic water resources planning and development in the Zambezi River Basin. Activities include:

- a) Hydro-meteorological Database: Detailed review and assessment of the existing ZAMWIS hydro- met database will be undertaken taking into account; technical architecture of the database, the quality of data in the existing database, functionality and user friendliness of the database, compatibility with Riparian States databases and human and financial resources required to maintain the database.
- b) Modelling: The sub-activity will involve consolidation and collation of various hydrological and meteorological modelling tools and software that have been developed and/or used in the Zambezi River Basin. This will support the integration and access to a library of models, hydro-met data and information management systems across the basin to strengthen basin wide planning and management.
- c) Decision support systems (DSS): This sub-activity involves developing analytical tools to support water resources planning, management and development, and to address issues including water allocation and impacts of proposed interventions in the basin. Additional tools will be incorporated in the DSS for flow forecasting and monitoring to assist in drawing up measures necessary to inform

## Rules and procedures for sharing data and information adopted by ZAMCOM Council

by Hastings Chibuye

Data and information sharing is key to the equitable and reasonable utilization, management and sustainable development of the Zambezi watercourse.

As part of operationalizing the ZAMCOM Agreement, the ZAMCOM Council of Ministers has adopted rules and procedures for sharing data and information related to the management and development of the Zambezi Watercourse.

The overall objective of these rules and procedures is to give effect to the provisions on data sharing in the ZAMCOM Agreement and the SADC Protocol on Shared Watercourses in order "to ensure that relevant and quality assured data and information are shared timely between the Member States in order to facilitate that information are shared timely between the

Member States - through ZAMCOM - will be able to take informed decisions in relation to the planning and management of the shared water resources".

The specific objectives of these rules and procedures are to specify the type of data and information to be shared as well as sources, frequency, format, standards, quality assurance, and the method of transfer; roles and responsibilities of involved institutions; timeframes for supplying the agreed data and information; as well as ownership and access rights to shared data and information.

The rules and procedures affirm the importance for an effective, sustainable, reliable and accessible water resources information system for Zambezi watercourse.

By adopting the rules and procedures Member States have committed to the sharing of data and information in accordance with Article 15 of the ZAMCOM Agreement which states that "Member States shall, on a regular basis, provide the Secretariat as well as all the other Member States with readily available or obtainable data and information with regard to all aspects of the Zambezi Watercourse.

The sharing of data and information acknowledges the cooperative spirit among Member States for the development of the Zambezi Water Resources Information System (ZAMWIS) database, which is being hosted at the ZAMCOM Secretariat with software being installed at a key institution in each of the eight countries.

The rules and procedures will be a solid common reference for all the Member States when discussing the future development and management of the basin.

#### ZAMCOM UPDATE

## **ZAMWIS Enhancement Completed**

by Hastings Chibuye

Through assistance from the Danish International Development Agency, the Zambezi Watercourse Commission (ZAMCOM) embarked on a project to enhance the Zambezi Water Resources Information System (ZAMWIS) in June 2014.

The overall objective of the assignment was to enhance the ZAMWIS platform developed in 2008 through creation of an interactive, web-based information portal ZAMCOM based on contemporary spatial data, earth observation information and other related information, to ensure ZAMWIS was well positioned to support decision making and planning processes in the Zambezi Basin for the benefit of human and economic development.

The final version of ZAMWIS was presented and handed-over at a final workshop held in Maputo from 29 June to 1 July 2016. The final version included the software, database and supporting documents.

One of the functions of ZAMCOM is "to collect, evaluate, and disseminate all data and information on the Zambezi Watercourse as may be necessary for the implementation of the Agreement".

The water resources information system is, therefore, an essential tool for the ZAMCOM Secretariat to be able to carry out this function.

ZAMWIS is expected to play an essential role in providing the overarching information management system for the Zambezi River Basin.

Deployment

In each of the eight Riparian States, a windows version of ZAMWIS software has been installed. This will facilitate processing, storage and exchange of data and information among the Riparian States.

Next Steps

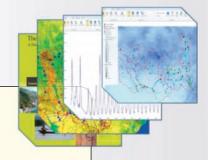
ZAMCOM has secured a CIWA grant of US\$ 1.5 million to support the implementation of ZAMWIS Enhancement 3 Project.

The Enhancement 3 Project will involve detailed review and assessment of the hydro-met database and existing hydrological/hydraulic models for water resources strategic planning and decision making in the Zambezi Basin.

A Decision Support System (DSS) will then be developed based on agreed and/ or adopted models/tools by the Riparian States.

It will, among other things, support water resources strategic planning in the basin for mutual benefit of all Riparian States; serve as a data and information depository for planning, sustainable utilization, efficient and equitable use of the water resources of the Zambezi Basin; and provide a platform for storage, visualization and presentation of Geographical Information System (GIS) and earth observation data.





#### Content of ZAMWIS

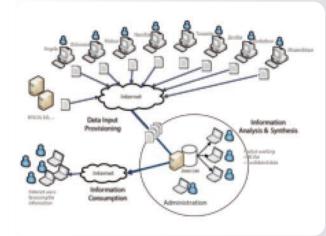
The enhanced ZAMWIS database, which can be accessed at zamwis.zambezicommission.org, includes the following:

- Contemporary and historical hydrometeorological data and information from strategic river gauging stations in the Zambezi Basin;
- GIS/spatial data including remote sensing products such as land cover, rainfall, evaporation, land use, hydrological characteristics of the basin;
- Knowledge products such as studies, reports, water master plans, policies, and IWRM plans; and
- Modelling and analytical tools for planning and decision making (to be integrated under enhancement 3 project).

To test the efficacy of the adopted tools, ZAMCOM through the consultant to be

identified will carry out case studies in the basin.

Further integration of flow forecasting monitoring tools, multi objective optimization, multi-scriteria decision analysis, environmental and socio-economic analysis and determination of eflows will then follow.





by Neto Nengomasha

Zambezi River Basin States and the rest of southern Africa are seeking approval for the sale of their ivory stock piles ahead of an international conference on trade in endangered species in South Africa this September.

Two of the riparian states in the basin, namely Zimbabwe and Namibia, have already submitted proposals to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) Secretariat seeking removal of restrictions that bar them from selling their stockpiles on the international market.

The basin countries further want CITES to finalize and approve the development of a decision-making mechanism for a process of trade in ivory.

Although elephant populations in the region are in Appendix II, meaning that commercial international trade in species is allowed, countries from the basin and the rest of southern Africa have for a long time not benefitted much from their conservation efforts.

"CITES regulations on trade in elephant and elephant products from the region have an annotation which restricts trade in hunting trophies for non-commercial purposes, trade in live animals to appropriate and acceptable destinations, trade in hair, hides and leather goods for non-commercial purposes and trade in registered raw ivory for whole tasks and pieces," said Oppah Muchinguri-Kashiri, Zimbabwean Minister for Environment, Water and Climate.

Like the rest of southern Africa, Zambezi Basin States are contesting a total ban of trade in ivory, arguing that their elephant populations have grown way above the carrying capacity of their forests.

The elephant population in Zimbabwe, for example, now stands at more than 100,000, which is nearly three times its sustainable carrying capacity, while Namibia's elephant population stands at over 22,500 –almost twice its carrying capacity.

CITES reports confirm that southern Africa has the largest number of elephants in Africa at about 350,000. This is double that for East Africa, which boasts of about 166,500 elephants, mostly in the United Republic of Tanzania – which is again part of the Zambezi River Basin.

The bulk of the elephant population in the region is found in the Kavango-Zambezi Transfrontier Conservation Area which covers parts of five Zambezi riparian states of Angola, Botswana, Namibia, Zambia and Zimbabwe.

The countries supporting the total ban of ivory are proposing the inclusion of all populations of the African elephant in Appendix I through the transfer from Appendix I to Appendix I of the populations of Botswana, Namibia, South Africa and Zimbabwe.

Appendix 1 of CITES lists species that are threatened with extinction. Trade in specimens of these species is illegal while those on Appendix II are not necessarily threatened with extinction.

The rising elephant population in the Zambezi Basin has caused untold suffering to local communities surrounding national parks, with increasing cases of human wildlife conflict.

In addition, the rising elephant population in the Zambezi Basin has led to extensive environmental degradation in the form of increased soil erosion, vegetation damage and loss of biodiversity.

For example, the elephant population in Namibia is found in the northern part of the country with serious challenges of water.

It is reported that thousands of elephants in Botswana continue to add pressure on wildlife habitats whilst in Zambia, Mozambique and Angola the populations are growing. Cases of poaching and human wildlife conflict some of the common challenges in these countries.

The rising elephant population in Zimbabwe has added pressure on available water resources as most of these populations are concentrated in drought prone areas forcing the Parks and Wildlife Management Authority to use borehole water as an alternative though it is very expensive to pump.

Zambezi Basin Riparian states, therefore, believe that a controlled marketing system is the way forward rather than a total ban of ivory trade, as ban fuels demand in the absence of a legal market.

The proposals by the two countries is set to be at the top of the agenda at the 17th Conference of Parties (COP 17) to the Convention on International Trade in Endangered Species of Wild Fauna and Flora that runs from 24 September to 5 October 2016 in Johannesburg, South Africa.

In 1989, CITES banned the international commercial ivory trade and later permitted Botswana, Namibia, South Africa and Zimbabwe to sell some stocks of ivory to Japan, totalling over 150 tonnes in 1997 and 2002.

The decision was made in recognition of the fact that some southern African elephant populations are healthy and well managed.

Other sales in these countries took place in 1999 and 2008 and earned some US\$20 million for elephant conservation and community development programmes in and around the elephant range areas.

CITES was negotiated in 1973 when it was realised that international trade in wildlife and wildlife products could lead to the over-exploitation of certain species, thereby threatening them with extinction.