

SADCMET ANNUAL REPORT FOR THE PERIOD APRIL 2011 – MARCH 2012

This report covers a summary of activities carried out and coordinated by the SADCMET Secretariat since our last SADC SQAM meetings held in Gaborone, Botswana and for the period under review.

1. AFRIMETS GA and WG Meetings

The Intra-Africa Metrology System (AFRIMETS) held its 5th General Assembly (GA) hosted by the Kenya Bureau of Standards and Kenya Weights and Measures in Nairobi, Kenya from 18-22 July 2011. The General Assembly was preceded by the AFRIMETS Executive Committee (EXCOM) meeting, various technical working group meetings and the National Awareness Seminar. The General Assembly was attended by more than 80 delegates from all the six sub-Regional Metrology Organisations (SRMOs) in Africa representing Scientific and Industrial and Legal metrology, and observers from PTB, BIPM, OIML, UNIDO, the African Union Commission and the NEPAD Secretariat. SADCMET was represented by the Chair of SADCMET Mr Viki Kanama, SADCMET Regional Coordinator, the SADCMET TC 1 Chair Mr Shadrack Kajane and a number of SADC countries.

The GA was officially opened by the Permanent Secretary of the Ministry of Trade and Industry of Kenya who welcomed all the delegates from the SRMOs as well as all the international guests to Kenya. In his speech the Permanent Secretary reiterated the importance of Metrology in international trade through the ability to demonstrate accurate and traceable measurements and acknowledged the role that AFRIMETS is playing in ensuring that accurate measurements are harmonised in Africa and linked to the international measurement system.

The GA received a number of keynote speeches and statements from the representatives of the international organizations present including:

- Mr Andy Henson from the BIPM
- Mr Ian. Dunmill from the OIML
- Mr Gengezi Mgidlana from NEPAD
- Mr Juan Pablo Davila from UNIDO

- Ms Katherine Wunderlich from PTB

all of whom encouraged stronger cooperation between AFRIMETS and these organisations.

The Chair of AFRIMETS, Dr Wynand Louw, informed the delegates of the progress made since the establishment of AFRIMETS. He presented the activities of AFRIMETS, highlighting the AFRIMETS roadmap and the successful hosting of the first AFRIMETS Metrology School in February 2011.

The following Working Groups met during the GA to discuss comparison results and presented their technical work programmes for 2011-2012.

- Metrology in Chemistry Working Group (TC-QM)
- Mass and Related Quantities Working Group (TC-M)
- Length Working Group (TC-L)
- Electricity and Magnetism Working Group (TC-EM)
- Thermometry Working Group (TC-T)
- Legal Metrology technical Committee (TC-LM)

The GA thanked SADC MET for the role that it has played in establishing AFRIMETS as the Regional Metrology Organisation for Africa and especially thanked Dr Wynand Louw and the outgoing EXCOM members for their outstanding contribution and excellent work in leading AFRIMETS since its establishment in 2007. As the EXCOM's term of office came to end, the GA elected Mr Mourad Ben-Hassine from Tunisia as the new Chairperson of AFRIMETS and also elected two new vice-Chairs, Mr. Joel Kioko from Kenya and Mr. Paul Date from Ghana, representing Scientific/Industrial Metrology and Legal Metrology respectively. In line with the AFRIMETS MoU to ensure continuity of AFRIMETS activities and programmes as outlined in the AFRIMETS roadmap, the GA resolved to include the immediate past chair (Dr Louw) as an Ex-Officio member of EXCOM who will also serve as the Leader of the delegation to the Joint Committee of Regional Metrology Organisations (JCRB) for the next term.

SADC MET will still play a key role in AFRIMETS, but focusing more on the technical work programmes. Most of the working groups are chaired by metrology experts from SADC MET (NMISA), since the rules of AFRIMETS require the TC chairs to be from an NMI with membership of the respective Consultative Committee of the

CIPM. This ensures the consistent review of CMCs within the AFRIMETS intra-RMO review mechanism. The TC-QS is chaired by Egypt.

The next General Assembly is tentatively planned for 10-14 September 2012 to be hosted in Cotonou by the Government of the Republic of Benin.

2. Participation at the NCSLI

The National Conference of Standards Laboratories International (NCSLI) is an annual testing and measurement conference organized in conjunction with the National Institute of Science and Technology (NIST) of the United States of America to promote cooperative efforts for solving common quality management problems faced by measurement and testing laboratories. Today, NCSLI International has over 1500 members from academic, scientific, industrial, commercial and government facilities around the world. This wide representation of experience provides members a rich opportunity to exchange ideas, techniques and innovation with others engaged in testing and measurement sciences.

The SADC MET Regional Coordinator Mr. Donald Masuku was sponsored through the SADC EU funding and attended the NCSLI 50th Anniversary and conference held in Washington DC, USA from 21-26 August 2011. The specific objective for participation was to represent SADC MET and SADC WaterLab Association in the panel discussions aimed at advancing the quality assurance of measurements of SADC NMIs and to share the experiences and advantages of participation in water proficiency testing schemes and inter-laboratory comparisons, and similar inter-comparison techniques.

Mr. Masuku participated in a number of quality management and technical sessions at the conference including the following:

- Panel discussion on metrology traceability in water testing where he shared his experience and challenges of coordinating and conducting a PT scheme within the activities of the SADC WaterLab Association following his paper on the SADC Water PT scheme that he presented at the previous NCSLI conference held in 2010 in Rhode Island, USA. He highlighted the benefits of participating in a PT scheme and demonstrated how the SADC Water PT scheme has helped to build capacity in the area of quality assurance in water

testing laboratories in Africa which is an important component in ensuring that test results from these laboratories are reliable and can be trusted

- Plenary session on the new SI units and their impact on industry which discussed the newly proposed definitions for the base units of the International System of Units (SI) and the impact that it would have on industry. Of the seven base units of the SI, only the kilogram is still defined in terms of a material artefact, namely the international prototype kept at the BIPM headquarters in Paris. The major disadvantage of the present definition of the kilogram is that it refers to the mass of the artefact which, by its very nature, we know cannot be absolutely stable. Work to redefine the kilogram started way back to ensure that the SI continues to meet the needs of science, technology, and commerce in the 21st century. While remarkable progress has been made over the last few years, the conditions for adopting the redefinition, as set by the General Conference on Weights and Measures (CGPM) at its 23rd meeting held in 2007, have not yet been fully met. For this reason the International Committee of Weights and Measures (CIPM) is not ready to make a final proposal for the revision of the SI at the present time. However the CIPM drafted a Resolution for the CGPM at its October 2011 meeting to take note of the intention to redefine four of the SI base units, namely the **kilogram**, the **ampere**, the **kelvin** and the **mole**, in terms of invariants of nature; the new definitions would be based on fixed numerical values of the Planck constant (h), the elementary charge (e), the Boltzmann constant (k), and the Avogadro constant (N_A), respectively. It was reported that the changes to the new SI will not happen soon, probably only after the 2015 CGPM meeting at which time the BIPM will produce a guideline and booklet explaining the changes and what impact will the new base units of the SI have on industry.
- Session on global metrology challenges which discussed the need for collaborations among NMIs and partnerships that exist through the respective RMOs. Mr. Masuku had an opportunity to discuss training programmes of metrologists from the SADC region with the NIST Head of the International Department, Mrs. Clare Saundry. Mrs. Saundry informed Mr. Masuku that NIST does not necessarily conduct training or mentoring programmes as they have a very small budget which is aimed at training and development of metrologists from NMIs in the Americas, i.e. they have trained a number of metrologists from INMETRO (Brazil) and CENAM

(Mexico). However, NIST has a guest research exchange programme which is the largest in the world and is aimed at research scientists to work at NIST on research projects of mutual interest. This exchange programme is available to SADC NMIs especially those which have research projects in their countries to consider the NIST exchange programme.

The mission was worthwhile and very beneficial to the SADCWaterLab Association and SADC MET in general as it offered an opportunity for collaboration and exchange of information on the developments and operations of similar regional and international metrology organizations and proficiency testing schemes. Good contacts were made with other similar PT schemes and water testing laboratories in the USA which are willing to consider requests for used equipment by SADCWaterLab members.

3. Participation at the Test and Measurement Conference, Pretoria, South Africa

SADC MET participated in the 2011 Test and Measurement Conference hosted by the National Laboratory Association (NLA) of South Africa held in Pretoria, South Africa. The theme of the conference was the “the importance and benefits of participating in PT schemes”.

The next NLA Test and Measurement Conference is planned to be held from 2-5 September 2012 at Elangeni Hotel & Conference Centre in Durban, South Africa. The theme for 2012 is “The impact of reliable measurements on our environment”. SADC MET would like to encourage its members to participate in this event.

For more information and to register for the conference visit the website on www.nla.org.za

4. Participation at the Tripartite Workshop

SADC MET participated in the COMESA, EAC and SADC Tripartite workshop held in Lusaka, Zambia to discuss the market integration of the three Regional Economic Communities (RECs) and the role of the quality infrastructure in the elimination of the technical barriers to trade. The meeting reviewed the status of implementation of activities from 2008 to 2011, and agreed on plans for the

implementation of outstanding activities in standardization, scientific and industrial metrology, legal metrology, accreditation and conformity assessment.

SADCMET then participated in the Metrology Working Group represented by the SADCMET Chair Mr. Kanama Viki Mbuya and the TC 1 Chair Mr. Shadrack Kajane and developed a work programme for metrology activities in the tri-party which is attached as Appendix 1.

5. Participation at the APMP GA and related meetings, Japan 14-19 Dec 2011

The Asia Pacific Metrology Programme (APMP) held its 27th General Assembly and related meetings hosted by NMI Japan (NMI-J) from 14 – 19 December 2011 in Kobe, Japan. The General Assembly which was held on 18 -19 December was preceded by several TC meetings, the Developing Economies Committee (DEC) meeting and a symposium. SADCMET was represented by four delegates from NMISA who participated in the various TC meetings, DEC meetings and the General Assembly respectively to present SADCMET and AFRIMETS activities.

NMISA participates in a number of comparisons piloted by APMP countries to support its calibration measurement capabilities (CMCs) in the BIPM key comparison database.

6. SADCMET Water PT Scheme

6.1 Evaluation Workshop 2011, Mauritius

With assistance from PTB, the SADCMET Secretariat runs the SADC Water PT Scheme since 2004, distributing samples once a year. Following compilation of the results, PTB then sponsors a workshop where results can be discussed and training on relevant subjects be provided. The 2011 evaluation workshop was held in Mauritius from 14-17 November 2011 to evaluate the results of the 8th PT round for the Chemistry group and the 4rd PT round for the Microbiology group.

The PT providers for the scheme are NamWater from Namibia for the Chemistry PT and Uganda National Bureau of Standards for the Microbiology PT. Participants included laboratories from Angola, Namibia, Zimbabwe, Uganda, Botswana, Swaziland, Madagascar, Ghana, Zambia, Malawi, Tanzania, Kenya, Mauritius, Ethiopia, Burundi, Rwanda, Seychelles, Lesotho, Ghana, South Africa and Democratic Republic of Congo.

A record number of laboratories registered for each scheme, 68 for Chemistry and 40 for Microbiology which included laboratories from Angola and Ethiopia participating again after two years break. Fifty-nine laboratories reported results in Chemistry while in Microbiology all laboratories reported results. There was remarkable improvement in the results for the Microbiology PT by using repeat analysis of the PT samples by expert laboratories combined with quality control data of the PT provider UNBS to calculate target values. Two laboratories Randwater of South Africa as well as the laboratory of the scientific consultant NLGA (Germany had been approached and thankfully agreed to act as expert laboratories and this helped a lot to improve the results. In Chemistry, NMISA provides the reference values which have generally helped improve the results of many laboratories. However it remains a source of concern that the results of certain laboratories are consistently not satisfactory or getting worse.

To facilitate the organization of the PT rounds Local Coordinators have been installed in each participating country. During the workshop, the Local Coordinators reported on their activities to promote the scheme at a national level. Two PT leaflet designed by SADC MET Secretariat on "Benefits of participating in a PT scheme" and "How to ensure high quality analytical results" especially targeted to create awareness of the importance of the PT scheme among the decision makers are widely used. A biannual SADC WaterLab Newsletter is produced which is also used to promote the scheme. This has helped expand the PT scheme and in some sense is already reflected in the participants in this PT round, with laboratories from Ghana, Burundi, Rwanda and DR Congo also participating.

During the workshop training was provided to the participants focusing on the principles of using international standards as well as on the details of membrane filtration methods for the Microbiology group. Internal quality control of microbiological membrane filtration methods was also discussed. The use of many different methods prevents comparison of the results between laboratories. The SADC WaterLab Association has published a recommendation of what methods seem to be suitable for the analysis of potable water in the SADC and EAC region on the SADC MET website. "Ensuring the quality of analytical results" was the topic of the training for the Chemistry group which focussed on the possibilities to check the trueness of analytical results. Trueness is strongly related to traceability. After explaining the principles of traceability the problems of traceability in analytical chemistry were discussed. The traceability of balances, volumetric equipment and thermometers used in the lab can be ensured using different methods which were explained in detail. Nevertheless this is not sufficient since biases in the analysis can also result from other steps like sample preparation. Trueness of the final result therefore has to be checked using (certified) reference materials, interlaboratory test samples or spiking experiments. Feedback from

participants was very positive, with statements generally indicating that laboratories would be able to go and implement the proposed approaches.

6.2 SADCWATERLAB General Assembly

The SADC ASSOCIATION OF WATER TESTING LABORATORIES (SADCWATERLAB) had its general assembly meeting during the workshops. This association is the responsible body for the PT system and an opportunity for collaboration and information exchange between its members.

Summary of decisions:

- A new Executive Committee was elected and the new Chair is Mrs. Nanhuck from Mauritius and the vice Chair is Mr. Radegonde from Seychelles.
- Participation fees for the Chemistry PT was raised from the current U\$150 to U\$200 while the participation fees for Microbiology would be maintained at \$100 as the scheme was still in its infancy
- PTB indicated that it was their expectation as a funding cooperating partner that the PT schemes being run by the SADC WaterLab association be sustainable. To this end they would from 2012 reduce their support to the chemistry PT so that members pay their own travel costs to the evaluation workshop. PTB would meet the participants' accommodation and per diem costs. However as the microbiology scheme was still in its early stages, PTB would still fully support the next microbiology PT evaluation workshop.
- SADCWATERLAB needs to be promoted and it was resolved that a biannual SADCWaterLab newsletter be continued for the promotion and marketing of the PT scheme and to be published by the SADC MET Secretariat with contributions of articles from all SADCWaterLab members.

The next workshop for the PT evaluation will be hosted by the Ethiopia Conformity Assessment Enterprise (ECAE) in Addis Ababa, Ethiopia in November 2012.

Full reports for both Chemistry and Microbiology PTs are available on the SADC MET website on www.sadcmnet.org

6.3 SADC MET website updated with SharePoint Facility

The SADCMET website has been upgraded with a SharePoint facility that will allow SADCMET members to log on to the website using a username and password which has been provided to each country and upload documents directly onto the website. Herewith below some instructions of how to access the website and upload the documents:

1. Logon to the SADCMET website on www.sadcmnet.org
2. On the top left corner of the homepage click on "User Login"
3. The next window that opens is Username and Password
4. Type in the unique Username and Password that will be provided for each country.
5. Your country name will display on the top right hand side of the website to show that you have logged in
6. To upload documents go to "Publications" on the top menu and then click "Annual Reports" on the drop down menu
7. Once the Annual Reports page has opened click on "Add documents"
8. On the next window click on "Browse" to attach your document
9. Finally press "Ok" to finish uploading the document.

Once this process has been completed an e-mail message will be sent to the website administrator to approve the document and immediately after approving it the document will be displayed on the website.