



Regional Office for Africa

Annual Report 2010/2011

Strengthening international science
for the benefit of society



ICSU

International Council for Science



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ACRONYMS

ADF	African Development Forum	ICSU	International Council for Science
AfDB	African Development Bank	ICSU EB	International Council for Science Executive Board
AfHDDH	African Footprint/Human Development Framework	ICSU RCA	International Council for Science Regional Committee for Africa
AfWCCI	African Water Cycle Coordination Initiative	ICSU ROA	International Council for Science Regional Office for Africa
AMMA	African Monsoon Multidisciplinary Analysis	IIASA	International Institute for Applied Systems Analysis
ASSAf	Academy of Science of South Africa	INQUA	International Union for Quaternary Research
AU	African Union	IR&C	International Relations and Cooperation
AUC	African Union Commission	IUBS	International Union of Biological Sciences
BMBF	Federal Ministry of Education and Research (Germany) <i>[Bundesministerium für Bildung und Forschung]</i>	IUFoST	International Union of Food Science and Technology
CARS	Centre for African Renaissance Studies	IUGG	International Union of Geodesy and Geophysics
CODATA	Committee on Data for Science and Technology	IUPAB	International Union of Pure and Applied Biophysics
DST	Department of Science and Technology, South Africa	IUPAC	International Union of Pure and Applied Chemistry
EAQUA	East African Association for Quaternary Research	IUPAP	International Union of Pure and Applied Physics
eGY	Electronic Geophysical Year	IUTOX	International Union of Toxicology
ENHANS	Extreme Natural Hazards and Societal Implications	LOC	Local Organising Committee
EU	European Union	MoU	Memorandum of Understanding
GEM	Global Earthquake Model	NEPAD	New Partnership for Africa's Development
GEO	Group on Earth Observation	NGO	Non-Governmental Organisation
GEOSS	Global Earth Observation System of Systems	NRF	National Research Foundation of South Africa
GFDRR	Global Facility for Disaster Reduction and Recovery	REC	Regional Economic Community
		RSSC	Regional Science Service Centre

ACRONYMS – CONTINUED

SAAFoST	South African Association of Food Science and Technology
SADC	Southern Africa Development Community
Sida	Swedish International Development Agency
SSEESS	Swedish Secretariat for Environmental Earth Systems Science
STI	Science, Technology and Innovation
START	Global Change System for Analysis, Research and Training
SWA II	Second Science with Africa Conference
TOXSA	Toxicology Society of South Africa
UN	United Nations
UNECA	United Nations Economic Commission for Africa
UNESCO	United Nations Educational, Scientific and Cultural Organisation
WAQUA	West African Association for Quaternary Research
ZAR	South African Rand

Mission

ICSU endeavours to strengthen international science for the benefit of society. To achieve this, ICSU mobilises knowledge and resources of the international science community to: identify and address major issues of importance to science and society; facilitate interaction amongst scientists across all disciplines and from all countries; promote the participation of all scientists—regardless of race, citizenship, language, political stance, or gender—in the international scientific endeavour; and provide independent, authoritative advice to stimulate constructive dialogue between the scientific community and governments, civil society, and the private sector.



1 MESSAGE FROM THE ICSU EXECUTIVE DIRECTOR



Following the successful review of the ICSU Regional Office for Africa in 2009, we started a process to recruit a new director for the office. ICSU headquarters and the NRF have worked closely in this process. I was very glad to see that there were many competent and interested candidates, which indicates that the office and its activities have gained some interest and attraction in the region over the last few years.

The outcome of this recruitment process was the appointment of Dr Edith Madela-Mntla as Director of the Regional Office for Africa, which was most satisfactory. For that I am grateful to the NRF, especially to Prof. Albert van Jaarsveld and Dr Patrick Thompson, as well as to Dr Xola Mati, the representative of the Academy of Science of South Africa (ASSAf), ICSU's national member in South Africa.

I am personally convinced that the combination of continuing support from the NRF and ASSAf, new approaches and ideas from the new leadership of the office, and increased commitment from ICSU should enable the Office to build on the considerable positive progress made to date and to realise its full potential in the next phase of its work in the region.

While the recruitment process was on-going, the office was managed by an acting director, Dr Rocky Skeef, who was jointly appointed by NRF and ICSU. Rocky's work during the period 1 March 2010 – 31 December 2010 allowed the Office to continue its work and created a strong base for the new director to build upon. Rocky, thank you for your professional attitude, passion and commitment which have inspired us all!

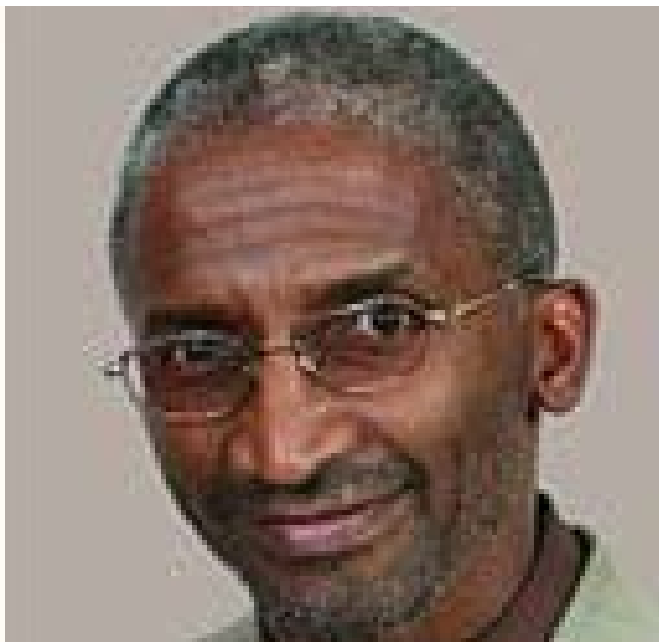
Over the difficult transition period, the staff in the office worked very hard to ensure the continuity of activities. Your dedicated work is also very much appreciated!

Around the end of 2009, ICSU headquarters established a good contact with the Swedish International Development Cooperation Agency through the Swedish Secretariat for Environmental Earth System Sciences. We discussed possibilities for increased support for the activities of the office in Africa. A number of interesting ideas have been proposed and these will be further worked out by the new leadership, including the new Regional Committee starting in 2011, in close collaboration with other ICSU family members and partners.

Deliang Chen, Prof. PhD

Executive Director: International Council for Science (ICSU)

2 DIRECTOR'S OVERVIEW



This is the sixth annual report of the ICSU Regional Office for Africa (ICSU ROA) since its inauguration in September in 2005. The 2010/11 financial year was characterised by activities that are underpinned mostly on the Office's support of the ICSU family and its partners on the continent. The report presents the achievements of the Office over a period that was marked by changes in its leadership entailing the departure of the previous Director (Professor Sospeter Muhongo), having myself come in as an acting Director and towards the end, the appointment of the new Director (Dr Edith Madela-Mntla) and new members of the Regional Committee. The changes in leadership of the Regional Office brought with it some overhaul of processes and procedures, resulting in delays or suspensions of some of the Office's planned activities.

The mid-term review of ICSU ROA recommended the need for a change in approach for implementation of the science plans. In this regard, the Office adopted a new approach where independent consortia would be established to replace project Task Teams in further developing and implementing research projects from the science plans, with the guidance of the Regional Office. In March 2011, a workshop organised by the Office expanded Task Teams into international consortia that will complete the project proposals on Health and Human Well-being as well as on Global Environmental Change (including Climate Change and Adaptation) science plans. The established consortia, which consist of leading African scientists and their counterparts from outside the continent, have already started preparing large-scale, long-term and high-quality project proposals that are generic enough to be tailored for specific requirements of funding bodies and agencies. These projects will be developed on a time scale extending beyond the 2011 – 2014 framework.

Throughout this financial year, ICSU ROA has been at the forefront in promoting the activities of the ICSU community in Africa. It has worked very closely with and supported activities that were organised by various ICSU Unions within and outside the continent. In order to assist the ICSU community in its activities, the Regional Office engaged in activities that ranged from sourcing extra financial resources to enable African scientists to attend international scientific events, identifying and selecting suitable candidates to participate in these events, doing presentations, as well as facilitating the process of issuing visas for travel.

The Office also supported applications of four Scientific Unions (IUTOX, IUBS, IUPAC and IUGG) submitted to the ICSU Grants Programme for consideration in 2011. I am

2 DIRECTOR'S OVERVIEW - CONTINUED

confident that ICSU ROA will continue to work closely with the ICSU family in Africa and support their initiatives. The Regional Office has also been engaging intergovernmental and governmental bodies in its activities and was actively involved in their activities. These bodies included AU/NEPAD, UNESCO, UNECA and the regional economic communities in the sub-continent, as well as national government departments.

The generous and core financial support from the Department of Science and Technology (DST) of South Africa, channelled through the National Research Foundation (NRF), underpins the Regional Office's successful work programmes and activities. Additional support also came from the ICSU Head Office in Paris in the form of the annual contribution.

Given the leadership changes and associated challenges, I feel pleased with the achievements of the Regional Office, thanks to the dedicated and knowledgeable staff who enabled this. This leaves me feeling confident that the new leadership will continue to work off a solid foundation.





Highlights

Management and Governance

ICSU ROA Mid-term Review

Activities



3 HIGHLIGHTS

New Director for ICSU ROA: The 2010/11 financial year began with a change in leadership through the appointment of Dr Rocky Skeef (Executive Director for New Business Development) at the National Research Foundation (NRF) as Acting Director of the Regional Office. This followed the lapsing of the contract of the former Director, Prof. Sospeter Muhongo, which ended in February 2010. Dr Skeef served in this capacity from 01 March to 31 December 2010. Dr Edith Madela-Mntla was appointed to head the Regional Office in September 2010 and she officially took office as Director of ICSU ROA on 01 January 2011.

New Regional Committee for Africa: The last four members of the ICSU Regional Committee for Africa (ICSU RCA) appointed in 2005, saw the end of their second tenure in December 2010. The other three whose tenure had ended in December 2009 were not replaced. The ICSU Executive Board (ICSU EB) appointed a new Committee in February 2011. The New ICSU RCA composed of 8 statutory and 3 *ex-officio* members held its first meeting in March 2011 in Pretoria, South Africa.

ICSU ROA Projects: During 2010/11 ICSU ROA changed the strategy for implementation of its science plans from the Task Team approach to the Consortium Approach. A workshop was organised in March 2011 to consolidate the formation of research consortia for projects on Health and Human Well-being and on Global Environmental Change (including Climate Change and Adaptation). Seven consortia were established (three for Health and Human Well-being and four for Global Environmental Change) and they committed to completing and submitting the first drafts of their proposals to ICSU ROA Secretariat by the end of June 2011. The idea is that proposals generated by these consortia will be marketed by ROA to potential funders to raise their interest, but it is the researchers involved that will target specific funders and respond to calls for funding proposals where possible.

ICSU ROA Book Projects: Significant progress has been made towards producing ICSU ROA's second book, "*Chemistry for Sustainable Development in Africa*". The 20 manuscripts received for the book have been reviewed and the authors are busy with corrections to incorporate the reviewers' comments. The book is envisaged to be published in late 2011 as part of the commemoration of the International Year of Chemistry. In collaboration with the United Nations Economic Commission for Africa (UNECA), ICSU ROA engaged in the process of producing a 3rd book. This third book project focuses on the science of Climate Change from the African perspective, and the contribution of African scientists to the Global climate change research. Twenty-nine manuscripts received for this book are currently being reviewed. UNECA is coordinating the process. The book will be produced in English and in French, and is envisaged to be published late 2011 to early 2012. Attempts are underway to exhibit the complete book or its manuscripts, at the COP 17 conference on Climate Change, in Durban, November 2011.

Scientific Collaboration and networking: ICSU ROA has extended its network of partners for scientific collaboration during 2010/11. For example, the Regional Office has signed a Memorandum of Understanding (MoU) with UNECA and the Global Footprint Network to develop the African Footprint/human development framework. ICSU ROA has also established an understanding with the Council for Scientific and Industrial Research (CSIR) in Pretoria for collaboration in research on issues of common interest. A formal MoU in this regard is under preparation. A similar relationship has been established with the Applied Centre for Climate and Earth Systems Science (ACCESS) for collaboration in systems research. The relationship with UNESCO was strengthened by the close collaboration forged, with UNESCO Nairobi, to host the Rio+20 Regional Science and Technology Workshop for Africa in May – June 2011.

3 HIGHLIGHTS – CONTINUED



Partnerships with Inter-Governmental Bodies: ICSU ROA strengthened its partnership with NEPAD through a joint research project proposal on Climate Change. The proposal, jointly prepared by ICSU ROA and the NEPAD Science and Technology Division, has been submitted to the Swedish International Development Agency (Sida) for funding consideration. The Regional Office has also continued to be involved in events organised by the African Union Commission and UNECA. Key among these, are the second Science with Africa Conference (SWA II), held in Addis Ababa, Ethiopia on 23 – 25 June 2010 and the 7th African Development Forum (ADF VII) in Addis Ababa on 10 - 15 October 2010.



4 INTRODUCTION

In the endeavour to strengthen international science for the benefit of society and as spelt out in its Strategic Plan 2006-2011, ICSU created Regional Offices in the Developing regions of the world. The purpose of the Regional Offices is to ensure that the voice of developing countries influences the international science agenda, and that scientists from the less developed parts of the world are fully involved in international research. The aim of the ICSU Regional Office for Africa (ICSU ROA) is therefore, to promote and facilitate the engagement of African scientists and engineers in utilizing, strengthening and advancing science, technology, and innovation (STI) for the socio-economic development of the continent in the context of regional priorities. To achieve this, the Regional Office strives to bring the scientific activities of the ICSU family, especially its scientific unions and interdisciplinary bodies, closer to the African scientists through collaborative ventures; while also building and/or strengthening linkages among African scientists and with their counterparts in other parts of the world through strategic networking. In pursuing these objectives, ICSU ROA fulfils the three fundamental principles of the organisation as enshrined in its Strategic Plan 2006 – 2011, namely: (i) International Research Collaboration; (ii) Universality of Science; and (iii) Science for Policy.

Through its activities, the mission of ICSU ROA would be realised by harnessing the experience, knowledge, skills, and research infrastructure found within the community of the ICSU family and its partners, both at the local and international levels. Hence the Regional Office continued to promote and facilitate the activities of several ICSU Unions and Affiliated Bodies in Africa by actively getting involved in the organisation of such events. ICSU ROA has also established new partnerships while maintaining its existing partnerships with research networks, development agencies and intergovernmental bodies, including UN agencies.



As stated in its Business Plan, ICSU ROA activities in 2010/11 focused essentially on the implementation of its four science plans as well as promoting the activities of the ICSU family in Africa, while building on strategic partnerships to promote the advancement of SETI for socio-economic development of Africa. The Regional Office also continued to pursue its goal on information gathering and dissemination, with special emphasis on documentation of the achievements of African researchers and creating a forum for Africa to tell its own story. This was done through further driving the process of publishing a second book *“Chemistry for Sustainable Development in Africa”*, while engaging on a third book project in partnership with the UN Economic Commission for Africa (UNECA) on the science of climate change.

This report summarises the activities of ICSU ROA during the 2010/11 financial year and how these activities have addressed the key objectives of the Regional Office.

5 ORGANISATION AND GOVERNANCE

5.1 ICSU ROA Secretariat

The full establishment of ICSU ROA was initially designed to consist of six staff members, namely: the Regional Director, the Regional Director's Personal Assistant, two Programme Specialists (PhD holders), a Communications Officer, and a Programme Officer. For several years the Office has only operated with four or five staff members. During the 2010/11 financial year, it was resolved to keep the full staff complement at 5, composed of the Regional Director, Personal Assistant to Regional Director also in charge of overall office administration, two Programme Specialists (PhD holders), and a Liaison Officer with aspects of communication.

Prior to 2010, the jobs of ICSU ROA staff were not graded and they had no defined job descriptions. The grading took

place during 2010/11 and the first job descriptions for all staff except the Director were concluded. In accordance with the grading and job descriptions, the position of Personal Assistant was changed to Personal and Administrative Assistant, structurally given the title of Administrative Assistant (AA). The position of the Liaison Officer was upgraded to the level of Communication Officer.

Following the stepping down of ICSU ROA's founding Director in February 2010, The Regional Office was led by an Acting Director (Dr Rocky Skeef) who cumulated this function with his regular function as Executive Director for New Business Development at the NRF. Dr Skeef was relieved of his function as Acting Director of ICSU ROA in December 2010, following the appointment of Dr Edith Madela-Mntla to the position with effect from 01 January 2011. The staff dynamics at ICSU ROA during 2010/11 is presented in Annex A.



5.2 ICSU Regional Committee for Africa

The ICSU Regional Committee for Africa (ICSU RCA) is mandated to provide guidance and oversight to the Regional Office and assist it in its mission and strategic goals. The ICSU RCA is made up of distinguished scientists representing the five sub-regions of the continent (west, central, east and southern Africa, and the Small Island States) and the three languages spoken in Africa (English, French, Portuguese); while also considering representation of women and young scientists. Added to these statutory members are 4 Ex-Officio members, namely: the ICSU ROA Director; the representative of the ICSU Secretariat in Paris; the representative of the NRF; and representative of the ICSU Executive Board (ICSU EB).

The activities and functioning of the ICSU RCA were frozen during the 2010/11 financial year following recommendations of the ICSU ROA review to disband the Committee. Hence the three members of the Committee whose tenure expired in December 2009 were not replaced as envisaged while the other members were not given any opportunity to operate in their capacity as ICSU RCA until their tenures expired in December 2010. A new Committee was then appointed in February 2011 (see Annex B) and it held its first meeting (10th meeting of the ICSU RCA) in March 2011. This was thus the only RCA meeting held during the 2010/11 financial year, instead of the usual two. The decisions of the 10th meeting of ICSU RCA held in March 2011 are available in a separate document available at ICSU ROA Secretariat.



Standing (left to right): Fernandes Tito, Abdourahamane Konare, Hilary Inyang, Patricia Ocampo-Thomason, BabatundeAgbola, Mohammed Elhassan, Achuo Enow, Uri Shamir, Daniel Nyanganyura.

Sitting (left to right): Robert Kriger, Edith Madela-Mntla, Deliang Chen, Ameenah Gurib-Fakim

Missing on photo: Joseph Kanyanga and Vincent Tanya

6 ACTIVITIES

6.1 Implementation of ICSU ROA Science Plans

The 2010/11 ICSU ROA Business Plan placed emphasis on continuing the implementation of the four science plans through projects. As the year unfolded, it became apparent that little would be achieved in this regard for three reasons. Firstly there was a change in leadership that came with it, a significant overhaul of processes and procedures, with the result that several planned activities were either delayed or suspended. Secondly, the Office started the year with a financial deficit that led to a number of planned activities being put on hold. The deficit was as a result of the income of the Office not materialising as envisaged. Thirdly, recommendations of the mid-term review of the Regional Office suggested the need for a change in approach for implementation of the science plans. ICSU ROA thus decided to move from the approach of setting up project Task Teams to prepare project proposals that would be managed by the Regional Office, to that of facilitating the establishment of independent consortia to develop research projects from the science plans with the guidance of the Regional Office. In this light a workshop was organised in March 2011 to establish research consortia for the implementation of the ICSU ROA science plans on Health and Human Well-being and on Global Environmental Change (including Climate Change and Adaptation). The major outcomes of this workshop are summarised below. The detailed report of the workshop is available at ICSU ROA Secretariat. A similar workshop for implementation of the Science Plans on Sustainable Energy and on Natural and Human-induced Hazards and Disasters is envisaged during the 2011/12 financial year.

6.1.1 Research Consortia for implementation of the ICSU

ROA Science Plan on Health and Human Well-being
At the workshop on Projects for implementation of two of ICSU ROA Science Plans (02 – 04 March 2011, Pretoria, South Africa), research consortia were established to develop project proposals on the respective areas. Three thematic issues were identified from the ICSU ROA Science Plan on Health and Human Well-being as listed below. These consortia were an expansion of the Task Team previously set up by ICSU ROA, to include other interested researchers in the respective relevant disciplines. The projects/project concepts agreed on by the various consortia are as follows:

6.1.1.1 Project WB 01: HIV/AIDS and Public Health

The group working on this theme concluded on developing two project proposals: (i) Chronic diseases of lifestyle; and (ii) Water and sanitation. On water and sanitation, the group focused on responding to the AU call for proposals which would be closing on 30 April 2011. However, due to some unforeseen constraints, this deadline could not be met and the group has continued to work on the proposal and to target other funding calls. The proposed project title is *“Improvement of access to drinking water, hygiene and sanitation: Case studies of Nigeria, Botswana, Cameroon and Burkina Faso.”* The project will address issues of water quality and water management strategies and technologies. On chronic diseases of lifestyle, the group focused on childhood and adolescent lifestyles and social behaviour, and



the associated risk factors for major Non-Communicable Diseases. It was anticipated that the detailed project proposal would be finalised before 30 June 2011, to respond to a call for proposals from US National Institutes for Health (NIH) which would close in August 2011. The project implementation protocol proposes to include the participation of the end-user communities.

6.1.1.2 Project WB 02: Modern Bio-medicine, Traditional Medicine and Indigenous Knowledge Systems

The research consortium dealing with this theme resolved to develop two project proposals namely, (i) Drug Discovery Based on African Indigenous Medical Knowledge; and (ii) A multi-disciplinary approach to utilize science and appropriate technology for alleviation of disease burden in Africa with special emphasis on malaria, TB, HIV/AIDS and water-borne diseases.

The proposal for the second project is already fully developed and the consortium is now looking for funding avenues. The Drug Discovery project would aim at promoting therapeutic interventions which are feasible, affordable,

and based on local resources for the treatment of priority infectious, degenerative and neurodegenerative diseases, while developing potential drug leads. The project intends to make use of existing ethno-medical knowledge and apply reverse pharmacology to identify new therapeutic agents against neglected tropical diseases, including immuno-modulatory agents. The proposal includes a capacity building component in several disciplines within the health and medical sciences at various levels (MSc/PhD bursaries, Post-doctoral Fellowships, training workshops), including Institutional strengthening.

6.1.1.3 Project WB 03: Food and Nutrition Security

On this theme, consideration was given to general issues such as the geographical scope of the projects, their sustainability and budgets, capacity building aspects (Human Resource, Infrastructure, Equipment and Consumables), ethical issues (IP ownership), active networking and communication facilities, funding, and the cross-cutting nature of climate change and its impacts. The group resolved to embark on three projects, namely, (i) Sustainable improvement of crop and livestock (ii) improving post-harvest



6 ACTIVITIES - CONTINUED

technologies; and (iii) Food safety, quality, accessibility and utilization. The proposals for the three projects are at different stages of completion. For each of them, the objectives have been clearly defined, the activities are outlined and the methodologies described. In addition to the three main projects, a short term activity of the consortium would be to organize short (two-week) regional training courses on 'Climate Change and Agriculture - Impacts, Adaptation and Mitigation.' The training courses would target Research Scientists, Extension Personnel, Policy Makers, Farmers and Non-Governmental Organisations (NGOs).

6.1.2 Research Consortia for implementation of the ICSU ROA Science Plan on Global Environmental Change (including Climate Change and Adaptation)

At the ICSU ROA project implementation workshop in March 2011, four sub-groups of researchers were formed as an expansion of the Task Teams previously set up by ICSU ROA to develop project proposals for the implementation of the ICSU ROA Science Plan on Global Environmental Change (including Climate Change and Adaptation). The four sub-groups constituted themselves into consortia to prepare project proposals on thematic areas as outlined below earlier identified from the science plan.

6.1.2.1 Project GC 01: The Impact of Land Degradation and Biodiversity Loss on Human Well-being in Africa

Having recognized that land degradation and biodiversity loss and their effects on human well-being are amplified by climate change and its impacts in Africa, the group embarked on developing a research project proposal to address the following objectives:

- i. To determine the causes and indicators of biodiversity loss and land degradation;
- ii. To assess the land cover changes using remotely sensed data and how these changes affect local, regional and global climate;
- iii. To assess climatological data linkages on the loss of biodiversity and land degradation in sub-Saharan Africa;
- iv. To produce a harmonized international standard for measuring climate change impact on land degradation;
- v. To document biodiversity loss trends in sub-Saharan Africa using climatological and remotely sensed data;
- vi. To investigate the influence of the land degradation and biodiversity loss on the spread of disease and disease vectors; and
- vii. To integrate research and data on land use changes in the policy-making process in sub-Saharan Africa, and adoptive strategies for conservation of biodiversity loss and land degradation.



The project is intended to be carried out at selected pilot sites in four African countries representing the geographic regions (North, West, East and Southern) Africa, with the possibility of adding more study countries to the list if other interested partners (researchers and institutions) are identified from such countries to join the consortium. The intention is to implement the project in three phases, each phase addressing a specific set of objectives. North-South and South-South cooperation is anticipated and some international development agencies have been identified to be approached for partnership and collaboration.

6.1.2.2 Project GC 02: Impact of climate Change on Rainfall and Water Resources in Sub-Saharan Africa

The research group working on the impact of Climate Change on Rainfall and Water Resources in Sub-Saharan Africa project opted to build on the efforts already made by the Task Team previously set up by ICSU ROA. Hence they continued to develop the following two project proposals

- i. *“Sustainable adaptation to changes in rainfall patterns for food security in sub-Saharan Africa.”* This would involve mapping changes in agro-ecological zones in sub-Saharan Africa; improving adaptive capacity and resilience of socio-ecological systems; developing strategic tools for adaptation to changes in socio-economic and ecological systems; building a data base for resilience of Africa’s social and ecosystems; and exploring the potential for crop and cropping systems diversification options in reducing the risks associated with global environmental changes and in increasing the adaptive capacities of communities.
- ii. *“Integrated trans-boundary water resource management in the context of climate change in sub-Saharan Africa.”* Here the focus would be on understanding the availability and nature of water

resources; establishing the potential uses of water, and mapping vulnerability sectors; promoting communication between stakeholders; and community involvement.

6.1.2.3 Project GC 03: Air Pollution and health impact in urban areas in sub-Saharan Africa

The consortium working on air pollution proposed to develop two major work packages as follows:

- i. WP1: “Air pollution assessment in mega-cities in sub-Saharan Africa.” This work package is intended to assess the air quality of major African cities and conduct case studies on impacts of air pollution on health and corrosion of structural materials. The specific activities will include air quality monitoring at several sites in eight selected cities across the continent. Case studies are proposed, to address the key research questions identified by the team.
- ii. WP2: “Monitoring and modelling of trans-boundary atmospheric aerosols due to anthropogenic and natural sources in sub-Saharan Africa.” The focus of this work package is on monitoring trans-boundary transportation and deposition of particulate matter in sub-Saharan Africa and its impacts on climate change, human health and structural materials. For this component of the project the consortium has expressed the need for additional expertise to join the consortium. ICSU ROA undertook to facilitate identification of such expertise once the consortium has defined the areas of expertise required.

6 ACTIVITIES - CONTINUED



6.1.2.4 Project GC 04: Africa's Oceanographic Uniqueness

The group working on this theme proposed a project titled *“Developing strategies for adaptation to the impacts of climate change in the utilisation of African coastal and estuarine resources: – from prediction to policy and implementation.”* The aim of the project is to improve the future outlook of African coastal communities by identifying potential climate driven changes (environmental and biological) to the coastal and estuarine fish and fisheries, and developing adaptation and mitigation strategies at both fisheries policy and management levels. The group proposes to align the operation and outputs of the project with the guidelines and principles of the ecosystem approach to fisheries, which is the most recent paradigm in fisheries management.

6.2 African Diaspora Project

The first phase of the ICSU ROA/NRF African Diaspora project, which was completed during 2009/10 financial year, produced the initial database of African scientists in the Diaspora. As part of the outcome of this project, feasible and realistic ways of involving the African Diaspora in the development and application of STI on the continent were proposed. The modalities of how the database is going to be availed are being worked out by the different stakeholders who were involved in the first phase of the project. The implementation of the second phase of this project is envisaged to commence in the 2011/12 financial year. Several potential partners have been identified for this project, which include the Centre for African Renaissance Studies (CARS) at the University of South Africa, AU/NEPAD, UNECA and South Africa's Department of Science and Technology (DST).

Additionally, there have been subsequent engagements with some South African government departments and the AU in this regard. ICSU ROA attended the African Diaspora Technical Committee of Experts Meeting that was held in Pretoria, South Africa, on 21-22 February 2011. Dr Nyanganyura attended the meeting and gave a presentation titled 'Mobilising the African Diaspora for Advancement of Science, Engineering and Technology in Africa', wherein he highlighted the findings of the first phase of the Diaspora project. Through the request and recommendation of the DST, ICSU ROA prepared a discussion paper and took a leading role in the Africa Union Diaspora Technical Committee of experts session that deliberated on science and technology. The sessions recommended that the idea of creating a dynamic and consolidated African skills database, inclusive of new and existing Africa and Diaspora skills database should be included as flagship project under science and technology.

This, it was recommended, would be tabled at the planned AU Ministerial and Summit meetings for consideration, endorsement and support. ICSU ROA is expected to play a role in the implementation of the project. The DST expressed keenness to support the current work done by the Office on the African Diaspora database and initiatives.

6.3 Capacity Building

6.3.1 International Training Course on Biophysics

ICSU ROA collaborated with the International Union of Pure and Applied Biophysics (IUPAB), ICSU Regional Office for Latin America and the Caribbean (ROLAC) and other partners in organising a two weeks training course in Biophysics in Rio de Janeiro, Brazil from 30 August 2010 to 10 September 2010. The training course was funded through the ICSU Grants programme 2010. Ten African young scientists selected by ICSU ROA attended the course alongside their counterparts from Latin America. One of the African students was among the ten best poster award winners out of 120 posters presented during the course. Daniel Nyanganyura coordinated the African trainees and accompanied them in Brazil during the course.

The course provided an opportunity for the African young biophysicists to interact with, and learn from, key players in biophysics in the Americas and other parts of the globe. It was also an opportunity for the African trainees to share knowledge and experiences among themselves as well as with their peers from Brazil, Argentina and other Latin American countries. The trainees were exposed to laboratories and other facilities for Biophysics in Brazil, and were opportune to have hands-on experience with the state of the art equipment in these facilities.



An important outcome of the training course was the initiation of collaboration between Africa and Latin America in Postgraduate Research and Training in Biophysics in Africa. ICSU ROA was identified as the possible link that would play a catalytic and facilitating role in establishing the link between Latin American and African biophysicists.

6.3.2 Health Risk Assessment Training Workshop

ICSU ROA (represented by Achuo Enow) joined the Toxicology Society of South Africa (TOXSA) to organise a two-weeks training workshop on Health Risk Assessment at the University of Witwatersrand, Johannesburg, South Africa on 01 – 12 November 2010. This training course was part of the implementation of the project: *“Building Capacity in Health Risk Assessment in African Countries”* funded through the 2009 ICSU grants programme. The course was attended by 14 trainees from five countries (Cameroon, Malawi, Nigeria, South Africa and South Korea). Resource persons were drawn from within the IUTOX community in Africa, Europe and America.

6 ACTIVITIES - CONTINUED

An evaluation of the course through a questionnaire designed by ICSU ROA revealed that, from the point of view of the trainees, the course imparted new and useful knowledge that would be very valuably applied in their academic and/or professional careers.

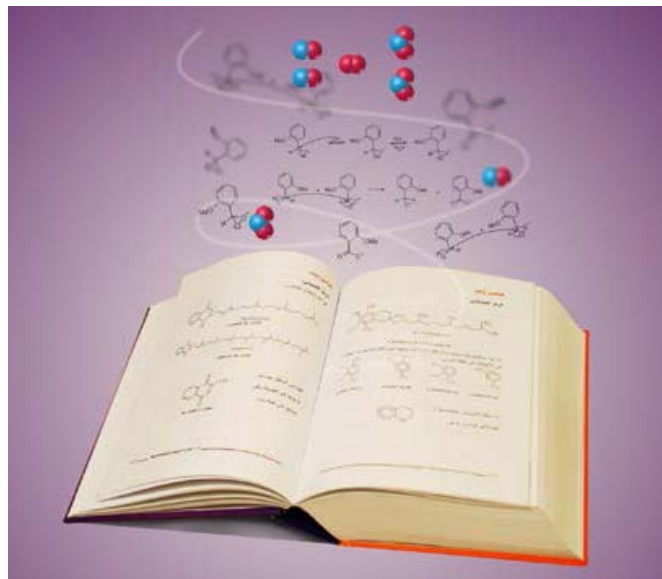
6.4 Publications and General Communication

6.4.1 Publications

6.4.1.1 ICSU ROA Book Project II

The preparation of the second book project about "Chemistry for sustainable development in Africa" is still underway and is envisaged to be published during the 2011/12 financial year. Twenty manuscripts were received and after the preliminary review by the editors, fifteen of the manuscripts were retained and were sent out for peer-review. On receiving the comments from reviewers, the Office will send them to the editors (Prof Ameenah Gurib-Fakim of the University of Mauritius and Prof Kobus Eloff of the University of Pretoria, South Africa) for cross checking before submission to Springer-Verlag GmbH for publication.

The issues presented in the manuscripts focus on many aspects that range from atmospheric chemistry, geo-chemistry, chemistry related to biofuels, agriculture, medicine and nanotechnology. The research concepts of Chemistry for sustainable development are presented in innovative ways and stand to give a unique opportunity to show how research on the continent has evolved over the last years as well as demonstrating essential developments in the way that chemistry is practised for sustainable development in Africa.



6.4.1.2 ICSU ROA Book Project III

In partnership with UNECA, ICSU ROA is preparing to publish a book on climate change science in Africa. The book is meant to present the climate change issues of most relevance to Africa as well as providing a comprehensive and up-to-date review of climate change activities on the continent. The topics treated in the book feed into the on-going formulation of collective strategy to protect the global environmental change and climate, founded on the UN Framework Convention on Climate Change. 29 manuscripts, both in English and French, were received. Manuscripts are under review and the book is envisaged to be published mid-2012. The publication will be in two volumes of the book; one in English and the other in French.

6.4.1.3 Reports on Workshops/Conferences

During the 2010/11 financial year, ICSU ROA organised or assisted in the organisation of several workshops/conferences, for which reports were produced and are available at ICSU ROA Secretariat. The most important of these events include:

- the 15th World Congress of Food Science & Technology held in Cape Town, South Africa, in August 2010. The Congress was organised by IUFOST and ICSU ROA sourced funds that enabled 10 African scientists to attend;
- the III Latin American Postgraduate Program of Biophysics Course / I Colloquium Brazil/Africa of Biophysics that took place in Brazil in September 2010;
- the 20th CODATA Conference in Stellenbosch, South Africa in October 2010;
- TOXSA/ICSU ROA training workshop on Health Risk Assessment for Southern Africa in November 2010;
- workshop on “Extreme Natural Hazards and Societal Implications (ENHANS) in Pretoria, South Africa in January 2011; and

Reports from all these events are.

6.4.2 General Communication

Apart from reaching out to the general public through publications, ICSU ROA also reached out to the international scientific community and the general public through exhibiting its materials at regional and international scientific and policy meetings, through its active website, electronic mailing as well as through oral presentations at different forums.

6.4.2.1 Public Lectures

ICSU ROA reaches out to the general public during special events to which the Regional Office is invited to give a lecture. For example, during the 2010 Africa Day Celebration on 25 May 2010 ICSU-ROA, represented by Dr Nyanganyura, was invited by the Cape Peninsula University of Technology, Cape Town, to deliver a lecture on “*Strengthening African Scientific Research for the Benefit of Society*.” The lecture highlighted facts about ICSU, its mission, its Regional Offices and the role and activities of the Regional Office for Africa. The lecture raised awareness among academics and students who expressed interest in getting involved in ICSU ROA initiatives, especially in the Health and Human Well-being projects.

6.4.2.2 ICSU ROA Website

The new ICSU ROA website (<http://www.icsu.org/africa>) is designed and managed by the webmaster at the ICSU Secretariat but content management is handled at the level of the Regional Offices. General information about the Office’s activities as well as about activities of its partners and those of the ICSU family are published on the site. The website also contains information gathered by ICSU ROA from various sources, which is relevant to the African scientific community. This includes important announcements of events, grants and awards on the continent; and calls for participation in international projects and programmes, or for nominations to special committees of ICSU and other international scientific bodies.

6 ACTIVITIES - CONTINUED



6.4.2.3 Electronic mailing

ICSU ROA developed an extensive and a continuously growing electronic mailing list that allows a wide distribution of information, publications and documents from the Office as well as those from the ICSU Family and partners. This list covers a number of networks, spans across different disciplines and regions of the globe. The Regional Office also gathers information through electronic mailing from its numerous contacts, including its partners and networks from around the world and makes it available to the African scientific community via the electronic mailing list.

6.5 Scientific Collaboration and Networking



6.5.1 Activities of the ICSU family in Africa

As in previous years, ICSU ROA continued to support activities and initiatives of the ICSU family in Africa during the 2010/11 financial year as illustrated by the examples below.

6.5.1.1 ICSU Grants Programmes

ICSU ROA supported four applications for the 2011 ICSU Grants Programme from IUTOX, IUBS, IUPAC and IUGG. Two of these applications were successful, namely: (i) *“Building Capacity for Human Health Risk Assessment in Western and Central Africa”* (IUTOX); and (ii) *“Marine zooplankton population genetics and ocean circulation”* (IUBS). Both projects were approved for funding of €30,000 each, though the approval of the IUBS project is on condition of involving an Africa-based organisation.

ICSU ROA will collaborate with IUTOX and the Nigerian Society for Toxicological Sciences with the support of TOXSA and World Library of Toxicology to ensure effective

implementation of the first project. ICSU ROA will also support IUBS and the relevant Africa-based institution/organisation (to be identified) in implementing the second project.

6.5.1.2 International Union of Food Science and Technology (IUFOST)

The International Union of Food Science and Technology (IUFOST) organised its 15th World Congress of Food Science and Technology in Cape Town, South Africa on 22-26 August 2010. This was the first time the IUFOST Congress was held on the African continent and the event provided a truly international forum where scientists and policy makers came together to discuss challenges faced by the food science and technology sector. The Congress addressed global food science issues such as food safety and security, health and nutrition, sustainability and the eradication of hunger and poverty. It provided an excellent opportunity for academic and commercial food scientists and technologists from around the globe to meet, network and map the way forward in food science and technology. The scientific program was designed to cover topical and important issues affecting food scientists and technologists around the world and provided a platform for young and established researchers to present their work and share knowledge and experiences.

ICSU ROA was actively involved in the organisation of the Congress and worked very closely with the South African Association for Food Science and Technology (SAAFoST) in this regard. Dr Nyanganyura sat on the Local Organising Committee for the congress. ICSU ROA obtained funds from the International Bureau of the German Federal Ministry of Education and Research (BMBF), through the German Embassy in Pretoria, to support the participation of African researchers at the congress. These funds covered the full

cost of participation (flights, accommodation, subsistence, conference fees and other on-ground expenses) of 10 African Scientists from across the continent.

6.5.1.3 International Union of Pure and Applied Biophysics (IUPAB)

ICSU ROA supported the IUPAB application for the 2010 ICSU Grants programme and joined the Union and other partners to organise a training course on Biophysics in Rio de Janeiro, Brazil in September 2010 (see details in section 6.3.1).

6.5.1.4 Committee on Data for Science and Technology (CODATA)

The 22nd International CODATA Conference was held in Stellenbosch, South Africa on 24-27 October 2010 on the theme "Scientific Information for Society: Scientific Data and Sustainable Development". The conference was hosted by the National Research Foundation, South Africa. ICSU ROA was actively involved in the planning and organisation of the conference. Dr Nyanganyura sat on the Local Organising Committee (LOC) and served as the contact person for the committee.

ICSU ROA organised two special sessions during the conference, one on Health and Human Well-being convened by Dr Achuo Enow and the second on Global Environmental Change (including Climate Change and Adaptation) convened by Dr Daniel Nyanganyura. The Regional Office also mounted an exhibition manned by Mr Bongani Mahlalela who also provided invaluable support in coordinating the logistics during the conference.

ICSU ROA also mobilised funds from the International Relations and Cooperation (IR&C) Directorate of the NRF to

6 ACTIVITIES - CONTINUED

fully cover the cost of participation of 10 invited speakers at the two special sessions and 15 African young scientists (MSc and PhD students) from across the continent.

6.5.1.5 International Union for Quaternary Research (INQUA)



ICSU ROA continued to collaborate with INQUA, particularly in facilitating the establishment and/or strengthening of sub-regional representations in Africa. The regional Office, represented by Dr Achuo Enow, has been instrumental in strengthening the West Africa chapter of INQUA (WAQUA) through the pivotal role played during WAQUA's second conference held in Cotonou, Benin, on 05 – 09 October 2010. The primary objective of the conference was to pull together existing knowledge on paleoclimatology, palaeontology, archaeology, geology and other related disciplines, for a better understanding of the West African Palaeo-environment and human adaptation, in order to better manage the present and protect the future. The conference also aimed at consolidating the establishment of WAQUA and developing a coherent science programme.

At this conference Dr Enow gave an invited keynote lecture on the challenges of Climate Change Uncertainties to Africa's sustainable development. He was also the Co-Moderator of the conference academic sessions, as well as of the special session dealing with issues of structure and governance. Major achievements of the conference include a renewed enthusiasm among young scientists to engage in Quaternary research on the identified priority themes; and the alignment of WAQUA research priorities to the ICSU ROA science plan on Global Environmental Change

INQUA also has regional chapters in Southern Africa (SAQUA) and in East Africa (EAQUA). ICSU ROA was invited to the EAQUA workshop in Tanzania in February 2011 but could not attend due to other commitments.

6.5.1.6 International Union of Toxicology (IUTOX)

ICSU ROA has collaborated with IUTOX on several events and works very closely with its South African affiliate, the Toxicology Society of South Africa (TOXSA). With funds obtained through the ICSU Grant programme 2009, TOXSA and ICSU ROA held a training workshop on Health Risk Assessment for Southern Africa in November 2010 (see section 6.3.2). Within the framework of the same grant a similar workshop will be held for Eastern Africa in November 2011. A second IUTOX application supported by ICSU ROA for the 2011 ICSU grant programme has been approved for similar training workshops in West Africa (see section 6.5.1.1).

6.5.1.7 International Union of Geodesy and Geophysics (IUGG)

ICSU ROA joined the IUGG Geo-risk Commission and other partners to organise an international workshop on Extreme Natural Hazards and Disaster Risk in Africa on 17 – 20 January

in Pretoria. This workshop was organised in the framework of the ENHANS project funded through the ICSU 2010 Grants programme. Dr Achuo Enow was a member of the local organising committee for this event and Dr Edith Madela-Mntla gave a presentation during the workshop. She also sat on the Recommendations Committee that drafted the workshop resolutions. The Regional Office mounted an exhibition at the workshop.

ICSU ROA also participated in the preparation of the IUGG General Assembly that was held in Australia, 28 June to 7 July 2011. Dr Daniel Nyanganyura was a co-convenor of the session on Earth and Space Science in Africa and he assisted in reviewing the abstracts for this session.

6.5.1.8 International Union of Pure and Applied Physics (IUPAP)

ICSU ROA supported the bid by the South Africa Institute of Physics (SAIP) to host, in partnership with Women in Physics in South Africa (WiPiSA), the IUPAP 4th International Conference on Women in Physics in Cape Town, South Africa on 04 – 08 April 2011. The Regional Office has been very actively involved in organising the Conference, with Dr Nyanganyura sitting on the LOC. ICSU ROA was also very instrumental in developing the scientific programme for the conference, and in facilitating the processing of visas for some delegates.

6.5.2 Activities with other Partners and Networks

ICSU ROA maintained a good working relationship with its traditional partners but also established new partnerships and networks in the course of 2010/11.

6.5.2.1 AfricaArray

AfricaArray has been a close partner of ICSU ROA since 2005 and ICSU ROA has attended all Annual workshops of AfricaArray since then. Dr Enow attended the 6th AfricaArray Annual workshop at the University of Witwatersrand, Johannesburg on 18 – 22 November 2010. The workshop organized in two parts: Part 1 dealt with Vetting and revision of science and logistics plan for an expanded AfricaArray; and part 2 was a technical workshop with concurrent thematic sessions covering all disciplinary areas (atmospheric science, climate science, geodesy, hydrology, seismology, human dimensions of climate change, ecology and space weather).

Dr Enow made valuable inputs to the discussions on the Science and Logistics Plan of AfricaArray. The science plan is based on the principle of a shared vision that Africa will retain capacity in an *array* of technical and scientific fields vital to its sustainable development. This is the background behind the name '*AfricaArray*', which also refers to *arrays* of scientists working on linked projects across the continent; and *arrays* of shared training programs and observatories. The science and logistics plan is divided into two major sections, one on science driven by societal needs, and the other on basic science. Other minor sections of the plan address instrumentation requirements and opportunities for adding new kinds of sensors to the network, the integration of education and training programs with research and network operations, establishing an organizational structure that includes both disciplinary and geographic representation, and funding priorities for supporting the activities of an interdisciplinary AfricaArray.

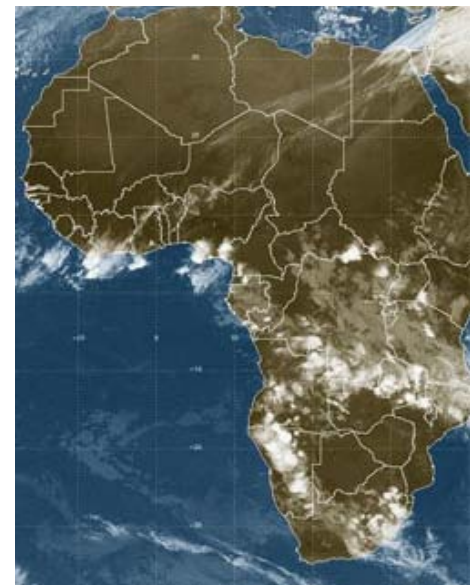
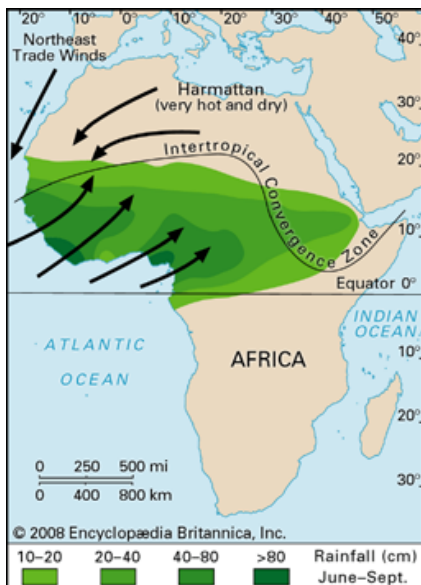
AfricaArray is one of the key partner networks for the implementation of the ICSU ROA science plan on Natural and Human-induced Hazards and Disasters.

6 ACTIVITIES - CONTINUED

6.5.2.2 African Monsoon Multi-disciplinary Analysis (AMMA) Project

ICSU ROA established a working partnership with AMMA since February 2009 and since then the two have been working closely together. The Objectives and content of the AMMA programme fit very well within the ICSU ROA Programme of hazards and disasters, particularly the hydro-meteorological hazards. AMMA also fits into the ICSU ROA programme of Global Environmental Change (including Climate change and adaptation). Some key researchers of the AMMA network are involved in the ICSU ROA project implementation consortia.

ICSU ROA was invited to the AMMA-Africa Prospective Workshop in Abidjan, Cote D'Ivoire on 19 – 21 May 2010 on the theme, *“The impact of climate change: Definition of priorities, contribution to the regional actions and strategies for mitigation.”* Representing ICSU ROA at the workshop, Dr Enow played multiple roles namely, giving remarks at the opening session, wherein he discussed, among other issues, the role of ICSU in promoting networks such as AMMA, and establishing the link and commonalities between ICSU ROA and AMMA; presenting an invited Keynote lecture on *“Addressing the Challenges of Climate Change and its impact on ecosystems & Human Well-being”*; serving as moderator for two of the plenary technical sessions; and sitting on the Inter-agency Panel which was assigned to examine the proposed organizational structure of the AMMA Africa network as well as the implementation plan for the sub-regional programme of action.



6.5.2.3 Global Earthquake Model (GEM) Foundation

ICSU ROA has continued to work very closely with GEM since the establishment of a partnership between the two in 2009. ICSU ROA established a new partnership with the Global Earthquake Model (GEM). The point of common interest between ICSU ROA and GEM Foundation is in harmonising global efforts, knowledge and skills to improve predictability of, and resilience to earthquakes. The approach of GEM is to use all the available data, information and technologies to harmonise global standards, techniques and procedures for monitoring and predicting earthquakes, and assessing the risks associated with them. To achieve this objective GEM has developed Global Programmes to carry out projects on the global scale with regional inputs, as well as Regional Components to adapt the global models at regional scales and using regional data. The African Regional Component was launched in November 2009 and Dr Enow, representing ICSU ROA, was elected to the Regional Management Committee as Administrative Coordinator. This role involves organising regional meetings of GEM Africa and ensuring efficient management of funds received for specific activities.

Dr Enow represented GEM Africa at the GEM outreach meeting in Washington DC on 01 – 04 June 2010. The meeting was aimed at sharing information on the outcomes and products of the GEM 1 pilot project and to map the way forward in the global application of the GEM Model Infrastructure. At the meeting Dr Enow presented the GEM Regional Programme for sub-Saharan Africa. The programme is centred on a proposed project on *“Mitigation of earthquake risk in sub-Saharan Africa”* and covers aspects of earthquake mapping, modelling and prediction; risk and vulnerability analysis; and socio-economic impact analysis. The programme is designed to build on available products and on-going

projects, namely, Seismic Hazard Map for sub-Saharan Africa (2003), Seismotectonic Map of Africa, ESARWG active fault mapping project, AfricaArray seismic network and projects, and ICSU ROA geohazards science projects. Through the GEM Foundation, ICSU ROA hopes to facilitate the implementation of the earthquakes component of its science plan on hazards and disasters.

6.5.2.4 Electronic Geophysical Year (eGY)



In November 2010 the Electronic Geophysical Year (eGY), a voluntary organization focusing on a 21st Century e-Science approach to issues of data stewardship, organised a workshop in Accra, Ghana on better internet connectivity for research and education in Africa. Dr Nyanganyura was invited to the workshop to represent ICSU ROA. He delivered three lectures at the workshop, one focusing on the development of national research and education networks (NRENs) in Africa with special attention given to the current and planned networks in sub-Saharan Africa; the second focusing on how ICSU ROA can assist in the establishment of new NRENs, strengthening the existing ones and fostering collaboration between these networks; and the third highlighting the achievements of the South African National Research

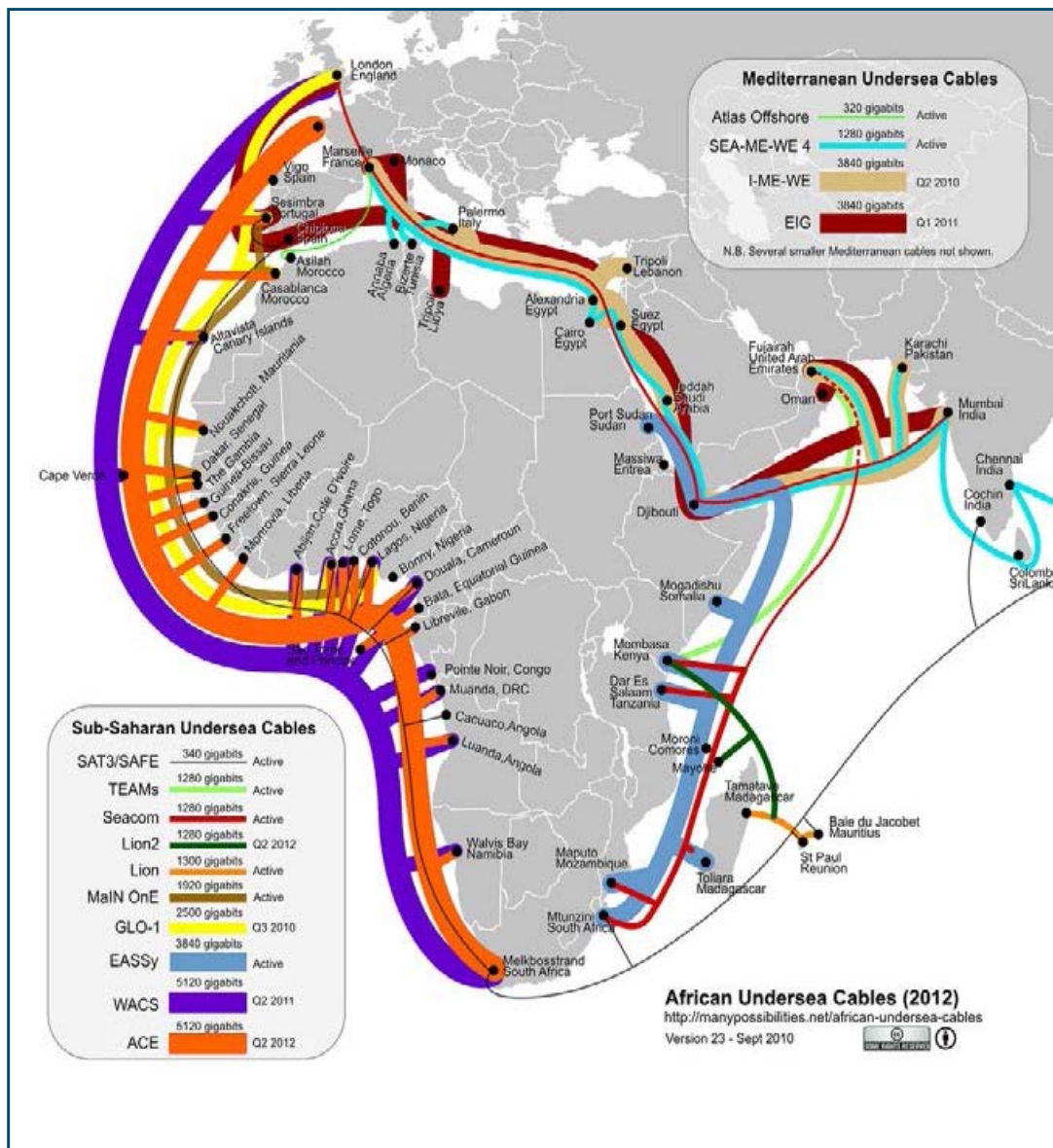
6 ACTIVITIES - CONTINUED

Network in providing the populace with connectivity to the world's research networks as well as Internet access. Dr Nyanganyura was given an additional role of being the editor of the eGY Africa newsletter, a publication that comes out three times a year. ICSU ROA and the Association of African Universities were given a task to host eGY Africa and assist it in publishing its materials, events and actions. ICSU ROA was also assigned to play an editorial role in a proposed eGY Africa book project that will focus on eGY Africa related activities, success stories, best practices for better connectivity.

6.5.2.5 Global Change System for Analysis, Research and Training (START)

START is the capacity building arm of the Earth Systems Science Partnership (ESSP) which is an ICSU body bringing together the four Global Change programmes of ICSU. ICSU ROA established a close working relationship with the Pan African START Secretariat in Dar es Salaam, Tanzania. ICSU ROA was invited to attend the Forum on Education,

Capacity Building, and Climate Change: A Strategy for Collective Action in Africa that was held in Dar es Salaam, Tanzania from 27 June - 1 July 2010. The Forum explored the role of African universities in promoting education on climate change adaptation in the areas of research, curriculum development and teacher training, as well as examining issues of how to more fully engage civil society on adaptation through education outside the university. Dr Nyanganyura attended the event on behalf of the Regional Office and gave a lecture on *"Science Education and the Role of Universities in Promoting Adaptation to Climate Change in Africa"* with emphasis to the role of ICSU ROA and other civil society organisations. The presence of ICSU ROA at the Forum fostered its network drive and a good number of participants expressed interest in participating in the implementation of ICSU ROA projects especially those on climate change. During the Forum, an African Climate Research and Education Network (ACREN) was launched whose role would be to link African climate scientists and climate change activities on the continent, which include scientific research and climate change education. ICSU ROA was requested to play a leading role towards realising these goals.



6 ACTIVITIES - CONTINUED

6.5.2.6 GEOSS Africa Water Cycle Coordination Initiative (AfWCCI)

The Global Earth Observation System of Systems (GEOSS), an implementing arm of the intergovernmental Group on Earth Observation (GEO), organized a Symposium on the African Water Cycle in Addis Ababa, Ethiopia on 23 – 25 February 2011, to which ICSU ROA was invited. The workshop aimed at exploring how GEOSS could provide fundamental services to support water management in Africa, including convergence and harmonization of observational activities, new techniques, interoperability arrangements, and effective and comprehensive data management to strengthen the various on-going and planned water-related activities in Africa. Having recognized the regional commonality of water-related issues and socio-economic impacts caused by water-related disasters in Africa, such as floods, droughts and landslides, water scarcity, river and water environment degradation, and the effects of climate change, the need for convergence and harmonization of observational activities, techniques, interoperability arrangements, and effective and comprehensive data management became obvious as the most fundamental elements that can be addressed under the GEOSS framework, including activities, programs and guidelines under UN agencies. A major outcome of the workshop was therefore the establishment of the GEOSS African Water Cycle Coordination Initiative (AfWCCI). The purpose of AfWCCI would be to develop a platform where scientists and professionals can come together to test and validate tools, and make them freely available to experts for informed water resource decisions. The intention is to implement pilot projects within specified transboundary basins as a first step towards improved cooperation and data sharing, as well as demonstrating increased use and application of Earth observations for effective management in cooperation with several River

Basin Authorities and initiatives. The system will be built on a paradigm that incorporates issues of international water resource management, climate change, biodiversity, health and development perspectives.

Representing ICSU ROA, Dr Enow sat on the panel discussing Projects to demonstrate GEO principles as part of the steps for implementation of AfWCCI. In mapping out these project areas, consideration was given to the challenges facing Africa in the water sector as raised in the various technical sessions, as well as on-going activities by other networks or organizations, including the ICSU ROA science plans. The overall objectives of AfWCCI fall very much in line with ICSU ROA's proposed research areas in the domain of water resource management. AfWCCI will therefore constitute an important partner in the implementation of water-related aspects of the ICSU ROA science plans. ICSU ROA also undertook to feature AfWCCI at the Rio + 20 Regional workshop for Africa in May – June 2011, and provide an opportunity for African water issues from the GEOSS/AfWCCI perspective to be factored into the recommendations that would be made at the Rio+20 forum.

6.5.2.7 African Footprint/Human Development Framework (AFHDF)

ICSU ROA, United Nations Economic Commission for Africa (UNECA) and the Global Footprint Network have jointly developed a project on *"African Footprint/Human Development Framework (AFHDF): Accelerating Africa's Development Success."* Through a Memorandum of Understanding (MoU) concluded in July 2010, the three parties are committed to collaborate in producing an African Footprint/human development framework. The MoU was an outcome of the first consultation meeting jointly organized by UNECA and ICSU-ROA on *"Science of Climate Change and*

Socio-economic Prosperity in Africa” on 17-19 March 2010 in Addis Ababa, Ethiopia. Dr Enow represents ICSU ROA in the consortium.

The aim of AFHDF is to guide African countries in establishing their ecological balance sheet, give them a tool to manage their resources and secure their future, and help them identify effective negotiation strategies in the climate negotiations and other possible resource negotiations. The project is structured in five phases, namely, (i) awareness raising workshop during the second Science with Africa Conference; (ii) project development and fundraising; (iii) Footprint validation; (iv) Footprint interpretation and country applications; and (v) African Footprint/Human Development fact book and strategy.

The first phase of the project was accomplished during the second Science with Africa Conference in June 2010, in Addis Ababa, Ethiopia. For the pilot phase of project development four countries (Ghana, Morocco, Rwanda and Tanzania) have been selected and UNECA has started consultations with its focal points in the various countries to create a core group of officials from the Ministries of Science and Technology, Environment, Finance, or other, to lead the footprint process.



6.5.2.8 Bioenergy Market Africa: Expanding sustainable bioenergy production

Bioenergy Markets Africa is the 21st edition in the Bioenergy Markets Global Series organised by Green Power Conferences. The workshop, organised in Maputo, Mozambique on 11-13 May 2010, was meant to expand on bioenergy issues in southern Africa and link them to other initiatives in other parts of the globe. The Workshop was attended by African government and local community officials, investors in bioenergy, academics and scientists from African universities/institutions, NGO representatives as well as representatives for SADC energy sector. Dr Nyanganyura attended the event on behalf of ICSU ROA. The involvement of ICSU ROA gave an opportunity for the Office to meet, interact and exchange ideas with key players in bioenergy production from the continent as well as source potential implementers of ICSU ROA Sustainable Energy projects.

6.6 Strategic Partnerships

During 2010/11, ICSU ROA continued to collaborate with its traditional partners but also established new partnerships. Some of the partners with which significant interactions occurred during the period under review are listed below.

6.6.1 The National Research Foundation (NRF), South Africa

Being the host of the Regional Office, the NRF is one of the closest strategic partners of ICSU ROA. ICSU ROA has carried out several joint events with the NRF, particularly with the IR&C Directorate. Some of the spotlight events of the NRF/IR&C in which ICSU ROA was very involved during 2010/11 include:

6 ACTIVITIES - CONTINUED

(i) **RSSC Regional Workshop in Pretoria, August 2010.**

The South African National Office of the Regional Science Services Centre (RSSC) is hosted by the NRF within the IR&C Directorate. On 17 – 19 August 2010 a regional workshop of RSSC was organised in Pretoria to consolidate the modalities of participation of South Africa in the initiative. RSSC is an initiative of the German government aimed at setting up a Service Centre for Climate Change adaptation, land and water management in Southern Africa. The programme covers five countries namely, South Africa, Namibia, Angola, Zambia and Botswana. The regional workshop featured an overview of South Africa's climate change research activities and programmes, and a critical consideration of how the country should be involved in the initiative. Dr Enow represented ICSU ROA at the workshop and contributed to the analytical review of the initiative in terms of its implications, as well as the advantages, and added value to the climate change research agenda of South Africa. The RSSC initiative is of particular interest to ICSU ROA, considering the potential synergy between its scientific content and the ICSU ROA programme on Global Environmental change which includes climate change and adaptation.

(ii) **Hosting the 22nd CODATA Congress in Stellenbosch in October 2010.** See section 6.5.1.4.

(iii) **Hosting the IIASA regional workshop in Cape Town in January 2011.**

The IR&C Directorate of the NRF organised a SADC regional workshop on behalf of the International Institute for Applied Systems Analysis (IIASA) on 27 – 28 January 2011 in Cape Town, South Africa. The workshop was aimed at finalising IIASA's 10 year Strategic Plan – "Research for a Changing World" - with inputs from the South African research and policy-making communities on three key collaborative research areas namely, Energy and Climate Change;



Food and Water; and Poverty and Equity. ICSU ROA was very involved in the roll out of the workshop. Dr Madela-Mntla chaired one of the parallel sessions, Dr Enow was chief rapporteur of the workshop and he was also a panel presenter for one of the parallel sessions, while Dr Nyanganyura was rapporteur for several plenary and parallel sessions. The full report of the workshop is available at IIASA website (www.iiasa.ac.at).

(iv) IR&C Breakaway in February 2011. ICSU ROA was invited to the IR&C breakaway in Rustenburg, South Africa on 23 - 25 February 2011. Dr Nyanganyura attended the session and presented the activities of ICSU ROA, contextualising them within the framework of activities of IR&C as well as those of the RSSC. The breakaway session revealed several synergies and potential areas of collaboration between the three offices, and for which it was agreed to plan a follow-up workshop to map out possible long-term joint projects and funding opportunities for the implementation of science plans from these offices.

(v) ICSU Regional Consultation in Pretoria, March 2011. In preparation for the 30th ICSU General Assembly (GA) coming up in September 2011, the South African national ICSU Secretariat (part of the IR&C Directorate), on behalf of the South African National Board for ICSU, organised a consultative workshop for African National Members of ICSU including non-members who are targeted for membership. The purpose of the consultation was to discuss and agree on a common position on issues to be raised at the GA. ICSU ROA was instrumental in several aspects of the organisation of the workshop, including identification of resourceful outstanding African scientists who are not ICSU National Member

representatives. The workshop was attended by Dr Madela-Mntla, Dr Enow and Dr Nyanganyura.

In addition to these engagements, ICSU ROA staff have often been called upon by the NRF to assist in evaluation of researchers for rating, evaluation of project proposals for funding, and sitting on interview panels for staff recruitment.

The NRF staff and management have also provided support to ICSU ROA activities. Most prominent among these was the very important role played by the International Science Liaison manager (IR&C Directorate) at the workshop on implementation of ICSU ROA science plans (see section 6.1). Besides chairing one of the workshop sessions, she provided very valuable information concerning project funding possibilities and avenues, with particular reference to the NRF bi- and multi-lateral agreements scheme.

The NRF, through its IR&C Directorate, also provided funding for the ICSU ROA guest speakers and students invited to the 22nd CODATA Congress in October 2010 in Stellenbosch (see section 6.5.1.4).

6.6.2 The Department of Science and Technology (DST), South Africa

Apart from being the main funder of ICSU ROA, the DST has emerged as one of the main partners of the Regional Office, especially in the implementation of its science plans. During 2010/11 the DST specifically took special steps to boost activities of the Regional Office by alleviating a financial crisis in which ICSU ROA found itself at the beginning of the financial year. The DST has also expressed strong support for ICSU ROA's Diaspora Project.

6 ACTIVITIES - CONTINUED



6.6.3 The German Federal Ministry of Education and Research

The German Federal Ministry of Education and Research (BMBF) has proven to be a very reliable partner of ICSU ROA. The German Embassy in Pretoria serves as a strong bridge between BMBF and ICSU ROA. During the 2010/11 financial year BMBF provided funding to cover the full cost of participation of 10 African scientists at the IUFoST conference in Cape Town, South Africa in August 2010 (see section 6.5.1.2). BMBF has pledged its support to ICSU ROA in its programmes and activities related to Capacity-Building.

6.6.4 The Swedish International Development Agency (Sida)

Sida has been a strong partner of ICSU ROA for a long time, and has supported the Regional Office in some major events such as the organisation of the 29th ICSU General Assembly in 2008. After a latent period following changes in leadership

both at ICSU ROA and at Sida, the partnership between the two organisations was rekindled in March 2011 through a meeting of ICSU ROA staff with Neda Farahbakhshazad who has recently been seconded from Sida to the Swedish Secretariat for Environmental Earth Systems Science (SSEESS). The meeting which was held at the ICSU ROA Secretariat on 23 March 2011, focused on collaboration between the Sida Research Secretariat and ICSU for project funding.

It emerged from the discussions that the Sida Research Secretariat would not directly fund Regional projects such as those submitted by ICSU ROA previously. Regional projects can only be funded as part of a global programme through the ICSU Secretariat in Paris. The dilemma is that the Sida Regional Secretariat which has the mandate to fund regional projects does not dispose of the funds to do so. Alternative strategies for obtaining Sida funding for regional projects were discussed and would be explored by ICSU ROA. Prior to that ICSU ROA would appreciate an official response from Sida regarding the project proposals that had been submitted in 2009.

In the meantime, ICSU ROA, in collaboration with SSEESS/ Sida and other development aid agencies have planned to organise a workshop between researchers and the major funding and development agencies, to establish a common understanding of the priorities and objectives of the research funding communities, as a guide towards designing research proposals..

6.6.5 Global Facility for Disaster Reduction and Recovery (GFDRR)

During GEM outreach meeting held in Washington DC in June 2010 (section 6.5.2.4) Dr Enow and Prof. Domenico

Giardini (GEM Steering Committee Member) held a side meeting with the Global Facility for Disaster Reduction and Recovery (GFDRR) of the World Bank to discuss possibilities of obtaining funding from the Bank for ICSU ROA geohazards projects. It was revealed at the meeting that the GFDRR had made commitments to some African Regional Economic Communities (RECs) in disaster reduction programmes. Through this commitment, GFDRR may fund the ICSU ROA project on earthquakes as part of the GEM Africa Regional Programme. In this regard GFDRR promised to contact its other global partners to raise collective funds for the African Regional programme of GEM as well as for other regional Programmes in other parts of the world. GEM Africa was encouraged to revise the ICSU ROA proposal according to GEM requirements. The revised proposal was submitted by GEM Africa through GEM foundation in October 2010. The response is still awaited.

6.7 Interaction with Intergovernmental Bodies

In the quest to drive its “science for policy” agenda, ICSU ROA has continued to interact with national government institutions as well as intergovernmental bodies to ensure that science is integrated into policy development and that relevant policies and decision-making processes take into account both scientific knowledge and the needs of science. The Regional Office has therefore been very involved in activities organised by the African Union Commission, UN agencies (UNECA and UNESCO), as well as Regional Economic Communities. Some of the activities carried out with these bodies during the 2010/11 financial year are described below.

6.7.1 African Union Commission (AUC)

The African Union Commission and UNECA organised the Seventh African Development Forum (ADF-VII) on 10 - 15 October 2010 in Addis Ababa, Ethiopia on the theme: “Acting on Climate Change for Sustainable Development in Africa”. ADF is a joint initiative of AUC, UNECA and the African Development Bank (AfDB), aimed at addressing the challenges of development in Africa and establish a consensual African-driven development agenda. The Forum brought together Africa’s top political leadership and policy makers, as well as policy shapers, including the private sector, civil society and academia.

Dr Nyanganyura represented ICSU ROA at the forum. He chaired a session on the ecological footprint and biodiversity as part of the initial steps in implementation of the AFHDF project (see section 6.5.2.7). It emerged from this session that the ecological footprint is the world’s premier measure of humanity’s demand on nature and provides an indicator of the pressure on ecosystems and biodiversity by measuring the competing level of ecological demand that humans place upon the biosphere. The footprint uses existing technology to measure how much land and water it takes to produce the resources consumed by the human population and to absorb resulting carbon dioxide emissions.

ICSU ROA used the ADF as a platform to understand the priority issues on the continent from the perspective of different role players in the climate change arena, in order to appropriately align its programmes and activities to be of benefit to society. It was also an opportunity for ICSU ROA to raise public awareness of its role and activities on the continent, and to establish a strong link between science and society.

6 ACTIVITIES - CONTINUED



6.72 New Partnership for Africa's Development (NEPAD)

ICSU ROA and the NEPAD Agency have continued to work together in areas of common interest. During the 2010/11 ICSU ROA and the NEPAD Science and Technology Division jointly prepared research project proposals on climate change and submitted them to the Swedish International Development Agency (Sida) for funding consideration. The proposed programme aims at contributing to sustainable

socio-economic development in Africa through harnessing science, engineering, technology and innovation for climate change adaptation and mitigation. The implementation of the proposed projects will seek to develop climate change risk, vulnerability and resilience maps for policy making and programme development at regional and continental levels as well as to develop, adapt and promote adoption of climate change adaptation and mitigation technologies. The proposal is still under review by Sida.

6.7.3 United Nations Economic Commission for Africa (UNECA)

ICSU ROA has worked very closely with UNECA on several activities. The two organisations, together with the Global Footprint network, have developed, and are implementing a project on the African Footprint/Human Development Framework (AFHDF - see section 6.5.2.7). Implementation of the AFHDF project started at the second Science with Africa Conference organised by UNECA in Addis-Ababa on 23 – 25 June 2010, where an awareness-raising presentation was given by global Footprint network. This presentation was delivered in a special session on “Green Science and Technology” co-convened by ICSU ROA and UNECA. Dr Enow represented ICSU ROA at the event.

The purpose of the Science with Africa conference was to identify policies, measures and mechanisms for creating a favourable environment that facilitates and exploits innovation and entrepreneurship to meet Africa’s pressing challenges and future opportunities. The Session on “*Green Science and Technology*” examined the opportunities of exploring emerging technologies such as nanotechnology for environmental sustainability. In particular, the electric car technology was presented as a suitable strategy for recycling waste from the electronic industry, in addition to reducing the carbon footprint through reduced use of fossil fuels. The application of nanotechnology in drug formulation was also discussed. The possibility for exporting energy from Africa’s huge wind and solar energy potential was also discussed, among other emerging green technologies.

Another event associated with the SWA II conference was the launch of the African Technology Development and Transfer Network. Dr Enow was invited to represent ICSU ROA on the network. This network provided an opportunity for ICSU ROA to interact with several other networks working in various areas of science and technology for socio-economic development. Most relevant to ICSU ROA programmes was the African Network for Drugs and Diagnostics Innovation (ANDI). ANDI was seen as a resourceful network that could make valuable contributions to the implementation of the ICSU ROA science plan on Health and Human Well-being.

A follow-up on the implementation of the AFHDF project was done at the 7th African Development Forum jointly organized by UNECA, AUC and AfDB (see section 6.7.1) Dr Nyanganyura represented ICSU ROA at the Forum.

ICSU ROA is also working together with UNECA to publish a book on climate change science in Africa (see section 6.4.1.2). The book, which will be written in English and French, seeks to present the climate change activities on the continent as well as other relevant issues.

Financial Report
Annexes



7 FINANCIAL REPORT

The financial resources and expenditure of ICSU ROA during 2010/11 are summarised below

INCOME AND EXPENDITURE STATEMENT FOR THE YEAR ENDED 31 MARCH 2011

Description	Budget (ZAR)	Actual (ZAR)	Notes
INCOME			
Brought forward from previous year	-	-1,564,603	1
NRF contribution	2,055,000	3,677,839	2
DST Allocation	2,000,000	1,576,360	3
ICSU contribution	575,000	371,637	4
UNESCO contribution	400,000	-	5
Donation from BMBF (Book project)	147,143		
Fixed Assets (reversal of payment)	10,030		
TOTAL CASH INCOME	5,030,000	4,218,406	
EXPENSES			
Books and journals	50,000	-	
External audit fees	-	1,4273	
Computer requisites	24,000	853	
Meetings and Conferences (venues)	73,000	195,541	
Meetings and Conferences (entertainment)	83,000	5,802	
Meetings and Conferences (travel, accommodation and subsistence)			
Fees for services	55,000	107,160	
Marketing	60,000	1,154	
Printing and Stationery	45,000	58,467	
Telephone and postage	36,000	56,198	
Recruitment	46,780	132,776	
Staff training	60,000	-	
Other expenses (including bank charges)	87,000	1,584	
Total Running Expenses	2,139,000	1,169,744	
Staff Salaries	2,891,000	1,843,576	
TOTAL EXPENDITURE	5,030,000	3,013,320	
Balance Carried Forward	-	1,205,094	6

7 FINANCIAL REPORT – CONTINUED

Notes:

1. The origin of this deficit is explained in the 2009/10 Annual report. The deficit as shown here is more than the amount reflected in the 2009/10 Annual report because the ICSU contribution for 2010/11 was received in February 2010 and reflected as income for 2009/10. That contribution is appropriately reported here to reflect the true picture of the annual cash contributions from ICSU.
2. The budgeted NRF contribution was intended to cover the salary of 5 staff (excluding the director. However, due to failure to secure the DST allocation the NRF paid the salary of four staff (including three months for the director who took office in January 2011) and provided additional funds to cover the running costs.
3. The DST allocation as per the budget was not received. However, the DST paid in R1,576,360 to offset the deficit brought forward from the previous year.
4. The ICSU contribution for 2010/11 was €35,000 instead of the expected €40,000 as per the budget.
5. The expected contribution from UNESCO (US\$ 50,000) for joint activities as provided for in the framework agreement between ICSU and UNESCO was not received.
6. The DST contribution of R1,576,360 to offset the previous deficit was received at the end of the financial year and could not be spent.

ANNEXES

Annex A: Staff of ICSU ROA Secretariat

NAME	POSITION	DATE OF EMPLOYMENT
DR EDITH MADELA-MNTLA (South Africa) e.mntla@icsu-africa.org	Regional Director	01 January 2011
MS ZANELE MABENA (South Africa) zanele.mabena@nrf.ac.za	Personal Assistant & Administrator	01 July 2011
DR ACHUO ENOW (Cameroon) a.enow@icsu-africa.org	Programme Specialist	27 March 2006
MR BONGANI MAHLALELA (South Africa) b.mahlalela@icsu-africa.org	Liaison and Communications Officer	01 October 2007
DR DANIEL NYANGANYURA (Zimbabwe) d.nyanganyura@icsu-africa.org	Programme Specialist	01 August 2008

ANNEXES - CONTINUED

Annex B1: Composition of the ICSU RCA till 31 December 2010

STATUTORY MEMBERS	
<p>DOMINIC W. MAKAWITI - Chairman (2005-2007; 2008-2010) Deputy Vice Chancellor – Academic Maseno University (Kenya) dmakawiti@maseno.ac.ke</p>	<p>FRANCIS P. GUDYANGA (2005-2007; 2008 - 2010) Permanent Secretary, Ministry of Science and Technology Development; Chairman, Research Council of Zimbabwe (Zimbabwe) fpgudyanga@zarnet.ac.zw</p>
<p>GABRIEL B. OGUNMOLA (2005-2007; 2008 - 2010) Chairman: Institute of Genetic Chemistry and Laboratory Medicine University of Ibadan, (Nigeria) presidentnascience@yahoo.com, gbogunmola@yahoo.com</p>	<p>MANUEL LUIS CHENENE (2005-2007; 2008 - 2010) Co-ordinator, Scientific Council of the Scientific Research Association of Mozambique (Mozambique) chenene@zebra.uem.mz</p>
EX-OFFICIO MEMBERS	
<p>PATRICIA OCAMPO-THOMASON International Council for Science (ICSU) Science Officer (France) patricia@icsu.org</p>	<p>ROCKY SKEEF Acting Director ICSU Regional Office for Africa (South Africa) rocky@nrf.ac.za</p>
<p>ROBERT KRIGER (representing the NRF) Executive Director, International Relations, National Research Foundation (South Africa) rskriger@nrf.ac.za</p>	<p>URI SHAMIR Representative of ICSU EB Water Research institute, Technion – Isreal Institute of Technology (Israel) shamir@tx.technion.ac.il</p>

Annex B2: Composition of the ICSU RCA since February 2011

STATUTORY MEMBERS	
<p>AMEENAH GURIB-FAKIM (Chairperson) University of Mauritius (Mauritius) fakima@uom.ac.mu</p>	<p>JOSEPH K KANYANGA Zambia Meteorological Department (Zambia) jk_kanyanga@yahoo.com</p>
<p>ABDOURAHAMANE KONARE University of Cocody (Cote D'Ivoire) konarea@yahoo.com , abdou.konare@univ-cocody.ci</p>	<p>SAMUEL BABATUNDE AGBOLA University of Ibadan (Nigeria) babatunde.agbola@gmail.com</p>
<p>MOHAMMED ELHASSAN University of Gezira (Sudan) elhasans@yahoo.com</p>	<p>TITO FERNANDES Nampula Lurio University (Mozambique) profccattifernandes@gmail.com</p>
<p>VINCENT NGWANG TANYA Ministry of Scientific Research and Innovation (Cameroon) vntanya@yahoo.com</p>	<p>URI SHAMIR Representative of ICSU EB Water Research institute, Technion – Isreal Institute of Technology (Israel) shamir@tx.technion.ac.il</p>
EX-OFFICIO MEMBERS	
<p>Deliang Chen Executive Director International Council for Science (ICSU) (Paris, France) deliang.chen@icsu.org</p>	<p>Edith Madela-Mntla Regional Director ICSU Regional Office for Africa (South Africa) e.mntla@icsu-africa.org</p>
<p>Nithaya Chetty (representing the NRF) Associate Professor of Physics University of Pretoria (South Africa) Nithaya.Chetty@up.ac.za</p>	<p>Uri Shamir (Representative of ICSU EB) Water Research institute, Technion – Israel Institute of Technology (Haifa, Israel) shamir@tx.technion.ac.il</p>

Annex C: ICSU Members and Associates in Africa

Annex C1 - ICSU National Members in Africa

Angola:	Foundation of Science and Development (Member since 2010)
Botswana:	Ministry of Communications, Science and Technology of Botswana (Member since 2006)
Burkina Faso:	Centre National de la Recherche Scientifique et Technologique (Member since 1981)
Cameroon:	Cameroon Academy of Sciences (Member since 1999)
Côte d'Ivoire:	Académie des Sciences, des Arts, des Cultures d'Afrique et des Diasporas Africaines (Member since 1992)
Egypt:	Academy of Scientific Research and Technology (Member since 1925)
Ethiopia:	Ethiopian Science and Technology Agency (Member since 2006)
Kenya:	Kenya National Academy of Sciences (Member since 1980)
Lesotho:	Department of Science and Technology (Member since 2007)
Malawi:	National Research Council of Malawi (Member since 2006)
Mauritius:	Mauritius Research Council (Member since 2005)
Morocco:	Centre National de la Recherche Scientifique et Technique (Member since 1925)
Mozambique:	Scientific Research Association of Mozambique (Member since 1999)
Namibia:	Ministry of Education: Directorate of Research, Science and Technology (Member since 2008)
Nigeria:	Nigerian Academy of Science (Member since 1963)
Senegal:	Association des Chercheurs Sénégalais (Member since 1993)
Seychelles:	Seychelles Centre for Marine Research and Technology (Member since 1983)
South Africa:	National Research Foundation (Member since 1919)
Swaziland:	National Research Council (Member since 1993)
Tanzania:	Tanzania Commission for Science and Technology (Member since 2004)
Togo:	Chancellerie des Universités du Togo (Member since 1993)
Uganda:	Uganda National Council for Science and Technology (Member since 1995)
Zimbabwe:	Research Council of Zimbabwe (Member since 1989)

Annex C2 - ICSU National Observers in Africa

Ghana:	Ghana Academy of Arts & Sciences (Member since 1961)
Rwanda:	Kigali Institute of Science and Technology (Member since 2006)
Sudan:	National Centre for Research (Member since 1974)
Zambia:	Zambia Academy of Sciences (Member since 2006)

Annex C3 - ICSU National Scientific Associates in Africa

Madagascar:	Ministère de l'Enseignement Supérieur et de la Recherche Scientifique (Member since 1970)
Tunisia:	Université Tunis El Manar (Member since 1931)





Strengthening international science for the benefit of society



ICSU

International Council for Science

ICSU Regional Office for Africa

PO Box 13252

Hatfield, 0028

South Africa

Tel: +27 (0) 12 481 4090 • Fax: +27 (0) 12 481 4084

Email: director@icsu-africa.org or secretariat@icsu-africa.org

Website: www.icsu-africa.org