

SADCMET ANNUAL REPORT FOR THE PERIOD MAY 2010 - MARCH 2011

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

1. PRE-ASSESSMENT AND GAP ANALYSIS VISITS TO SADC NMI'S

Immediately after the SQAM meetings held in Swaziland and as part of the SADC EU project SADCMET conducted pre-assessment and gap analysis visits to a number of SADC National Metrology Institutes (NMIs) to assess their readiness for accreditation of their laboratories in the four basic parameters of mass, volume, temperature and dimensional. One of the project's objectives was that the laboratories would work towards achieving ISO/IEC 17025 accreditation status by the end of the project period. In this regard, Mr. Donald Masuku as the SADCMET Regional Coordinator and Mr. Eddie Tarnow, the Technical Assessor from NMISA, conducted pre-assessment visits to five countries which had applied for accreditation in the following parameters:

Pre-Assessment Visits

Country	Date Visited	Parameter
Botswana	14 - 16 April 2010	Temperature and Dimensional
Seychelles	03 - 07 May 2010	Mass
Mauritius	20 - 22 April 2010	Dimensional and Temperature
Tanzania	17 - 20 May 2010	Dimensional
Zimbabwe	22 - 28 May 2010	Temperature, Dimensional and Volume

The assessment team was able to fulfil this role and in addition was able to facilitate technology transfer and arrange inter laboratory comparisons in order to assist the laboratories in addressing the short-comings identified. These pre-assessment visits proved to be very helpful to the laboratories by ensuring that the laboratories were prepared and ready for assessment by the SANAS/SADCAS and MAURITAS assessment auditors respectively.

For the rest of the NMIs which did not qualify to be assessed and didn't seem to be ready for accreditation, it was decided to conduct a "Gap Analysis" in order to make an appreciation of what metrology infrastructure is available in these NMIs and identify the gaps in the laboratories which may need further donor assistance in their efforts to become accredited. For this purpose Mr. Donald Masuku and Mr. Benjamin van der Merwe, an experience Lead Assessor from NMISA, visited four countries including Malawi, Namibia, Swaziland, DRC and Mozambique. The gap analysis was conducted against the requirements of ISO/IEC 17025 and shortcomings were identified to assist them in the process of moving forward towards accreditation.

Gap Analysis Visits

Country Visited	Date of visit
Malawi	26 April – 30 May 2010
Namibia	30 May – 04 June 2010
Swaziland	04 - 09 July 2010
DRC	02 – 06 August 2010
Mozambique	23 – 27 August 2010

The full reports for the gap analysis visits that were conducted are attached as appendices for each of the countries visited.

2. Participation at the NCSLI

The NCSL International is an annual testing and measurement conference organized by the National Institute of Science and Technology (NIST) of the United States to promote cooperative efforts for solving common problems faced by measurement and testing laboratories.

The Regional Coordinator Mr. Donald Masuku and the AFRIMETS Chair, Dr Wynand Louw attended the NCSLI conference in Providence, Rhode Island, USA from 28-31 July 2010. Mr. Masuku presented a paper on the SADC Water PT scheme and Dr Louw presented a paper on AFRIMETS. We also had an exhibition stand at the conference to promote the activities of SADCWaterLab and AFRIMETS as the RMO for Africa. Good contacts were made with other RMOs and laboratories in the USA.

3. AFRIMETS 4th GENERAL ASSEMBLY

The Intra-Africa Metrology System (AFRIMETS) held its 4th General Assembly hosted by the National Standards Institute of Egypt (NIS) at Sham El Sheikh, Egypt from 20-24 September 2011. The General Assembly was preceded by the AFRIMETS Executive Committee (EXCOM) meeting, various technical working group meetings and the meeting of the Joint Committee of the Regional Metrology Bodies (JCRB). The General Assembly was attended by more than 40 delegates from the six sub-Regional Metrology Organizations in Africa including Legal metrology and observers from PTB, BIPM, SIM, EURAMET, COOMET UNIDO, APMP, and the NEPAD Secretariat. SADC MET was represented by the Chair Mr. Mathew Ranganai, the Regional Coordinator Mr. Donald Masuku and the SADC MET TC 1 Chair, Mr. Shadrack Kajane.



Delegates to the AFRIMETS GA Egypt 2010

The AFRIMETS Working Groups held their second meetings back to back with the General Assembly. The following Working Groups most of which are chaired by NMISA staff met during the GA and presented their technical work programmes for 2010-2011.

- Quality System Working Group
- Metrology in Chemistry Working Group (CCQM)
- Mass and Related Quantities Working Group (CCM)
- Length Working Group (CCL)
- Photometry and Radiometry Working Group (CCPR)
- Electricity and Magnetism Working Group (CEM)
- Thermometry Working Group (CCT)
- Legal Metrology technical Committee (LMTC)

AFRIMETS signed a Memorandum of Understanding (MoU) with EURAMET aimed at mutual cooperation on the following areas:

- Establish joint working groups for specific technical work programmes and initiatives
- Facilitate the exchange of expertise and experts for efficient execution

- of metrological projects including projects of technical assistance to developing countries
- Arrange joint promotional, educational and technical initiatives such as conferences, seminars, workshops and training courses
 - AFRIMETS will invite EURAMET to contribute to the development of metrology in Africa

The next General Assembly will be held in Nairobi, Kenya to be hosted by Kenya Bureau of Standards from 18-22 July 2011.

3.1 AFRIMETS Metrology School

The first Intra-Africa Metrology System (AFRIMETS) Metrology School was held in Nairobi, Kenya from 7 – 16 February 2011. This event formed part of the UNIDO and NORAD (the Norwegian Agency for Development Cooperation) funded project for the development and strengthening of the technical infrastructure for the intra-Africa Metrology System (AFRIMETS). The event was locally supported by Kenya Bureau of Standards and the Weights and Measurement Department.

The school aimed at introducing young metrologists from Africa to the components that make up a sound measurement system for a country and gave them hands-on experience in a number of technical fields. The syllabus was designed to introduce standards, quality assurance, accreditation and metrology (SQAM) in a balanced way over 2 weeks. It also included exposure to industry, where SQAM underpins the success of manufacturing processes.

Participants from all over the African continent were invited, and after a rigorous selection process, two candidates were selected per country. To encourage inter-continental relations, young metrologists from Asia and the Americas were also invited to facilitate networking and inter-regional knowledge exchange. The event brought together nearly 80 participants from 45 countries. SADC was represented by participants from 10 countries which included Botswana, DR Congo, Lesotho, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe.

Several international renowned scientists were invited to share their knowledge and particular expertise and the participants also had the opportunity to visit various industries to assess the implementation of quality, standards and metrology, and their effect on the success of these industries.

The event was a huge success, meeting the objectives set and a follow-up event is planned within the next three years. Metrology is fundamental to trade, and the improvement thereof in Africa will result in the promotion of Africa as a trade partner to the world, and increase in the wealth building and poverty alleviation of the continent.

4. PARTICIPATION AT THE 25th and 26th JCRB MEETINGS

Twice per year, AFRIMETS must present its Quality system in support of calibration and measurement capabilities to the JCRB. This is an important and crucial part of the international mutual recognition arrangement for the international acceptance of calibration certificates and measurements by NMIs in Africa.

Dr Louw and Mr Masuku were two of the four representatives from AFRIMETS at two JCRB meetings, the first one held back to back with the AFRIMETS GA in Sham El Sheikh, Egypt from 20-24 September 2010 and the second one held recently in Paris, France from 20-22 March 2011 where they presented an update on activities in Africa and reported on the following:

- Kenya became a full member of the BIPM, and five other African countries (Ghana, Mauritius, Seychelles, Zimbabwe and Zambia) became associate members of the CGPM. AFRIMETS now has three full members of the BIPM (Egypt, Kenya and South Africa) and six associate members of the CGPM (Ghana Mauritius, Seychelles, Zimbabwe, Zambia and Tunisia).
- Of the five new associate members, three (Seychelles, Zambia and Zimbabwe) have signed the CIPM Mutual Recognition Arrangement (MRA).
- South Africa and Egypt have CMCs in the KCDB and Kenya is preparing submissions. Egypt is still assisted by EURAMET that organizes comparisons to support its CMC claims, and oversee the acceptance of the Quality system.
- Both Kenya and Tunisia are preparing for an AFRIMETS peer review of their Quality systems. Both have accreditation to ISO 17025 for the laboratories that plan to submit CMCs in the near future.

The JCRB commended AFRIMETS for such significant progress made since its formation and welcomed the increase of AFRIMETS members to the BIPM and CGPM respectively, which will improve AFRIMETS participation in the BIPM and international system of metrology.

5. SADC MET EU Project PE 2 ACTIVITIES

The SADC MET Regional Coordinator Mr. D. Masuku and the Chair Mr M. Ranganai attended the last Project Steering Committee meeting of the SADC EU SQAM Project held in Gaborone Botswana from 10-11 November 2010 to wrap up the activities of the project and discuss the final report. The SADC EU SQAM project activities which were carried out in two phases: PE 1 from 25th August 2008 to 31st May 2009 and PE 2 from 1st June 2009 to 30 September 2010 ended in November 2010.

A number of activities were planned to be carried out for PE 2 and included the following:

No:	Activity	Title	Date Scheduled
01	3102	Presentation techniques for train the trainer programme for 4 selected candidates from the 4 parameters including the 4 NMISA experts	Scheduled for July 2010
02	3204	Gap Analysis for 5 countries (DRC, Malawi Swaziland, Mozambique and Namibia)	Scheduled for April to August
03	3207	Pre-assessment visit of the 5 qualifying NMIs' for QMS readiness for accreditation	Scheduled for April to July
04	3209	Accreditation Assessment for 5 qualifying NMIS	As per schedule to be finalized by SADCAS
05	3307	Membership of Metre Convention for qualifying NMIs	Applications to be submitted by September
06	3401	Calibrate measurement standards (Received list of standards from 9 countries)	As per the calibration schedule to start April
07	3702	Workshop on Water PT Scheme	Postponed to Nov subject to approval
08	3901	Provision of inter comparison artifacts for Length and Volume	As per submitted quotation

Note: Activities highlighted in red were subsequently not carried out.

During the lifetime of the project the following sequence of events was planned and performed in several countries of the SADC Member States, on the basis that regional technical experts from all different National Metrology Institutes (NMI's) were selected from those nominated by the NMI's by the Regional Coordinator in cooperation with the Technical Assistance (TA) Team.

To fulfill the objectives in the best manner, the TA Team and the SADC MET RC first visited the NMI's of the SADC Member States, to obtain an overview of the conditions and the status of the latest developments within the NMI's. It was noted at this time that the structure of the National Metrology Institutes varied from country to country and that sometimes responsibilities were shared under

different Ministries. The information was used to decide upon and schedule the PE1 and PE2 activities in close cooperation with the Regional Coordinator.

Basic Metrology training in PE1 was followed by specific training in PE2 for technical staff in the main Metrology fields of Mass, Volume, Length and Temperature. Areas covered included:

a) Training in how to compile measurement capabilities (CMC) and to set up a database:

For ease of access of CMC`s (Calibration Measurement Capabilities) for all Member states and to assure the transparency of the latest development within the Region, a CMC Database with relevant links was developed and incorporated into the SADC MET webpage. This Database was introduced to the Member States for the first time in the SADC SQAM Annual meeting in March 2010 in Swaziland.

b) Training on calibration of measurement standards and on critical issues for any NMI such as uncertainty, traceability, environmental aspects of laboratories for the calibration of equipment, as well as on preconditions for intercomparison tests:

To prepare the NMI's for the planned calibration of measurement standards several training courses and workshops were performed and specific knowledge regarding uncertainty, traceability and environmental aspects of the laboratories was successfully transferred.

c) Attachment of technical members of staff to other NMI's within the SADC region for experience exchange.

Various attachments were organized held at the NMISA and other different NMI's, where 24 metrologists from the SADC NMIs experienced the day to day work in the major fields of metrology

d) Coaching by International experts in different Metrology fields:

During PE2 four international experts carried out coaching assignments in the four main fields of Metrology: Mass, Volume, Length and Temperature. These activities were performed in six different countries including Swaziland, Namibia, DRC, Malawi, Zambia and Mozambique.

e) Accreditation of NMIs

Pre-Assessment and Gap analysis visits were conducted in nine SADC NMIs culminating in five NMIs (Tanzania, Zimbabwe, Mauritius, Seychelles and Zambia) being assessed by SADCAS and MAURITAS respectively and recommended for accreditation pending clearance of findings. Three NMIs including Botswana for

temperature, Seychelles for mass and Zimbabwe for mass, temperature, volume and dimensional have since been accredited.

f) Associate Membership of SADC NMIs to the CGPM

As part of the SADC – EU project qualifying SADC NMIs that had participated in the accreditation programme were assisted with the initial joining fees for membership of the Meter Convention. One of the pre-conditions for benefiting from this assistance was the submission of a letter by the NMIs, committing the institution to continued payment of the Metre Convention membership fee after the initial SADC-EU sponsorship. This required commitment was received from the NMIs of Zimbabwe, Seychelles, Mauritius and Zambia, which therefore fulfilled all the conditions for this additional sponsorship.

After submitting their applications, the following NMIs were therefore accepted as the Associates of the General Conference on Weights and Measures:

- Zimbabwe effective 14 September 2010
- Seychelles effective 10 September 2010
- Mauritius effective 14 September 2010
- Zambia effective 22 January 2011

Before the Start of the SADC-EU project, only South Africa amongst the SADC member countries was a member of the Metre Convention (full member).

g) Measurement Standards of NMI's calibrated in advanced countries against higher grade Standards

After receiving several training courses for the calibration of measurement equipment in the four main fields of Metrology, the Project made provision for the calibration of selected National Metrology Standards. A questionnaire was sent by SADCMET to all NMI's of the SADC region requesting their requirements for calibration of the National standards for Mass, Volume, Length and Temperature. After the questionnaire was evaluated by the TA Team and the Regional Coordinator it was decided which Metrology Standards from the different countries and NMI's should be calibrated. After the approval of the necessary derogation, all requested primary standards from 10 SADC NMIs (Botswana, DRC, Mauritius, Malawi, Namibia, Seychelles, Swaziland, Tanzania, Zambia and Zimbabwe) were calibrated by the National Metrology Institute of South Africa (NMISA) and returned to the different NMI's of the region. These primary standards are now traceable to the SI through the NMISA traceability chain.

6. Participation at the Test and Measurement Conference, Drakensburg, South Africa

Mr Mathew Ranganai Metrology Director at SIRDC – NMI Zimbabwe and Mr. Dominic Mwakangale Director of Testing at Tanzania Bureau of Standards were funded by PTB to participate in the Test and Measurement Conference hosted by the National Laboratory Association of South Africa held at the Drakensburg, South Africa. The two presented papers at the conference on their experiences of implementing quality management systems according to ISO 17025 requirements in their laboratories and undergoing assessment to achieve accreditation under the SADC EU project.

7. Participation at the APMP GA and related meetings, Thailand 14-19 Nov 2010

The Asia Pacific Metrology Programme (APMP) held its 26th General Assembly and related meetings hosted by the NMI of Thailand (NMI-T from 14 – 19 November 2010 in Pattaya, Thailand. The General Assembly which was held on 18 -19 November was preceded by several TC meetings, the Developing Economies Committee (DEC) meeting and a symposium. The SADCMET Regional Coordinator and four other NMISA delegates participated in the various TC meetings, DEC meetings and the General Assembly respectively to present the AFRIMETS activities and success stories from the SADCMET EU project as part of the NMISA delegation.

NMISA participates in a number of comparisons piloted by APMP countries to support our calibration measurement capabilities (CMCs) in the BIPM key comparison database. The delegation comprising of the AFRIMETS TC Chairs from NMISA participated in the General Assembly and most of the Technical Committee meetings and made presentations in all the meetings (except the Symposium). Mr. Donald Masuku presented the AFRIMETS feedback to the Developing Economies Committee (DEC) and GA meetings where he shared the experiences of SADCMET in implementing the SADC EU project and highlighted the success stories of five NMIs getting accreditation and four countries joining the CGPM as associate members. He also extended an invitation to the APMP to send three delegates to the AFRIMETS Metrology School. APMP thanked AFRIMETS for the invitation and accepted to send the three delegates.

There were a number of key decisions that the GA made which included:

- After receiving an application from Kenya Bureau of Standards (KEBS), the GA accepted KEBS to become an Associate member of the APMP.
- The GA elected NMIJ of Japan as the host of the 27th APMP GA in Kobe, Japan in 2011.

8. SADC MET Water PT Scheme

8.1 Evaluation Workshop 2010 Windhoek, Namibia

With assistance from PTB, the SADC MET 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 2010 evaluation workshop was held in Windhoek, Namibia from 1-4 November 2010 to evaluate the results of the 7th PT round for the Chemistry group and the 3rd 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 Namibia, Zimbabwe, Uganda, Botswana, Swaziland, Madagascar, Ghana, Zambia, Malawi, Tanzania, Kenya, Mauritius, Ethiopia, Burundi, Rwanda, Seychelles, Lesotho, Ghana and Democratic Republic of Congo.



Participants at the SADC Water PT Evaluation workshop

A record number of laboratories registered for each scheme, 70 for Chemistry and 33 for Microbiology which included laboratories from Burundi, Rwanda, DR Congo and Ghana participating for the first time. Fifty-nine laboratories reported results in Chemistry while in Microbiology all laboratories reported results. Due to the large spread of results in Microbiology it was however not possible to come up with a consensus value. It was decided that the next microbiology PT round will have to be based on assigned values and therefore a number of laboratories from Germany and Rand Water in South Africa will be approached to serve as expert laboratories to provide the required reference values. 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 leaflets 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. 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 last day of the workshop training was provided to the participants on method validation using ISO/TR 13843: 2000 Water Quality – Guidance on validation of methods for the Microbiology group and on Uncertainty of Measurement for the Chemistry group. The measurement uncertainty course gave a short overview of the statistics required during uncertainty estimation, followed by a quick overview of the GUM-approach and focussed on the approach recommended in the NORDETest guide (TEC 537) which will also be incorporated into a new ISO standard for water laboratories (ISO 11352, due for publication in 2011). Feedback from participants was very positive, with statements generally indicating that laboratories would be able to go and implement the proposed approaches.

8.2 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:

- Participation fees for both PTs to remain unchanged but for 2011 fees for the microbiology PT to be increased to U\$D 150 in line with the participation fees for Chemistry PT
- The GA resolved that from 2012 participation at the Evaluation workshops for Chemistry participants will no longer be fully sponsored by PTB. After 2012 PTB will only cover the cost of the ticket and the participants will need to get support from their institutions for accommodation and subsistence allowance costs. Microbiology participants will however still be fully sponsored by PTB.
- SADCWATERLAB needs to be promoted and it was resolved that a biannual SADCWaterLab newsletter be initiated 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 first issue of this newsletter was published in Feb 2011.
- Two working groups were installed for both Microbiology and Chemistry PTs to develop lists of recommended methods which can be used by the labs to improve the performance in the PT
- Another working group was also installed to coordinate and support national workshops on the Training of Trainers programme and to create a database of trainers from the member countries.

The next workshop for the PT evaluation will be hosted by Mauritius Standards Bureau in Mauritius in November 2011.

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

8.2 SADC WATER PT Train of Trainers Programme

With financial assistance from PTB, SADC MET organized and conducted a "Training of Trainers on Quality Assurance in Analytical Chemistry" (ToT) held in Livingstone, Zambia under the framework of SADCWaterLab with the aim to enable participants to conduct national workshops on this topic in their respective countries.

During the last years' PT scheme and activities in SADCWaterLab it became clear that there is a strong need to offer workshops on quality assurance in analytical chemistry on a national basis in the participating SADC and EAC countries since the previous training activities in conjunction with the established Water PT scheme did only reach a very limited number of laboratories. So the idea came up to train two people from each country to enable them to conduct such workshops and disseminate the knowledge in their countries.

Twenty eight participants were selected and participated in the one week course which was structured in two parts: the first two days training was given on presentation skills to give participants the skills and more confidence to present a topic in front of an audience and the second part, scheduled for three days, on the technical topics which were presented by the participants themselves.



Participants to the SADC MET Water PT Training Course

On their return to their countries, participants have started preparations for conducting such national workshops. Two workshops have already been arranged held in Kenya and Tanzania in November and December respectively.

9. Inter-comparisons

Through SADC MET and now AFRIMETS a number of inter-comparisons have been initiated and piloted by NMISA. The following comparisons have been initiated:

No.	Comparison	Status	No of Participants
1	AFRIMETS. (to be registered) -Luminous intensity -Luminous responsivity -Luminous flux	All three to start 1 st or 2 nd quarter of 2010. Links to CCPR-K3.a and CCPR-K4. ITRI and NML-ITDI from APMP and LNE to participate	3 AFRIMETS, 2 APMP and 1 EURAMET 3 4
2	SADCMET.L-S1 Comparison of gauge blocks 2007 – 2008	In progress	7
3	SADCMET.L-S2 Comparison of 1 metre steel rule 2007 – 2008	In progress	7
4	AFRIMETS.T-S1 (Industrial PRTs from -50°C to 450 °C)	In progress	16 AFRIMETS 1 APMP (NIMT Thailand)
5	SADCMET.EM-P11 voltage comparison at the 10V level	Started in October 2008, still in progress. Expanded to AFRIMETS	4 originally, now 17

The challenge faced has been the movement and transportation of the artefacts. However SADC Secretariat has developed a PT sample movement form that will be used to accompany all artefacts being circulated for regional inter-comparisons which will hopefully speed up the process of customs clearance of these artefacts.

10 SADC MET Website and Promotional Materials

10.1 Website

The SADCMET website is being re-designed with a new “look and feel” and will have a “shared point” facility where members will be able to upload information directly on the website. The website is being populated and currently most information on the website has been updated. The calibration and measurement capabilities (CMC) database of the SADC and Associate members NMIs is also available on the website. See the new “look and feel” on the SADCMET website on www.sadcmnet.org

10.2 Promotional Materials

A number of promotional materials i.e. SADCWaterLab PT brochures are being re-designed and there is an on-going review of all our promotional materials. The first issue of the SADCWaterLab Newsletter has been published and is aimed at providing information and updates on the activities of the SADC Water PT scheme to all our stakeholders. See the first issue on the link below:
<..\..\SADCMET WATER PT\Water PT Newsletter 1st Issue 2011.pdf>

10.3 Promotion of the Water PT Scheme on the EPTIS database

The SADCMET website will provide the link to the European Information System on Proficiency Testing Schemes (EPTIS).

EPTIS is a proficiency testing (PT) search engine which helps people to find a suitable PT scheme for their laboratories. EPTIS is a joint publication of 38 partner organizations comprising of metrology institutes, testing institutes and accreditation bodies from the Americas, Australia, Europe and now Africa that co-operate according to a joint protocol. Some 300 PT providers list about 1300 schemes on the database. The SADCWaterLab PT schemes have now been listed on the database which will help to promote the scheme to other interested parties in Africa.