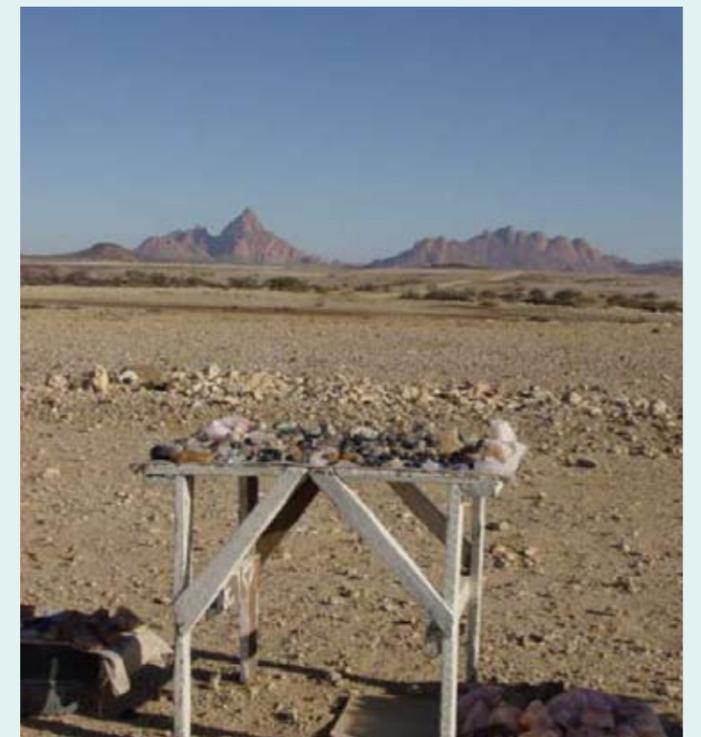


Biennial Report

on UNESCO
Science Activities by the Field
Offices in Africa
(2008-09)



United Nations
Educational, Scientific and
Cultural Organization

Organisation
des Nations Unies
pour l'éducation,
la science et la culture

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List of Abbreviations

ADB	African Development Bank
AfriMAB	African Network of Biosphere Reserves
AGRHYMET	Centre Regional de Formation et d'Application en Agrométéorologie et Hydrologie Opérationnelle
AMCEM	African Ministerial Conference on environment
AMCOW	African Ministerial Conference on Water
ANSTI	African Network of Scientific and Technological Institutions
AU	Africa Union
AUC	Africa Union Commission
BR	Biosphere Reserves
BSP	Biennial Sectoral Priority
CAWHFI	Central Africa World Heritage Forest Initiative
COVIDSET	Conference of Vice-Chancellors, Deans of Science, Engineering and Technology
CSIR	Council for Scientific and Industrial Research
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DAAD	German Academic Exchange Programme
DWAF	Department of Water Affairs and Forestry
ECOWAS	Economic Community Of West African States
FRIEND	Flow Regimes from International and Experimental Network Data
GWP	Global Water Partnership
HELP	Hydrology Environment Life and Policy
ICIWaRM	International Centre for Integrated Water Resources Management
ICSU	International Council for Science
IHP	International Hydrology Programme
IOC	Intergovernmental Oceanographic commission
IOCEA	Intergovernmental Oceanographic commission Regional committee for Central and Eastern Atlantic
IOCWIO	Intergovernmental Oceanographic commission Regional committee for West Indian Ocean Region
IPCC	Intergovernmental Panel on Climate Change
IRD	L'Institut de recherche pour le développement
ISARM	Internationally Shared Aquifer Resources Management
IUCN	International Union for Conservation of Nature
IWRM	Integrated Water and Resources Management
JIIHP	Joint International Isotope Hydrology Programme
KNUST	Kwame Nkrumah University of Science and Technology
LDCs	Least Developed Countries
MAB	Man and Biosphere
MAR	Managed Aquifer Recharge

MDG	Millennium Development Goals
MLA	Main Line of Action (UNESCO regular programme)
NATCOM	National commission for UNESCO.
NEPAD	New partnership for Africa's Development
ODINAfrica	Ocean Data and Information Network for Africa
PRSP	Poverty Reduction a Strategy Paper
RBT	réserves de biosphère transfrontalières
S&T	Science and Technology
SADC	Southern Africa Development Community
STI	Science , Technology and Innovation
TBA	Trans-Boundary Aquifers
TBR	Trans-Boundary Biospheres Reserves
UNDAF	United Nations Development Assistance Framework
UNDP	United nations Development Programme
UNEP	United nations Environment Programme
UNU	United Nations University
UWMP	Urban water Management programme
WEGSA	Women Engineers and Girl Scientists in Africa
WH	World Heritage

Disclaimer

The information provided in this booklet has been provided by UNESCO programme officers in the various field office in Africa. Any errors should be brought to the attention of the nearest UNESCO field office in Africa.

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Foreword

The UNESCO Regional Office for Science and Technology in Africa, based in Nairobi, Kenya is responsible for the development, planning and reporting on the UNESCO programme activities in science in Africa. The Office carries out this responsibility with the assistance of several science Programme Specialists based in eleven (11) of the UNESCO Offices in Africa. In 2008-09, the science programme specialists working individually and as a team, implemented several activities at national, sub-regional and regional levels. During this period UNESCO Science Programme activities were implemented in 36 out of the 46 sub-Saharan African countries. Almost every country in the region which requested UNESCO assistance in the field of science received some positive response even if it was not at the level expected.

In addition, the Regional Office organized several regional activities (training workshops, regional fellowship awards, and major conferences) in the five (5) disciplines of science currently administered in UNESCO. Major regional conferences were organized in Ecological Sciences (ECO), Hydrology (HYD), Ocean Science (IOC), Earth Sciences (EES) and Basic and Engineering Sciences (BES) to discuss important emerging issues, share experiences and develop a common approach to address problems.

This book is a biennial report on activities by the UNESCO Science field staff for the period 2008-09. It highlights only the major activities. It therefore does not include every activity that was carried out by the field offices in Africa. Furthermore, the book does not refer to UNESCO activities that were carried out by Programme Specialists based at UNESCO Headquarters in Paris.

The objective is first to bring to the attention of member states the kind of work UNESCO has done in the region, and second, to publicize to other partners within and outside the UN family in the region, the work of UNESCO in science. It is hoped that through these examples of work we have done in the past, UNESCO's role in science and technology for development will be appreciated and our partners will identify possible entry points for the Organization in the development and implementation of national policy and plans.

The book is divided into two parts. The first part presents activities carried out in each country or at sub-regional level (involving 3-4 countries). The countries are presented in alphabetical order. The second part presents regional activities that usually benefit more than one sub-region.

It is our sincere hope that all readers from member states, especially those from Africa will find the information in this book useful.



Joseph G.M. Massaquoi
Director
UNESCO Regional Office for Science and Technology in Africa

Introduction

1.1. Background

In October 2008, UNESCO organized its 34th General Conference during which the Programme and Budget for 2008-09 was approved. The programme which identified priority and global actions was published as document 34 C/5 . Immediately after the adoption of the 34 C/5, the UNESCO Regional Office for Science and Technology for Africa, based in Nairobi, Kenya, convened a meeting of all Science Programme Specialists in Africa in order to put the approved global programme into national and regional context. The idea was to identify those aspects of the UNESCO global programme which match those of the national priorities and allocate financial resources for their implementation. At the end of the exercise, a document entitled "UNESCO Science Programme Activities in Africa 2008-09" was published and widely circulated. The activities highlighted in the latter were implemented in the biennium and this book, "Biennial Report on UNESCO Science Activities by field offices in Africa, 2008-09", is a summary account of the results from those activities.

1.2. Implementation Procedure

There are several different types of activities in the UNESCO science programme and therefore their implementation procedures and participation in them vary and this may explain some of the differences, from country to country, in the number of UNESCO science activities. For activities such as technical assistance to member states for a particular project (e.g. review of science policy) UNESCO Programme Officers respond to requests from member states. Thus only those countries that make such requests are able to benefit. For capacity building activities, training workshops / courses / seminars and the award of fellowships, UNESCO publicizes them to all member states and invites applications from individuals and/or nominations from governments and institutions. There are also other activities that are location-specific which can benefit only certain countries (e.g. coastal countries are selected for participation on Ocean Science programmes).

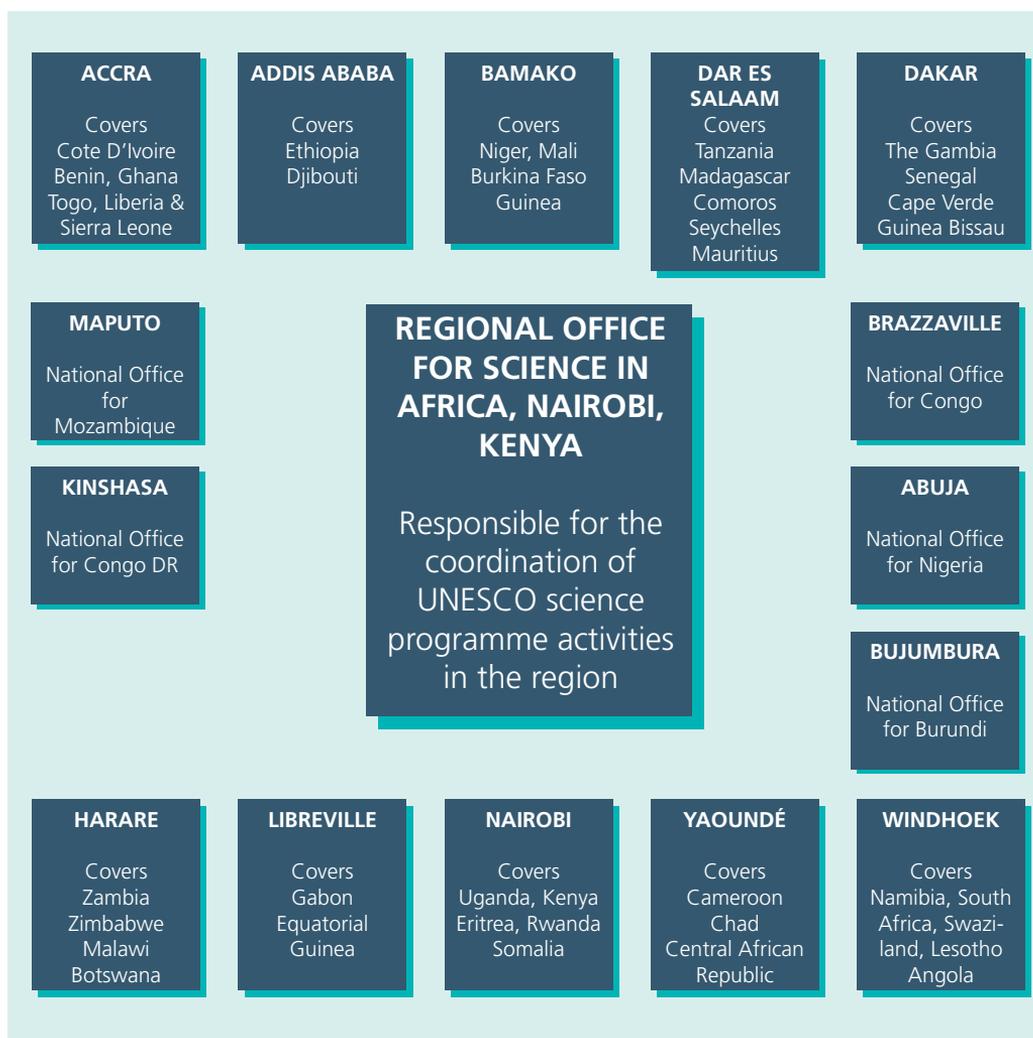
Notwithstanding the above, the UNESCO Programme Officers in the African Field Offices ensured that almost all countries in the region profited from at least one UNESCO science activity.

1.3. Responsibilities for Science Programme Implementation in Africa

Under the decentralized structure, a significant part of UNESCO science budget for Africa is implemented through a network of Field Offices. There are a total of 15 Science Programme Officers located in eleven (11) Offices. The Regional Office for Science, based in Nairobi is responsible for the coordination of the programme activities of all the Science Programme Offices. In Figure 1, the list of Science Programme Officers in Africa during the period under review is presented. In Figure 2, the geographical coverage of the various UNESCO Field Offices is shown. The activities presented in this booklet have been implemented by the Programme Officers located in the designated Field Offices.

¹ Document 34 C/5 is the fifth document tabled at the 34th General Conference of UNESCO held in Paris in October 2007

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PART I-ACTIVITIES LISTED BY COUNTRIES

(ANY QUERIES OR REQUESTS FOR ADDITIONAL INFORMATION ON THE ACTIVITIES LISTED IN THIS SECTION SHOULD BE ADDRESSED TO THE NEAREST UNESCO FIELD OFFICE IN AFRICA. SEE FIGURE 2 FOR LOCATION OF THE FIELD OFFICE UNDER WHICH EACH COUNTRY FALLS)

Angola

With the assistance of UNESCO Windhoek, the government of the Republic of Angola has identified the Parque Nacional do Iona area in the Namibe Province as a potential site for the country's first Biosphere Reserve. A study has been produced to confirm the feasibility of the area of the Iona National Park to become the First Biosphere Reserve in Angola, as well as to assess several features relevant to the planning of related upcoming activities, furthering the fulfilment of the criteria for the area to qualify as a UNESCO Biosphere Reserve. UNESCO Windhoek and the Government of Angola strive for the Biosphere Reserve to be incorporated to the World Network of Biosphere Reserves by 2011.



Iona National Park, Angola

Benin

During the biennium 2008-2009 the following six activities belonging to International Hydrology Programme (IHP), MAB and basic science programmes were implemented in Benin:

- In the framework of the International IHP programme within its major activity on Climate change impacts on hydrological cycle, and consequent impact on water resources, a study has been conducted with the support of the office by the National IHP committee on the evidence of climate variability and change and its impacts on water resources. A national document has been prepared and the findings were presented by the chairman of the National IHP committee to the ECOWAS regional dialogue forum on climate change held in Cotonou Benin from 18 to 22th October 2008. IHP national committee will continue to use the findings for awareness raising at all levels regarding climate change impacts on water resources in the country.
- In the framework of the International IHP programme within its major activity on the associated programme ISARM (Internationally Shared Aquifer Management), a study has been conducted on the transboundary hydrogeological system Keta shared. This study is a follow up to the Action Plan of the ISARM West Africa network established in 2007 who agreed to prepare an Atlas for transboundary aquifers in the sub-region. In this framework, data and information on the Keta hydrogeological basin have been collected and analyzed by the Benin ISARM focal point under the supervision of the Benin National IHP committee. On all the data within the different countries sharing the systems namely Togo, Benin, Ghana and Nigeria, the ISARM focal point for Keta basin will work with the different ISARM focal points of the countries to identify the transboundary nature of aquifers with the keta system and to produce a single report on the system.
- Within the framework of the MAB program, the National MAB committee hosted by the Benin Agency for Environment was supported to conduct Ecological mapping for the identification and characterization of three new potential sites for nomination as biosphere reserve. These sites are "la foret Marechageuse de Lokoli", "reserve communautaire d'Adjamé" and "la forêt classée de la Lama ». The Ecological mapping reports produced will be used by the national MAB committee to prepare the necessary complementary elements in order to

constitute the dossier for application for biosphere reserve nomination.

- Also within the framework of the MAB program the national MAB committee was supported to conduct study on the assessment of the impacts of Climate variability and change impact on Pendjari Biosphere reserve with a focus on water resources and proposition of adaptation measures. The findings of the study presented in a report will be shared among all the stakeholders involved in the management of the biosphere reserves and could be used for awareness raising at all levels for a sustainable management of the site.
- Five pilot schools have been selected to introduce the culture of science and technology to the teachers and the pupils. Pedagogical training materials on the culture of science and technology have been prepared and used to train the teachers who later train pupils. On the basis of the teaching received, pupils have asked to draw ideas on science and technology.
- In the framework of the promotion of the renewable energy for sustainable development, two pilot rural remote schools have been equipped with solar energy photovoltaic system for the electrification of classes, director accommodation and the installed internet café. The two schools are: public school of GOHONGOHOUE in the rural community of Kpomassè and rural school of DONA in the rural community of Djidja). The activity comprising also training on the maintenance and the used of ICT was implemented by MIERT in close collaboration with the ministry of elementary education.

Botswana

UNESCO Harare supported the Geology Club at the University of Botswana to undertake an outreach programme from 23-29 May, 2009. The objective of the outreach programme was to spread the geosciences knowledge to high school students doing pure sciences such as chemistry, physics, biology and maths. This exercise is significant in the sense that Botswana being a country whose economy is largely dependent on mineral resources deserves an outreach programme to sensitize the students, teachers and the community at large so that they could be better informed about International Year of Planet Earth (IYPE).

Burkina Faso

Conservation de la diversité biologique à travers la promotion des réserves de biosphères transfrontalières

Un atelier international sur les réserves de biosphère transfrontalières (RBT) en Afrique de l'Ouest s'est tenu du 12 au 17 février 2009 à Bamako. Organisé par le Bureau multi-pays de l'UNESCO à Bamako en collaboration avec le Ministère de l'Environnement et de l'Assainissement du Mali, la Commission Nationale Malienne pour l'UNESCO et la Commission Allemande pour l'UNESCO, cet atelier, a regroupé une trentaine de participants dont les représentants des organes de gestion des réserves de biosphère, les scientifiques et les points focaux MAB du Burkina Faso, de la Guinée, du Mali et du Sénégal.

Le but principal de cet atelier était de mettre en place un cadre de collaboration entre le Sénégal, la Guinée, le Burkina Faso et le Mali (et éventuellement d'autres pays de l'Afrique de l'Ouest) en vue de la création de réserves de biosphère transfrontalières. Au terme des discussions, les



Cérémonie d'ouverture de l'atelier international sur les RBT en Afrique de l'Ouest

participants maliens et burkinabés se sont engagés à créer une réserve de biosphère transfrontalière entre leurs deux pays, à savoir le Gourma-Sahel principalement à cause de ses éléphants.

La création d'une réserve de biosphère transfrontalière entre le Mali et la Guinée a également été discutée au cours de cet atelier.

Dans cette optique, un plan d'action et un mécanisme de création de RBT entre le Mali et les pays voisins susmentionnés ont été mis en place.

La fin de cet atelier a été couronnée par la signature d'un protocole d'accord entre le Ministère de l'Environnement et de l'Assainissement du Mali et le Bureau multi-pays de l'UNESCO à Bamako. Dans cet accord, les deux parties s'engagent à collaborer pour promouvoir la gestion transfrontalière des aires protégées et pour appuyer la création des réserves de biosphère transfrontalières entre le Mali, la Guinée et le Sénégal, d'une part, et entre le Mali et le Burkina, d'autre part.

Première Conférence Internationale sur les Filles et les Femmes en Sciences et Technologie en Afrique

La Première Conférence Internationale sur les Filles et les Femmes en Sciences et Technologies en Afrique a été organisée à Bamako, du 13 au 15 juillet 2009. Cette conférence a permis de renforcer les capacités nationales et régionales d'enseignement dans le domaine des mathématiques, des sciences fondamentales et des sciences de l'ingénieur. La documentation sur les bonnes pratiques dans le domaine des filles et des femmes en sciences et technologie a été mise à jour. De plus, un cadre prioritaire a été établi en vue de l'amélioration de la participation et des performances des filles et des femmes en sciences et technologie et dans les activités scientifiques. Parmi les participants, deux ressortissantes du Burkina Faso ont pris part à cette conférence.

Atelier International de Renforcement des Capacités dans le domaine de l'Enseignement des Mathématiques, des Sciences Fondamentales et des Sciences de l'Ingénieur

Les connaissances des représentantes du Burkina Faso et des autres pays en matière d'utilisation des TIC dans l'enseignement des sciences, des mathématiques, de l'ingénierie et de la technologie ont été améliorées au cours d'un Atelier International de Renforcement des Capacités dans le domaine de l'enseignement des mathématiques, des sciences fondamentales et des sciences de l'ingénieur (Ségou – Mali, du 17 au 18 juillet 2009). De plus, les participants ont acquis des compétences dans les domaines de la pédagogie, de l'orientation, du conseil et dans l'élaboration des programmes d'enseignement pour promouvoir la parité de genres dans les cours des sciences, des mathématiques, de l'ingénierie et de la technologie.

Première Ecole Régionale d'Énergie Solaire pour les pays Francophones d'Afrique

Le Bureau multi-pays de l'UNESCO à Bamako a organisé, du 30 novembre au 4 décembre 2009, en collaboration avec l'UEMOA et l'ISESCO, la Première Ecole Régionale d'Énergie solaire pour les pays francophones d'Afrique. Ont pris part à cette formation des ressortissants du Sénégal, du Burkina Faso, de Guinée Bissau, du Togo, du Niger, de la Côte d'Ivoire et du Mali. Parmi d'autres, les recommandations suivantes ont été formulées en vue d'améliorer les prochaines sessions de formation : la mise à disposition préalable de modules de formations adaptés aux besoins des pays, l'augmentation de la durée de formation, l'organisation biennale de la formation en alternance dans les différents pays de l'UEMOA, l'acquisition de plateforme pédagogique ainsi que de kits didactiques et la participation d'instituts spécialisés dans le domaine des énergies renouvelables.

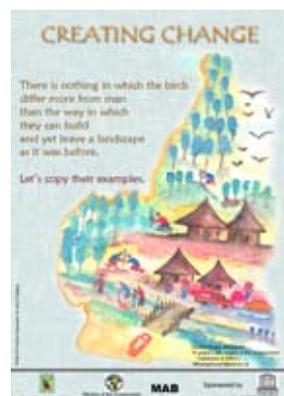
Burundi

UNESCO Nairobi Office sent a consultant to assist the government of Burundi to develop a Science, Technology and Innovation (STI) Policy. This project is ongoing and will be completed in the year 2010.

Cameroon

Support to Cameroon Children at TUNZA World Science Conference

Within the framework of assistance to the Ministry of the Environment, UNESCO supported the preparation of the 14 Cameroon participants to the 2008 TUNZA Conference in Stavanger, Norway including posters and travel of one girl child and one 'chaperone'.



Translation of the AfriMAB Charter

In June 2008, the AfriMAB Charter was translated into English by an expert from the Cameroon Forestry Ministry.

Evaluations of the Dja Biosphere Reserve and World Heritage Site

The Dja Reserve is a Biosphere Reserve since 1981 and a World Heritage Site since 1987.

In November 2009, a technical mission was undertaken with support from the Head of the Human Ecology Department of Brussels University; to assess strengths, weaknesses, threats and opportunities within the context of the recently approved management plan for the BR and the Madrid Action Plan.

In December 2009, within the Science support to the World Heritage Centre, technical support was provided to a joint IUCN/UNESCO evaluation mission to assess the state of conservation of the Dja World Heritage (WH) Site, following a recommendation of the WH Committee.

Both missions were undertaken with strong involvement of the Ministry of Forestry and the MAB focal point and have led to a number of recommendations, including potential linkages with the “Millennium Village” project that will be implemented from 2010-2015 in a cluster of villages south of the reserve; the transboundary



The Dja BR, impact analysis of mining developments through Landsat images

Dja-Odzala-Minkebe initiatives (GEF/TRIDOM and UNESCO/CAWHFI); and approaches to address threats in terms of unclear boundaries, bush meat industry and mining and other industrial developments.

Capacity Building of Indigenous Women to Adapt to Climate Change

Since December 2008, UNESCO has worked with the African Indigenous Women Organisation (AIWO) in Cameroon. Initial demonstration and training seminars in Yaoundé led to the development of a programme on introduction of firewood-efficient technology in the area south-west of Waza Biosphere Reserve, in the (Soudano-)Sahel region of northern Cameroon.

With support obtained from the GEF Small Grants Programme, a training programme has allowed 600 women to be trained in manufacturing the “fuel-less cooker” (heat retention cooker) and constructing efficient mud-stoves. The communication and information component targets 6000 households through the use of community radios and participative video.

Training of trainer workshop participants, manufacturing of the single pot mudstove and cooking bag.

Research in indigenous knowledge

A young researcher from Cameroon was supported to participate in the UNESCO colloquium “Localising products” in Paris in June 2009 and present a paper on valorization of the Grass-fields of Cameroon through the products of the Aframomum (jujube tree).



Training of trainer workshop participants, manufacturing of the single pot mudstove and cooking bag

Support to the Central Africa Forest World Heritage Initiative (CAWHFI)

Within the support of the Science sector to the World Heritage Centre, the CAWHFI programme, based in Libreville, was assisted with the organization of the programme steering committee meeting in Yaoundé in April 2009; and with the preparation of the submission of the transboundary landscape “Trinational de la Sangha” (TNS) as a World Heritage Site in January 2010.



One subspecies and various fruits of the Aframomum

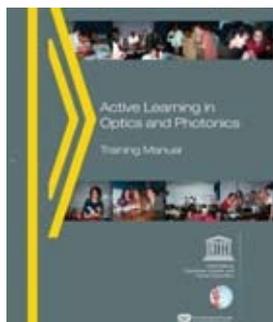
State of the Water Environment

Within the State of the Environment activity planned in the Cameroon UNDAF, UNESCO has taken the lead in the water sector. In partnership with the GWP and the University of Dschang, a stakeholder workshop was organized in October 2009 to define a set of indicators to monitor the State of Water. Subsequently, field work has been initiated to update some of the indicators.

UNESCO/IUCN/GWP Cameroon Water Partnership

In 2008, UNESCO, IUCN and the GWP formed a partnership in the water sector and identified national and regional areas of collaboration and potential co-financing with the African Water Facility of the ADB. This led to a joint workshop at IUCN in January 2009, followed by submission of 10 concept notes to the ADB. Three of these were identified as most relevant: Integration of IWRM in the higher education curricula of central Africa; Water management as a tool for conflict prevention; and Cartography of groundwater in Central Africa.

Women in Science



In 2008 a strategic planning workshop was hosted at the UNESCO Office for the Association of Women Engineers and Scientists in Cameroon (AFISC).

In order to assist women scientists to identify scholarships, a database of existing MSc programmes and associated scholarships was prepared in 2008 and is updated annually. Two professional women were assisted to identify suitable programmes and prepare submissions, including research proposals.

Basic and Engineering Sciences



Youth attend the Science au Sud expo

In December 2008, in partnership with the CEPAMQ Centre for Atomic Physics and Optics of the University of Douala, UNESCO/ICTP organised the first francophone sub-regional training workshop of the ALOP programme (Active Learning in Optics and Physics).

In the course of 2008/09, through the Families First Africa project, support was provided to allow the CIRCB (HIV/AIDS Reference Centre) to purchase laboratory reagents and ICT equipment for the documentation centre. UNESCO is on the scientific board of the CIRCB, chaired by French Nobel laureate Prof Luc Montagnier.

In January 2009, a mathematics seminar was supported at the University of Yaoundé, during which the Central African Network on Geometry and Topology (RAGTAAC) was formally launched.

During the first semester of 2009, support from UNESCO allowed the mobile exhibition "Science au Sud", organised by IRD (France), to extend its coverage to northern Cameroon. The exhibition consisted of tents with displays, posters and movies on science, and was animated by young local scientists.

Science Policy

In view of strengthening the role of science in Cameroon's national development policy, an evaluation of the integration of S&T and of Environment in national macro-economic policies was conducted in 2009. A draft report and policy brief with key recommendations was produced and will be discussed during a stakeholder workshop foreseen for the first quarter of 2010.

Central African Republic

Chair in Water Quality

In 2008, the Lavoisier Laboratory of the University of Bangui became UNESCO Chair in Water Quality. Given the challenges facing Chairs in developing countries, particularly LDCs, initial support has focused on mobilizing partnerships. Within UNESCO, support has been received from Higher Education (HED), Water Sciences (HYD), the National Commission and the Africa Department. The Chair has also been working closely with the UNESCO SIMEV Chair in Montpellier, France and attracted interest from other partners such as Unicef.



Key activities of the Chair during 2009 were

- Laboratory equipment received through UNESCO's participation programme.
- Support mission from UNESCO SIMEV Chair with courses on membranes and membrane processes.
- Seminar series on hydrology
- Technical support mission from UNESCO Yaoundé
- Water filter research project (image) with support from UNESCO SIMEV and French ODA.
- Donation of library books on hydrology through ADG/AFR

Science Policy

In July 2008, following a request of the Government of the CAR, a Consultancy mission was undertaken by the Director of the African Centre of Technology (Dakar) to undertake an analysis of the state of S&T and formulate recommendations.

Following the report of this mission, the University of Bangui has received support from UNESCO for the organization of a National Forum on Science, Technology and Innovation. The key objective of the Forum is to work towards a science policy framework and action plan. The University has delayed the event which will be held during the first quarter of 2010.

Manovo-Gounda St. Floris

Within the context of the support of the Science sector to the World Heritage Centre, a joint IUCN/UNESCO evaluation mission to this endangered Natural Heritage Site was undertaken in April 2009, resulting in a recommendation to the Government by the WH Committee to implement an emergency programme with UNESCO and IUCN.



The aerial survey confirms illegal pastoral activity and dramatic wildlife decline

Chad

Adaptation to desertification and climate change

In June 2008, support was provided to the organization of World Desertification Day, in partnership with the National Commission. Activities focused on raising youth awareness regarding measures to stop desertification, and in support of the Government's efforts to establish a green belt around N'Djamena.

Mobile science exhibition

During the second half of 2009, support was provided to IRD to extend its mobile exhibition "Science au Sud" to visit Maroua in northern Cameroun and N'Djamena in Chad.

Participation in science networks

During the first quarter of 2008, support was provided to allow the MAB focal point to participate in the 3rd MAB Congress, held in Madrid, and to the IHP focal point to attend the second regional IHP meeting, held in South Africa.

Zakouma

In November 2009, a joint mission was conducted by all sectors of the Yaoundé Office, during which the Science and Culture sectors held meetings with stakeholders regarding Zakouma national park. Subsequently, a consultancy missions was organised in 2009 to assess the feasibility of nomination as a natural heritage site and a second mission to prepare the dossier.

Cote d'Ivoire

During the biennium 2008-2009 the following three activities belonging to IHP and basic science programmes were implemented in Cote d'Ivoire.

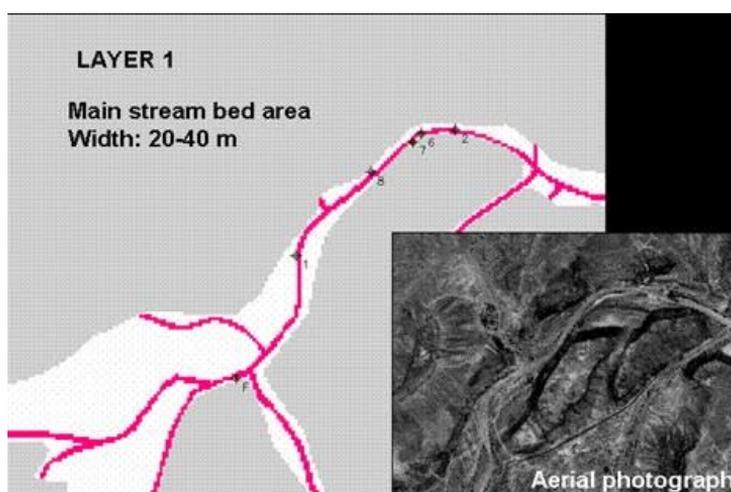
- In the framework of the International IHP programme within its major activity on Climate change impacts on hydrological cycle, and consequent impact on water resources, a study has been conducted with the support of the office by the National IHP committee on the evidence of climate variability and change and its impacts on water resources. A national report has been produced and the findings were discussed and disseminated during a national workshop. IHP national committee will continue to use the findings for awareness raising at all levels on climate change impacts on water resources in the country.
- In the framework of the International IHP programme within its major activity on the associated programme ISARM (Internationally Shared Aquifer Management), a study has been conducted on the transboundary hydrogeological system of Tano shared by Cote d'Ivoire and Ghana. This study is a follow up to the Action Plan of the ISARM west Africa network established in 2007 who agreed to prepare an Atlas for transboundary aquifers in the sub-region. In this framework, data and information on the Tano hydrogeological basin have been collected

and analyzed by the Benin ISARM focal under the supervision of the Cote d'Ivoire National IHP committee. One all the data within the different countries sharing the system, the ISARM focal point for Tano basin will work with Ghana ISARM focal point to identify the transboundary nature of aquifers with the Tano system and to produce a single report on the system.

- In the framework of the basic science programme, specifically on the promotion of basic science among youth particularly girls for study and careers, National Commission for UNESCO was supported in the framework for the organization of counseling workshops for two female high schools in the country namely Sainte Marie in cocody and Mamie Faitai of Bingerville. Awards have been given to the female students excelling in science studies.

Djibouti

The recharge mechanism of the towns of Oueah and Arta (Djibouti) is better understood)



Aerial photograph of the main area of interest

Groundwater resources cover more than 95% of the water supply in the Republic of Djibouti, and they are submitted to increasing stress by intensive pumping for growing water needs for people and agricultural activities. The Master Plan for water resources of the Republic of Djibouti (2000), the National Action Plan for Environment (2000) and the Initial National Communication of Djibouti to the Climate Change

Convention (2001) call for a better understanding of the groundwater aquifer systems in order to implement a sustainable groundwater management.

A study, based on a hydrogeological survey, that aims in the evaluation of the recharge processes and recharge itself for the purpose of a sustainable supply of groundwater resources to the towns of Oueah and Arta and the agricultural perimeters was commissioned to the Center d'Etude et de Recherche de Djibouti

The preliminary results obtained from the modelling in terms of recharge amount (Jalludin and Razack 2009), and in addition the calculation of the water balance on the site of Oueah (Abdillahi 2009) show that the groundwater resources are not overexploited as the total amount of water pumped for water supply is lower than the total annual recharge. However, the hydrochemical monitoring shows clearly the groundwater quality degradation. Such degradation appearing in terms of increasing of TDS, would be caused mainly by a local overexploitation and will need a significant review of the management of the aquifer.

The results of the research showed that the agricultural perimeters which can provide income for local rural people can be developed. Therefore the irrigation technique must be changed for better efficiency in water use. Drip irrigation technique can reduce water need for irrigation.

Eritrea

In April 2008, Ecological science unit was part of a joint mission to Asmara with Director of Nairobi Office and Culture programme specialist. The main objectives of the mission were to meet key stakeholders, both national and within the UN system, to identify possible activities in the field covered by UNESCO. For the Ecological programme, the counterparts met where the Ministry of Land, Water and Environment, the Ministry of Agriculture and the Ministry of Fisheries, as well as UNDP and World Bank officers in charge of environment. This first mission has been useful to put a base for further collaboration.

Ethiopia

Strengthening Science and Technology Capacity and Raising Awareness



Preliminary meeting for the establishment of the Ethiopian Academy of Science: UNESCO Addis supported the first meeting to discuss the establishment of an Ethiopian Academy of Sciences.

As a result a launching Board was constituted which is tasked to draft the

statutes of the Academy and set the criteria for electing foundation members. The Proceedings of these meetings were published by UNESCO.

Celebrating World Science Day: in our efforts to raise awareness for the role of Science, Technology and Innovation play on the daily life and the development of a Nation, UNESCO Addis in cooperation with the newly established Ministry of Science and Technology, organized celebrations of the World Science Day, at Addis Ababa, in November 2008.

Cluster Activities

Education for Sustainable Development: Ethiopia and Djibouti benefitted from the following cluster activity:

The exhibition "The earth on our hands" is an interactive exhibition that allows children to get

exposed to a number of concepts and thematic areas of the environment in a “hands on” manner, making the process and the subject more appealing. The exhibition was presented in both Djibouti and Ethiopia and more than 3,000 students were educated in a scientific manner in environmental aspects.

Regional Activities

Science, Technology and Innovation (STI) for Development

UNESCO Addis supported the Regional Workshop on STI Policy review that was held in Mombasa from the 30 March to 3 April 2009. This meeting was Organized with UNESCO HQ, UNESCO ROSTA in Nairobi, UNESCO UIS and the AU/NEPAD. The 5 days workshop had three main components: training on STI statistics and indicators STI; policy reviews; and a Scientific Forum for Parliamentarians. Approximately 30 scientists and Parliamentarians were trained on STI indicators and Policy issues and a network for S&T for Development for Eastern Africa, ST4D, was established.

Hydrology: Managing Hydroclimatic Risk in the water sector

UNESCO Addis in cooperation with HYD/HQ, organized a workshop on managing hydroclimatic risk for Djibouti, Ethiopia and Sudan specialists in the water sector, targeting governmental officials. The training took place in Addis Ababa from 30 June to 2 July 2009 and it resulted to the enhancement of the participants' knowledge on the topic, training more than 30 specialists. The workshop was composed of theoretical and practical sessions and raised great reviews from the trainees.

Ghana

During the biennium 2008-2009 the following five activities belonging to IHP, MAB and basic science programmes were implemented in Ghana.

- In the framework of the International IHP programme within its major activity on Climate change impacts on hydrological cycle, and consequent impact on water resources, a study has been conducted with the support of the office by the National IHP committee hosted by WRI (Water research institute) on the evidence of climate variability and change and its impacts on water resources. A national report was produced and IHP national committee will use the findings for awareness rising at all levels on climate change impacts on water resources in the country.
- In the framework of awareness raising on the protection and sustainable water resources management, the office has supported in Ghana the celebration of the world water day in 2008 and 2009. In 2009, within the UN system in Ghana, UNESCO has led the organization of the celebration on the theme shared waters shared opportunities. The office has contributed to the organization of a symposium each year as part of events for the celebration.
- Within the framework of the MAB program, the National MAB committee hosted by the Environmental Protection Agency was supported to conduct Ecological mapping for the identification and characterization of the Songor Ramsar Site. A detail analysis report on the site has been produced. The results of the mapping exercise has been discussed during a national stakeholders workshop organized by EPA. The Ecological mapping report produced will be used by the national MAB committee to prepare the necessary complementary ele-

ments in order to constitute the dossier for application for biosphere reserve nomination of the Ramsar Songor site.

- In the framework of the basic science programme, specifically on the promotion of basic science among youth particularly girls for study and careers, National Commission for UNESCO was supported for the organization a training workshop on based on the UNESCO material Women and science for science teachers in the western region in order to sensitize teachers on approaches for interesting girls for scientific studies.
- In partnership with the French Embassy and Tigo, UNESCO has contributed to the organization of roundtables on climate change within Universities (Legon, KNUST and Cape Coast) in order to raise awareness within the universities for students concerning climate change and its challenges. We have also contributed to the conference and workshop on climate change adaptation and role of higher education in Africa organized by the UNU.
- The office has also contributed to the preparation of the ECOWAS Action Plan on climate change by reviewing the draft documents and participating to the second validation workshop held in Accra.

Guinée

Conservation de la diversité biologique à travers la promotion des réserves de biosphères transfrontalières

Un atelier international sur les réserves de biosphère transfrontalières (RBT) en Afrique de l'Ouest s'est tenu du 12 au 17 février 2009 à Bamako. Organisé par le Bureau multi-pays de l'UNESCO à Bamako en collaboration avec le Ministère de l'Environnement et de l'Assainissement du Mali, la Commission Nationale Malienne pour l'UNESCO et la Commission Allemande pour l'UNESCO, cet atelier, a regroupé une trentaine de participants dont les représentants des organes de gestion des réserves de biosphère, les scientifiques et les points focaux MAB du Burkina Faso, de la Guinée, du Mali et du Sénégal.

Le but principal de cet atelier était de mettre en place un cadre de collaboration entre le Sénégal, la Guinée, le Burkina Faso et le Mali (et éventuellement d'autres pays de l'Afrique de l'Ouest) en vue de la création de réserves de biosphère transfrontalières. Au terme des discussions, les participants maliens et guinéens se sont engagés à créer une réserve de biosphère transfrontalière entre leurs deux pays, autour du Bafing Falemé du côté du Mali et le Mandé Wula et Nema Wula du côté de la Guinée.

La création d'une réserve de biosphère transfrontalière entre le Mali et le Burkina Faso a également été discutée au cours de cet atelier.

Dans cette optique, un plan d'action et un mécanisme de création de RBT entre le Mali et les pays voisins susmentionnés ont été mis en place.

La fin de cet atelier a été couronnée par la signature d'un protocole d'accord entre le Ministère de l'Environnement et de l'Assainissement du Mali et le Bureau multi-pays de l'UNESCO à Bamako. Dans cet accord, les deux parties s'engagent à collaborer pour promouvoir la gestion transfrontalière des aires protégées et pour appuyer la création des réserves de biosphère trans-

frontalières entre le Mali, la Guinée et le Sénégal, d'une part, et entre le Mali et le Burkina d'autre part.

Gestion intégrée des ressources en eau en milieu urbain en Guinée

Un atelier de formation a été organisé du 21 au 23 juillet 2009 en Guinée, en collaboration avec la Commission nationale guinéenne pour l'UNESCO et le Bureau Multi-Pays de l'UNESCO à Bamako, sur la gestion intégrée des ressources en eau en milieu urbain. Les thématiques liées à l'accès à l'eau potable, à la vulnérabilité et aux risques de pollution des nappes d'eaux souterraines et la gestion des eaux usées urbaines ont fait l'objet d'échanges/débats entre les différents acteurs (services techniques et société civile).

L'atelier a été mis à profit pour présenter le PHI, ses missions, sa structure organisationnelle, ses réalisations et pour mettre en place un comité PHI-Guinée.

Atelier National de Formation sur la gestion intégrée des ressources en eau en milieu urbain en Guinée : cérémonie d'ouverture, Conakry le 21 juillet 2009.

Kenya

Ecological Sciences

Nairobi Office supported the participation of Kenyan representatives to the World Congress of Biosphere reserves, 4-8 February 2008, Madrid Spain. This Congress, which was a major event for Man And the Biosphere programme gathered more than 800 participants from all over the world; they agreed on the Madrid Action Plan which will guide the programme implementation for the next 6 years 2008-2013.

Mont Kulal Biosphere reserve is one of the six biosphere reserves in Kenya. It was designated as a biosphere reserve in 1979. Since 2006, the Nairobi office is facilitating the full involvement of rural communities in the management of this particular Biosphere Reserve. In 2009, the assessment of the management of Mont Kulal was undertaken and supported by a Participatory Rural Appraisal. The Participatory Rural Appraisal exercise in Mt. Kulal Biosphere reserve was conducted with broad objective of involving the local communities in assessing the status of the resources within the Biosphere reserve, the management of the Biosphere Reserve and its compliance with the Seville Strategy and statutory framework of Biosphere Reserves and the Madrid Action Plan. It was evidently a community empowering process. The community was led to self discover the immense knowledge they have about their area, their resources and the potential they have in sustainable management with minimum support from outside.

The main objective of this exercise was to collect information to feed into periodic review of the biosphere, confirm the zonation of the biosphere reserve, identify both cultural and natural resources management related issues that the biosphere reserve management authority (who are mainly the local communities living within the biosphere reserve) face and empower them to be more effective in the management of the biosphere reserve. Finally, analysis of the information by

the community led to identification of community resources management issues and/or problems and their linkages to the state of the biosphere reserve. This PRA case study of Mt. Kulal provides community-led perspectives about periodic review of the biosphere reserve which can be used in developing guideline for conducting periodic review exercises for other biosphere reserves.

Participation in Sub-Regional Workshops

Kenya Delegation participated in the following workshops:

- The last stakeholders meeting of the project “Biosphere reserves as learning laboratories for sustainable development in Africa – Ecosystems and livelihoods in the Amboseli Biosphere reserve (Kenya) – Mt. Kilimanjaro World Heritage (Tanzania) transboundary complex, was held on 29 April 2009. The meeting was officially opened by Hon. Noah Wekesa, Kenya’s Minister of Forests and Wildlife.
- The International workshop on “Relevance of Biosphere Reserves to Testing Sustainable Development Approach” was held in Kigali, Rwanda, from 4 to 7 November 2008 which gathered more than 70 participants from Africa, Asia, North and South America and Europe.

Earth Sciences

The United Nations General Assembly declared 2008 as the International Year of Planet Earth to increase awareness of the importance of Earth sciences for the achievement of sustainable development. UNESCO was designated as the lead agency. The Year’s activities spanned the three years 2007-2009. The Year aims to raise \$20 million from industry and governments and will spend half on co-funding research, and half on “outreach” activities. It will be the biggest ever international effort to promote the Earth sciences.

Apart from researchers, who are expected to benefit under the Year’s Science Programme, the principal target groups for the Year’s broader messages are:

- Decision makers and politicians who need to be better informed about the how Earth scientific knowledge can be used for sustainable development
- The voting public, which needs to know how Earth scientific knowledge can contribute to a better society
- Geoscientists, who are very knowledgeable about various aspects of the Earth but who need help in using their knowledge for the benefit of the world’s population.

UNESCO Nairobi office contributed financially and technically to the Launch of Year of Planet Earth in Kenya organised by the Geological Society of Kenya in March 2009. During the opening session, Prof. Joseph Massaquoi, Director of UNESCO Regional office for Science and technology in Africa, gave a key note address.



Prof. Joseph Massaquoi, Director of UNESCO Regional office for Science and technology in Africa, giving a key note address during the National Launch of the IYPE in Nairobi.

Gender, Science and Technology

A network for women engineers in Africa was formed under the initiative of the office. The network whose secretariat is hosted by the University Of Botswana Faculty Of Engineering already has Kenya and Ghana as its Chapters for East and West Africa respectively. The Forum for Women Engineers and Girl Scientists in Africa (Forum-WEGSA) as the network is known has the promotion of participation and excellence of African women and girls in engineering, science and technology. The Forum aims among other activities, to provide support and nurturing to the girl scientist in her educational endeavours in pursuit of a career in the engineering, applied science and technology fields, improve visibility and active participation of women engineers, applied scientists and technologists in academia, research, innovation, community development and the industry.

The office also supported Forum-WEGSA Executive Secretary and one Chapter Chair to participate in the 1st International Conference on Women and Girls in Science and Technology in Africa in Bamako, Mali. Support was also provided for the official launch of the Kenya Chapter of WEGSA and translation and printing of WEGSA Brochure and banner into French. The decision to create a network for women engineers in Africa has already started to bear fruits since in less than two years since its launch in February 2009 WEGSA has already been able to acquire 3 postgraduate engineering scholarships for girls from Botswana and Kenya. The network members have also been engaged in career talks in girls' schools at no cost to UNESCO.

Science and technology policies and planning capacities of African Member States strengthened.

The office was involved in reviewing the Kenyan consolidated science sector Medium-Term Plan for 2008 – 2012, and supported a strategic planning workshop on gender mainstreaming in STI, and a gender mapping survey in the science and technology sector for effective gender mainstreaming for Kenya. A report entitled "Integrating a Gender Perspective in Science and Technology Policies and Programmes in Kenya has been produced to be used by policy makers and planners.

Intersectoral Platform Activity: HIV & AIDS

The office and its partner the African Women in Science and Engineering continued into the second phase of the UBW funded project with Universities, "African Universities Responding to HIV and AIDS through the faculties of Science and Engineering". Capacity of Deans of science and engineering faculties and lecturers from 32 Universities and 4 tertiary colleges was built on mainstreaming and integration of HIV and AIDS into science and engineering courses. The implementation process of the integrated courses was evaluated and a report produced with very useful recommendations. In its final phase, 21 lecturers were trained as trained trainers (ToTs) from five (5) Universities in Uganda. University Vice Chancellors and Deans of Science and Engineering from over 100 institutions in Africa (and ANSTI members) were also informed of the role of Universities in preventing the spread of HIV in sub-Saharan Africa and the need for their own personal commitment in fighting the AIDS epidemic as university leaders, through the COVIDSET 2009 meeting.

Several sample integrated course modules were produced for the benefit of universities and countries that had not had the opportunity to participate in the project. An electronic composition of materials was also produced to facilitate both the teaching and learning of the integrated courses.

Water Sciences

UNESCO and UNEP have jointly undertaken activities which aim at both analyzing the causes, consequences, extent and severity of deforestation in the Mau Forest Complex and investigating the contribution of both climatic and human factors to the changing hydrological conditions in the Mau Forest Complex.



Mau Forest Complex

Ocean Sciences

Science for Decision-Making: Coastal Management Projects Addressing Stakeholder Needs in East Africa

During the second half of 2009, the following ongoing projects were initiated in Kenya using Decision Support Tools (DSTs) for coastal management:

- Malindi_sea level rises and flooding_KMD
- Shimoni_Fisheries habitats_KMFRI

North Coast Storm Surge, Flooding & Climate Change, Malindi, Kenya

The project covers the coastal region between Kilifi and Lamu, with focus on Malindi. Of particular interest are effects due to sea-level change as the Malindi region is a low-lying area of concern. A longer term project is proposed to support the government interest in managing storm surge and flooding in Malindi and rivers of the north coast, taking into account climate change. Kenya Meteorological Department is leading this activity investigating the hydrodynamics of the larger area using tide data from the Kilifi and Lamu gauges. This output will can be used to study coastal circulation, and can be further developed in future to address the issues identified.

South Coast Fisheries, Shimoni, Kenya

The Kenya Marine and Fisheries Research Institution is leading a study focusing on the South Coast fisheries near Shimoni, with the long term goal to improve management of fisheries, harmful algal blooms, aquaculture and seaweed farming, and erosion – these issues are being addressed through a larger Fisheries project over the next few years. The study site also contains a marine park and international maritime boundary with Tanzania. For the first time, this activity characterizes the hydrodynamics of the system, and investigates its influence on the various habitats and areas of importance where management decisions are being made. The beach management units are the lead stakeholders on this activity, and the resulting scientific tools for decision making are being developed with them. Future studies on the effect of coastal circulation on fish larvae, particle dispersal, and erosion will also be possible by building upon the hydrodynamic model The bathymetry of the study region is quite complex, with a number of reefs appearing only on certain tide phases.

Lesotho

The Department of Science and Technology (DST) of Lesotho has established the National Science and Technology Databank aimed at supporting the country's research capacities in basic and engineering sciences. The databank includes information on Institutional arrangements, Human Resources, Research and Development projects, and Indigenous Knowledge Systems. The information in the databank will enhance the perception of the state of science and technology in Lesotho among the general public, as well as researchers and students. At the same time, it will be used as a support for the development of appropriate evidence-based policies and the identification of priority areas needing more attention.



Lesotho National S&T Databank implementing the Science and Technology Policy

With the support from UNESCO/Win, during 2008/2009, the Department has reviewed the database and related procedures to increase the international comparability of the data stored, as well as the establishment of synergies with existing initiatives such as the AU/NEPAD STI indicators initiative and the requirements of the UNESCO Institute for Statistics R&D survey. Training activities have been carried out with the support of an international consultant. During 2009, the first data collection exercise was also supported, in order to kick-start the integration of the databank into Lesotho's science and engineering sector.

The extension of the experience in Lesotho to other Windhoek Cluster Countries (particularly Angola, Namibia and Swaziland) is currently being considered and discussed with the corresponding governmental agencies.

Liberia

During the biennium 2008-2009 the following two activities were implemented in Liberia.

- After the transfer of Liberia to the Accra cluster and because of the post conflict status of the country, it was felt indispensable, before any activities on natural science programmes in the country, to have a real state of science in the country. A support was given to National Commission for UNESCO and has produced a report on the state of science in the country with a focus on the UNESCO international science programmes (IOC, MAB, IHP, IGCP, IBSP). Future activities of the office will be based on the priorities identified during the assessment and diagnosis of science in the country.
- In the framework of the promotion of study and careers among youth particularly girls, National Commission for UNESCO was supported to sensitize students on the studies and careers on science and technology. The activity was successfully implemented through a counseling workshop organized for more than 150 students from seven public and private high schools in Monrovia. Twelve high level teachers on different topics of science (mathematic, physics, biology, chemistry, agriculture, and engineering) have intervened during the counselling workshop.

Madagascar

3rd World Congress on Biosphere Reserves Madrid, Spain, 2008

Madagascar with the support of the Dar es Salaam Cluster Office participated at the 3rd World Congress on Biosphere Reserves which held in Madrid Spain in February 2008. During the event Mr. Pierre Ravelonandro, Director, CNRE Antananarivo Madagascar was elected as the Chair of the AfriMAB Group for the next two years. Madagascar will host the next AfriMAB Group Regional Meeting in 2010.



A participatory meeting with villagers to discuss their knowledge of climate variation

Workshop on Integrated Water Resources Management

Participants from Madagascar were among those training in Integrated Water Resources management for urban water supplies managers. Participants learnt new techniques for the management and control of pollution in water catchment areas used for urban and semi-urban areas. The integrated approach highlights the role of public participation in the management of water catchment areas.

Climate Change Knowledge Advancement



Villagers fetching water from the sea at North Mananara, Madagascar.

The impact of climatic change on biosphere reserves is of interest as biosphere reserves serve the important role of laboratories for learning. Since the biosphere reserve concept underscores the place of man within the ecosystem, it becomes important to understand the nature of effects of climate change impact on the man-ecosystem interaction. UNESCO Dar es Salaam commissioned a study aimed at documenting local coping strategies for climate change impact of local and indigenous peoples in the North Mananara Biosphere Reserve in Madagascar. The study revealed that people react and apply their empirical knowledge in order to overcome the difficulties which they meet due to the uncertain climatic conditions. The study also forced the local peoples to give more thought to the modifications of the environment with-

in the aforementioned Reserve, their causes and the various consequences as well as made them to consider various plans which they villagers already use out to mitigate these impacts. In order words there are already in place measures which the indigenous peoples have adopted for years to minimize impacts of climatic variations. The study revealed that the small scale farmers and/or fishermen are most sensitive to the changes as they do not have different sources of incomes. The full documents would be published soon for dissemination.

Malawi

World Water Day Celebrations 2009

Malawi celebrated the 2009 World Water Day on 22 March, 2009. This year UNESCO led the celebrations under the theme “Transboundary Water” a theme chosen to reflect the facets of fresh water resources. The Ministry of Water Resources and Irrigation invited The Harare Programme Specialist Marcel Tchaou for a joint statement at Inkhata Bay where the national were held. This event was largely publicized on the news and greatly increased UNESCO’s visibility in Malawi.

Review of Science, Technology and Innovation Policies

Malawi was supported by UNESCO to review their STI policy which they developed in 1991 and revised in 2002. Despite approval the policy had not been implemented due to lack of an implementation plan and an uncoordinated pluralistic approach to the S&T. The review was done. The organization and preparatory meetings were done with the assistance of the Harare Programme Specialist Marcel Tchaou and Shamila Nair-Bedouelle from Headquarters. A Stakeholders Consultative Workshop was held from 23- 25 May, 2009 a report was availed to UNESCO Harare.

Launching of the Women in Science and Technology Network ((WISTNET

The government of Malawi, under the Ministry of Education and Technology, recognizing the critical role which women scientists can play in the development and application of science, technology and innovation for socio-economic development of the country mobilized female scientists for form the ‘Women in Science and Technology Network’ (WISTNET). UNESCO financially supported this initiative and the official launching ceremony of the WISTNET was done on 7 August, 2009. WISTNET now boasts of over 150 registered members.

Assessment of groundwater resources in rural areas of Malawi

Following the World Water Day Celebration in Malawi on 22/03/2009, where UNESCO through the programme specialist, Marcel Tchaou called for an effective management of water resources, the Government of Malawi through the UNESCO National Commission made a request for an assessment of groundwater resources in rural areas. This activity was implemented in a bid to help Malawi assess the quality of groundwater available, to document the distribution of readily available underground resources, to examine the management of underwater resources and to propose mechanism for ensuring the conservation and protection of underground water. This assessment generated a wealth of information relating to ground borehole water toxicity levels. With the financial support from UNESCO only 5,324 boreholes of about 27,913 were tested for chemical toxicity in Malawi’s rural areas. 1,679 boreholes were found to have water toxicity levels above the WHO recommendation for safe limit of drinking water, which means the rural communities are ingesting water with high chemical toxicity and therefore compromising their health. Therefore there is a need to continue with this assessment for the rest of boreholes in rural areas.

Mali

Célébration de la Journée Mondiale de l'Environnement 2008

Le 5 juin 2008, lors de la célébration de la Journée Mondiale de l'Environnement, le secteur Sciences Exactes et Naturelles a organisé deux conférences portant sur le changement climatique, son impact sur la perte de biodiversité et les liens avec le phénomène de la désertification. L'objectif visé était de sensibiliser les populations sur les effets du changement climatique sur les secteurs clés du développement au Mali. Une centaine de participants appartenant à des associations de jeunes (clubs UNESCO et étudiants) et d'autres organisations de la société civile ont pris part à cette rencontre. La recommandation phare a été de porter l'information et la sensibilisation au niveau de la communauté locale qui est la plus vulnérable aux effets du changement climatique.

Conservation de la diversité biologique à travers la promotion des réserves de biosphères transfrontalières

Un atelier international sur les réserves de biosphère transfrontalières (RBT) en Afrique de l'Ouest s'est tenu du 12 au 17 février 2009 à Bamako. Organisé par le Bureau multi-pays de l'UNESCO à Bamako en collaboration avec le Ministère de l'Environnement et de l'Assainissement du Mali, la Commission Nationale Malienne pour l'UNESCO et la Commission Allemande pour l'UNESCO, cet atelier, a regroupé une trentaine de participants dont les représentants des organes de gestion des réserves de biosphère, les scientifiques et les points focaux MAB du Burkina Faso, de la Guinée, du Mali et du Sénégal.

Le but principal de cet atelier était de mettre en place un cadre de collaboration entre le Sénégal, la Guinée, le Burkina Faso et le Mali (et éventuellement d'autres pays de l'Afrique de l'Ouest) en vue de la création de réserves de biosphère transfrontalières.

Au terme des discussions, les participants se sont engagés à créer deux réserves de biosphères transfrontalières entre :

1. le Mali et la Guinée autour du Bafing Falemé du côté du Mali et le Mandé Wula et Nema Wula du côté de la Guinée ;
2. le Mali et le Burkina autour des éléphants du Gourma.

Dans cette optique, un plan d'action et un mécanisme de création de réserves de biosphère transfrontalières entre le Mali et les pays voisins susmentionnés ont été mis en place.

La fin de cet atelier a été couronnée par la signature d'un protocole d'accord entre le Ministère de l'Environnement et de l'Assainissement du Mali et le Bureau multi-pays de l'UNESCO à Bamako. Dans cet accord, les deux parties s'engagent à collaborer pour promouvoir la gestion transfrontalière des aires protégées et pour appuyer la création des réserves de biosphère transfrontalières entre le Mali, la Guinée et le Sénégal, d'une part, et entre le Mali et le Burkina d'autre part.

Célébration de la Journée Mondiale de l'Eau 2009

Dans le cadre de la Journée Mondiale de l'Eau, l'UNESCO a souhaité conscientiser les adultes et enfants sur « l'eau, source de vie » à travers un concours sur le thème « Les Animaux du Fleuve »



Cérémonie de signature du MOU entre Mme Diallo Aminata SIDIBÉ, Ministre de l'Énergie et des Mines p.i. et le Pr Juma Shabani, Directeur du Bureau de l'UNESCO à Bamako



Cérémonie de remise de prix UNESCO «Les animaux du Fleuve à Mougna, 22 mars 2009 En présence du sous-préfet, du Maire, de la Présidente des Femmes et du Chef des chasseurs

formation et des échanges/débats sur les thématiques liées à l'accès à l'eau potable, à la vulnérabilité et aux risques de pollution des nappes d'eaux souterraines à la gestion des eaux usées urbaines, etc.

Cérémonie d'ouverture de l'atelier national GIRE en milieu urbain au Mali par la Directrice Nationale de l'Hydraulique représentant le Ministre de l'Énergie et de l'Eau en présence du Directeur du Bureau de l'UNESCO à Bamako, du Secrétaire général de la COMNAT-Mali et du Président du PNE-Mali

L'atelier a également été mis à profit pour présenter le PHI, ses missions, sa structure organisationnelle, ses réalisations et pour mettre en place un comité PHI-Mali.

Au terme de l'atelier, plusieurs recommandations ont été émises, notamment la diffusion des résultats des études présentées et, dans le cadre du PHI, l'élaboration d'un protocole de coopération entre le Ministère de l'Enseignement Supérieur et de la Recherche Scientifique, le Ministère de l'Énergie et de l'Eau, le Ministère de l'Environnement et de l'Assainissement et l'UNESCO.

destiné aux enfants des écoles de Banankabougou, de Djenné et de Mougna. Cette action s'inscrivant dans la pérennisation des acquis du projet 'Niger-Loire : Gouvernance et Culture' avait également pour but de promouvoir l'éducation environnementale et la protection de la biodiversité liée au fleuve en valorisant la dimension culturelle en relation avec les animaux sauvages. Les animaux faisant l'objet de ce concours sont ceux en voie de disparition ou ayant disparu et pour lesquels des notes techniques avaient été rédigées à l'intention des enseignants.

La remise des prix a eu lieu le 22 mars 2009 à l'occasion de la Journée Mondiale de l'Eau à Djenné, Mougna et au Musée national de Bamako. Celle de Bamako s'est déroulée en présence du Directeur d'école de Banankabougou, du Président de l'Association des Parents d'élèves de Banankabougou, du Directeur et Représentant du bureau multi-pays de l'UNESCO à Bamako, du Directeur de l'UNICEF et du Ministre malien de l'Environnement.

Outre les prix couronnant les meilleurs dessins, des cadeaux ont été offerts pour le meilleur conte, le meilleur chant et le meilleur proverbe.

Gestion intégrée des ressources en eau en milieu urbain

Organisé du 6 au 8 mai 2009 conjointement par le Bureau multi-Pays de l'UNESCO à Bamako et le Partenariat National de l'Eau du Mali (PNE-Mali), l'atelier national sur la gestion intégrée des ressources en eau en milieu urbain a rassemblé plus de 30 spécialistes dans la capitale malienne pour une



Cérémonie d'ouverture de l'atelier national GIRE en milieu urbain au Mali par la Directrice Nationale de l'Hydraulique représentant le Ministre de l'Energie et de l'Eau en présence du Directeur du Bureau de l'UNESCO à Bamako, du Secrétaire général de la COMNAT-Mali et du Président du PNE-Mali

Appui aux teinturières de Bamako

Composante du projet 'Niger-Loire : Gouvernance et Culture', l'appui aux teinturières de Bamako a été réalisé pendant la période 2008-2009 à travers différentes actions, avec le soutien de la Commission de l'Union européenne et en collaboration avec l'Agence Loire Angers.

L'objectif est de regrouper des teinturières sur un site pilote équipé d'une station de prétraitement des effluents, de les encadrer sur les techniques de teinturerie et de les sensibiliser sur les risques de pollutions environnementaux et sanitaires.

Célébration de la Journée Mondiale de l'Environnement 2009

En collaboration avec le Secrétariat Technique Permanent du Ministère de l'Environnement, le Bureau multi-pays de l'UNESCO à Bamako a organisé, dans le cadre de la Quinzaine de l'Environnement du Mali, une conférence sur l'information et la sensibilisation sur le changement climatique et la problématique de l'eau. Trois principaux thèmes ont été débattus au cours de cette conférence :

1. l'étude d'impact environnemental,
2. la vulnérabilité et les risques de pollution des eaux dans le district de Bamako,
3. la contribution du projet 'Niger-Loire : Gouvernance et Culture' à la réduction de la pollution du fleuve par les activités de teinturerie dans le district de Bamako.

Les participants ont formulé les recommandations suivantes dont leur mise en œuvre constitue les principaux défis :

1. promouvoir la construction des égouts afin de limiter la pollution de la nappe de Bamako;
2. réaliser des études sur la pollution et la vulnérabilité des nappes superficielles dans d'autres villes du Mali ;
3. promouvoir le regroupement des teinturières dans le district de Bamako afin de collecter et traiter les effluents de teinturerie et étendre cette opération aux autres villes du Mali ;
4. traduire les textes environnementaux en langues nationales afin de les rendre accessibles pour la population ;
5. vulgariser l'information relative aux études d'impact environnemental auprès de la population ;
6. définir des délais maximum pour les suivis à réaliser dans le cadre des suivis environnementaux ;
7. renforcer l'éducation environnementale dans les programmes scolaires.

Renforcement de la résilience des pays africains sub-sahariens face aux risques hydroclimatiques

Les capacités d'atténuation des risques d'inondation des pays subsahariens et des institutions ont été renforcées au cours d'un atelier régional de renforcement de la résilience des pays africains sub-sahariens face aux risques hydro-climatiques qui s'est déroulé à Niamey du 6 au 10 juillet 2009.

Cette rencontre a été l'occasion, pour les participants du Bénin, du Togo, du Ghana et du Mali, d'exposer la situation des inondations dans leur pays au cours des dernières années et les systèmes de gestion administratifs et législatifs en place.

De plus, le Centre Régional AGRHYMET a présenté une méthodologie générale de cartographie des zones à risque d'inondation aux représentants des pays subsahariens.

Une cartographie des zones à risque d'inondation de la ville de Bamako réalisée selon une autre méthodologie par le Bureau de l'UNESCO à Bamako a également été présentée lors de cet atelier.

A l'issue de la rencontre, un draft de proposition de projet sous-régional sur l'amélioration de la résilience de 6 pays africains subsahariens (Bénin, Burkina, Ghana, Mali, Niger and Togo) aux désastres liés aux inondations a été élaboré et des partenaires potentiels de financement ont été identifiés (JICA et ICHARM).

Première Conférence Internationale sur les Filles et les Femmes en Sciences et Technologie en Afrique

La Première Conférence Internationale sur les Filles et les Femmes en Sciences et Technologies en Afrique a été organisée à Bamako, du 13 au 15 juillet 2009. Cette conférence a permis de renforcer les capacités nationales et régionales d'enseignement dans le domaine des mathématiques, des sciences fondamentales et des sciences de l'ingénieur. La documentation sur les bonnes pratiques dans le domaine des filles et des femmes en sciences et technologie a été mise à jour. De plus, un cadre prioritaire a été établi en vue de l'amélioration de la participation et des performances des filles et des femmes en sciences et technologie et dans les activités scientifiques. Parmi les participants, de nombreux ressortissants du Mali ont pris part à cette conférence.

Atelier International de Renforcement des Capacités dans le domaine de l'Enseignement des Mathématiques, des Sciences Fondamentales et des Sciences de l'Ingénieur

Les connaissances des représentants de 21 Instituts de Formation des Maîtres (IFM) du Mali et des autres participants pour une utilisation efficace des TIC dans l'enseignement des sciences, des mathématiques, de l'ingénierie et de la technologie ont été améliorées au cours d'un Atelier International de Renforcement des Capacités dans le domaine de l'enseignement des mathématiques, des sciences fondamentales et des sciences de l'ingénieur (Ségou – Mali, du 17 au 18 juillet 2009). De plus, les participants ont acquis des compétences dans les domaines de la pédagogie, de l'orientation, du conseil et dans l'élaboration des programmes d'enseignement pour promouvoir la parité des genres dans les cours des sciences, des mathématiques, de l'ingénierie et de la technologie.

Première Ecole Régionale d'Énergie Solaire pour les pays Francophones d'Afrique

Le Bureau multi-pays de l'UNESCO à Bamako a organisé du 30 novembre au 4 décembre 2009, en collaboration avec l'UEMOA et l'ISESCO, la Première Ecole Régionale d'Énergie solaire pour les pays francophones d'Afrique. Ont pris part à cette formation des ressortissants du Sénégal, du Burkina Faso, de Guinée Bissau, du Togo, du Niger, de la Côte d'Ivoire et du Mali. Parmi d'autres, les recommandations suivantes ont été formulées en vue d'améliorer les prochaines sessions de formation : la mise à disposition préalable de modules de formations adaptés aux besoins des pays, l'augmentation de la durée de formation, l'organisation biannuelle de la formation en alternance dans les différents pays de l'UEMOA, l'acquisition de plateforme pédagogique ainsi que de kits didactiques et la participation d'instituts spécialisés dans le domaine des énergies renouvelables.

Atelier de réflexion sur les défis et opportunités de la recherche au mali

Des pistes d'orientation pour le renforcement de la recherche ont été explorées au cours d'un atelier de réflexion sur les défis et les opportunités de la recherche au Mali (Bamako, 28-29 juillet 2009). Cet atelier a regroupé une trentaine de chercheurs universitaires et d'institutions non universitaires pendant 02 jours. Les problèmes d'insuffisance d'équipements, d'insuffisance de financement du sous-secteur, d'information/ documentation et de difficulté de publication sont entre autre les défis identifiés pour la recherche au Mali. Au nombre des opportunités on a noté l'existence des réseaux de chercheurs, les possibilités offertes par les TICs, les appuis possibles auprès des organismes régionaux et sous-régionaux d'intégration etc.

Mauritius

Workshop on Integrated Water Resources Management

Participants from Mauritius were among those training in Integrated Water Resources management for urban water supplies managers. Representation from the Ministère des Travaux Public et delà Météorologie participated in the training workshop organized by the Public Utilities Corporation of Seychelles in Victoria. Participants learnt new techniques for the management and control of pollution in water catchment areas used for urban and semi-urban areas. The integrated approach highlights the role of public participation in the management of water catchment areas.

Namibia

Evidence-based Science, Technology and Innovation (STI) policy relies heavily on STI indicators for policy design, monitoring and evaluation. STI indicators are also a tool for knowledge systems studies, establishing cross-national comparisons and following-up its evolution over time. R&D statistics are probably the most important type of STI indicators. To produce R&D statistics, the methodology proposed by the OECD Frascati Manual is used extensively both in OECD countries



Expert Meeting on Measuring R&D in Developing Countries, Windhoek, September 2009

and in developing countries. However, the characteristics of research systems in developing countries differ significantly from the ones that gave rise to the current statistical standard.

The challenge of obtaining cross-nationally comparable indicators, while at the same time adequately reflecting the

characteristics of developing countries, was dealt with at an International Expert Meeting organized in Windhoek in September 2009 by the UNESCO Institute for Statistics, UNESCO/Windhoek and the Government of the Republic of Namibia. As a result of this Expert Meeting, an "Annex to the Frascati Manual on Measuring R&D in Developing Countries" is being developed. Information on the results of the meeting and the ongoing development of the Annex can be found at http://www.uis.unesco.org/ev.php?ID=7854_201&ID2=DO_TOPIC.



Roadside Sale of Small Scale mining Products

Concurrently, UNESCO Windhoek has assisted the Government of the Republic of Namibia in the establishment of a National S&T Indicators System. The first concrete results of this process are expected for 2010.

In order to support the improvement of the livelihoods of local communities, while promoting the right to cultural identity and expression, the process to establish the Gondwanaland Geopark has been initiated in collaboration with the Geological Survey of Namibia, in the framework of the Joint Programme (JP) on "Cultural Tourism Development as a Vehicle for Poverty Reduction", funded by the Millennium Development Goals Achievement Fund (MDG-F).

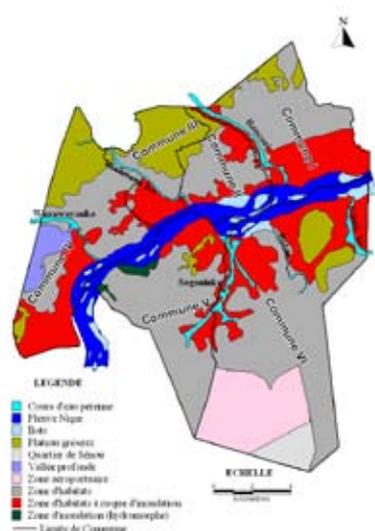
This first Geopark in Africa will be an important tool to improve and enhance earth sciences education in Namibia. The Gondwanaland Geopark possesses a significant geological heritage, and will contribute to sustainable development, based notably on sustainable tourism, by not only ensuring the appropriate recognition, preservation and promotion of Namibia's important geological heritage, but also improving the living conditions of local communities. The Gondwanaland Geopark will stimulate international interest and add new dimensions to tourism attractions in Namibia.

This project is of cross-cutting nature, and constitutes a milestone in the collaboration between the Natural Sciences and Culture sectors at UNESCO Windhoek Office.

Niger

Renforcement de la résilience des pays africains sub-sahariens face aux risques hydroclimatiques

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Cartographie des Zones à risque d'inondation par Commune dans le District de Bamako -Mali

Cette rencontre a été l'occasion pour les participants du Bénin, du Togo, du Ghana et du Mali d'exposer la situation des inondations dans leur pays au cours des dernières années et les systèmes de gestion administratifs et législatifs en place.

De plus, le Centre Régional AGRHYMET a présenté une méthodologie générale de cartographie des zones à risque d'inondation aux représentants des pays subsahariens.

Une cartographie des zones à risque d'inondation de la ville de Bamako réalisée selon une autre méthodologie par le Bureau de l'UNESCO à Bamako a également été présentée lors de cet atelier (voir un exemple de la série des 08 cartes produites ci-dessous).

A l'issue de la rencontre, un draft de proposition de projet sous-régional sur l'amélioration de la résilience de 6 pays africains subsahariens (Bénin, Burkina, Ghana, Mali, Niger and Togo) aux désastres liés aux inondations a été

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Nigeria

The goal of the Science Sector in 2008/2009 biennium anchored on providing support and assistance to Nigerian Government in building adequate capacity to meet its developmental needs through the utilization of science, technology and innovation systems.

Improving the Knowledge of Nigerian Legislators and Managers of Water Resources in Sustainable Water Governance.

UNESCO in collaboration with National Water Resources Institute (NWRI) organized a workshop for Legislators (Senators, Members of the House of Representatives and State House of Assemblies) to enhance their capacity for effective freshwater policy formulation and good governance. The workshop promoted best practices in water legislation and facilitated the development of sustainable freshwater education programmes for higher institutions. The Workshop also created an enabling environment for the Legislators to exchange policy ideas and network with experts in the field of water management.

Identifying and Promoting Cultural Approaches for Management of Bio-resources at the Nigerian World Heritage Sites in Oshogbo and Sukur:

UNESCO in collaboration with National Biotechnology Development Agency (NABDA), Nigerian Natural Medicine Development Council, Adamawa and Osun States Ministries of Culture and Tourism and other stakeholders conducted case studies at the two UNESCO World Heritage Sites to identify best practices in biodiversity management and the relationship between cultural practices and biodiversity protection as well as the key role of indigenous knowledge in the management of biological diversity for sustainable development.



In 2009, a training workshop was organized for 100 people (Managers and local people) at the two World Heritage sites in Sukur (Adamawa State) and Oshogbo (Osun State) on bio-resource conservation to build their capacity and enhance their skills on the management of biodiversity for economic (medicinal and aromatic products) purposes. The training of the indigenous people enhanced their livelihoods through marketing of their traditional bio-products.

Creating Legislative Framework and Awareness for the use of Alternative Energy Sources for Sustainable Development in Nigeria:

In collaboration with Energy Commission of Nigeria and 18 stakeholders, UNESCO organized a workshop in 2008 for Nigerian Legislators and Managers of the energy sector on the potential and use of alternative sources of energy for sustainable development.

The main purpose of the workshop was to promote best practice in legislation, sensitize and promote awareness amongst the legislators on various alternative sources of energy in the country

and how to harness their use to argument the conventional energy supply. The workshop also enhanced the skills of the legislators in developing appropriate policies for the use of alternative energy sources in Nigeria.

In 2009, another joint workshop was held in collaboration with the Energy Commission of Nigeria and 15 stakeholders on “strengthening advocacy for the use of alternative sources of energy for sustainable development by women in leadership positions”. The workshop attracted about 150 participants (mainly women from all sectors of the economy, Universities, Research Institutes and the civil society). The participants formed a lobby group and networks to facilitate the passing of the National Energy Masterplan into law to promote the use of alternative sources of energy.

Rwanda

Revitalization of Biosphere Reserve Programme

During the 2008-2009 Biennium, thanks to the One UN Fund, UNESCO ecological activities in Rwanda have increased and the Man and Biosphere (MAB) programme has been tremendously revitalised in the country.

As a first step, an International workshop on “Relevance Of Biosphere Reserves To Testing Sustainable Development Approach”, in Kigali, Rwanda, from 4 to 7 November 2008 which gathered more than 70 participants from Africa, Asia, North and South America and Europe. Rwandese senior officials and key stakeholders in the area of biodiversity conservation, sustainable use of natural resources and sustainable development attended the meeting as well as representatives of United Nations organizations and international bodies. This meeting was the cornerstone for the identification of priorities to be given to the MAB programme in the country. Following the meeting, the process to set up the Rwandese MAB national committee began, and at date the interim committee is led by Rwanda Environment Management Authority (REMA).

Regarding its outstanding Biodiversity, Rwanda has decided to extend its 10% coverage of protected area by 2%. Wetlands are among the less represented ecosystems in the protected area network. Upon agreement with REMA, UNESCO Nairobi Office supported the inventories of 3 islands situated on the Lake Kivu: Nyamunini, Mbabara and Rwanuma. Lake Kivu is one of the strings of huge freshwater lakes which lie along Africa’s Great Rift Valley. These inventories were undertaken by researchers and students of National University of Rwanda as the hand out part of Wetland Rapid Assessment Procedure training (WRAP). WRAP is a research tool used in collecting and documenting baseline ecological and anthropogenic information to be used in monitoring and evaluating the conservation and use of wetland resources in order to enable planning for the implementation of sustainable development activities. Including socio economic features, it is a useful method to have an outlook of the biodiversity of an area and its suitability to be a protected area before undertaking further in-depth investigations. With the available data collected from the two islands complimented by the previous biological inventory of the Nyamunini Island, there is now available information to be used in developing a management plan for these islands. Regarding socio economic situation, an adequate attention should be given towards the development of the local community in terms of their participation and access to natural resources use in the islands. For that purpose, the Biosphere reserve model might be extremely

relevant if the option of protecting these islands is taken by the Government of Rwanda. Regarding capacity building, Rwanda has now a pool of trainers for WRAP. The training modules will be packaged in electronic support to support the team to undertake roll out training sessions.

In Rwanda, most of the institutions dealing with biodiversity conservation and sound environment management do not yet possess the required capacities. Serious weakness in scientific and research capabilities still exist, both in terms of human and institutional resources. A cornerstone in the use of research information to inform and develop sound policies and practices towards biodiversity conservation and natural resource management in Rwanda - but also in the region- was the organization by the country of the 'First international research conference on Biodiversity and Sustainable Management of Natural resources' in Kigali , 23rd-25th July 2007. The Conference aimed at bringing together both leading national and international conservation and natural resource management professionals and to provide a forum for the exchange of research findings and ideas focusing on the importance of knowledge based approaches for the long term conservation of biodiversity. To foster the conference results, and following the proposition made by H.E. President Paul Kagame during his key note address, the Conference recommended establishing a regional centre of excellence in biodiversity and sustainable use of natural resources management for the Albertine Rift region. In support to this recommendation and upon request of the Government, in 2008, UNESCO has completed a feasibility study for the ARCoEB. The study was endorsed during a national validation workshop held in Kigali in April 2009. In the future, the creation of the centre of excellence is foreseen with the support of UNESCO, other UN agencies and the community of donors.

From Commitments to Action: Progress on implementing International Hydrological Programme (IHP) Activities within the "One UN" Programme in Rwanda

The Government of Rwanda and the United Nations System entered into a partnership by way of the agreements outlined in the UNDAF and the One UN Concept Note.

Through this partnership, the Government and the UN are seeking to address the development, vision, goals and aspirations of the people of Rwanda, as expressed in Vision 2020 and the EDRS 2008 – 2012. Rwanda is endowed with a large diversity of natural resources – rich productive soils, diverse flora and fauna, natural forests and wetlands, unique landscapes, dense networks of surface and ground water, and some minerals. Rwanda's abundant water resources constitute a big potential for the country economic growth. The water sector policy places emphasis on sustainable and integrated water resources management and development for multipurpose use including increased access to safe water and sanitation services by all and economic and recreational use. Specific areas of intervention are:

- Improve water quality management
- Improve natural water resource management
- Reduce cost for delivering water services
- Increase access to safe water supply for the rural and urban population
- Increase water for production
- Protect water sources
- Improve water facility maintenance.

In the wake of increased land scarcity, and driven by the need to optimize productive land use,

around 40% of the population will be in urban area by 2020, and all the population to live in organized clustered settlements. Increased urbanization will raise challenges of utility supplies (water, energy and housing) as well as waste disposal.



It is against this framework that SC/HYD has undertaken capacity building, research and assessment activities on urban groundwater vulnerability. These activities are implemented under UNDAF Result 4 – Management of environment, natural resources and land is improved in a sustainable way, Outcome 1 – An enabling policy framework to support an effective system for environment management and ecosystem conservation established.

The population rise has led to the growth of Kigali with large areas of unplanned sub-standard housing with few services. These unplanned expansions pose great pollution threats to groundwater arising from, sewage effluent leakage in open sewers, leaking septic tanks, latrines, domestic waste disposal and uncontrolled industrial and commercial activities.

Research is therefore required due to the unprecedented population growth of the urban poor population of Kigali which relies to a large extent on groundwater for its drinking water supply, ranging from springs to deeper public supply boreholes.

The project addresses the need to develop appropriate monitoring strategies and data and define cost-effective management alternatives, new technology and education programme in the area of protecting groundwater quality through clusters of inter-linked activities of:

- Assessment of groundwater vulnerability;
- Identification of hot spots and major threats on groundwater aquifers in Kigali;
- Policy options for better safeguarding groundwater aquifers in urban areas;
- Establishment of an early warning network for possible water supply contamination;
- Hydro geological modelling on groundwater vulnerability.

A national seminar held in Kigali in October 2008 marked the launch of the project activities. It was attended by more than 35 National participants who came from various Rwanda institutions: Ministry of Natural Resources, Ministry of Infrastructure, National University of Rwanda, High School of Agriculture, Kigali Institute of Science and Technology, Nile Basin Initiative, Nile Transboundary Environmental Action Project). It was officially opened by the representative from the Ministry of Natural Resources. Its objectives was to provide participants with basic notions on groundwater vulnerability and agree on activities to be launched, as well as discussed with selected experts ways and means for detailed planning of the project activities.

The meeting was very successful and set up the framework for the technical aspects of the programme under the guidance of the Senior Consultant. The UNESCO Programme Specialist responsible for managing the project selected a national coordinator for the project and set up a multidisciplinary team of scientists to undertake field work on the basis of an agreed timetable for the year 2009. This was done in close consultation with the participants.

Senegal

1. L'UNESCO a organisé à Dakar du 21 au 23 avril 2008 un atelier sous-régional dans le cadre du projet régional UNESCO-MAB/PNUF-FEM sur le «**Renforcement des capacités scientifiques et techniques pour une gestion effective et une utilisation durable de la diversité biologique dans les réserves de biosphère des zones arides et semi arides d'Afrique de l'Ouest**».
2. **Projet de recherche de lutte contre le typha (Salvinia molesta) dans la réserve de biosphère transfrontière (Sénégal/Mauritanie) Djoudj.**

Mise en œuvre et suivi du projet dont le titre est «**Testing Community based approaches to water management in the Transboundary Biosphere Reserve of Senegal Delta River**». Ce projet de recherche vise à mettre au point une technique de contrôle du typha au Djoudj en appliquant le concept de l'écohydrologie lancé par l'UNESCO en 1996.

Le Parc national du Djoudj a fait l'objet d'un plan d'action qui confirme la nécessité de limiter l'expansion du Typha afin de diminuer ou de stabiliser les surfaces colonisées et de rétablir ainsi une meilleure circulation de l'eau. Les modes opératoires préconisés par le plan d'action sont ceux qui sont déjà fréquemment utilisés dans la zone. La méthodologie comportera donc aussi bien des revues bibliographiques, que des travaux de terrain (collecte de données, expérimentation pour la mise au point de la technique de contrôle) ou en laboratoire.

Campus virtuel Africain



Dispositif expérimental Plants de typha en pépinière

Cette activité a été lancée en novembre 2008 puis finalisée en mars 2009. Dans le cadre de l'enseignement des sciences et technologie, l'UNESCO a mis en place à l'Université Cheikh Anta Diop de Dakar, l'ingénierie de production des cours en ligne et a formé les enseignants à cette technique. Plusieurs organisations internationales et plusieurs pays africains ont participé à l'atelier qui a eu lieu à Dakar, Sénégal du 16 au 18 mars 2009 à l'UCAD.

Adaptation to climate change. Responding to Shoreline change and its human dimensions in West Africa through integrated coastal area management (ACCC)

Funded by the GEF (Global Environmental Fund), this program wants to implement measures to strengthen the resilience of coastal communities to the impacts of climate change on coastal zones and resources. Five countries are partners of the program: Cape Verde, The Gambia, Guinea Bissau, Mauritania and Senegal. The program will last three years (till December 2011) and is organized with a regional team, based in UNESCO/BREDA in charge of regional components of the program and five national teams which are comprised of representatives from the target national institutions and from the UNDP national office in charge of the national components. Each year a steering committee meets to assess the results of the last year and adopt regional work plan and budget for the next year while giving advice on national action plans. The last steering committee was held in Banjul the 24th and 25th of November 2009.

What main activities have been achieved in 2009.

At regional level, three training workshops have been organized:

- On climate change and coastal zones, the 23rd to 25th of April: the main objective of this workshop was to introduce the challenges linked with climate change in the coastal zones;
- The second workshop was about techniques for mangrove restoration was organized in Saly (Senegal) from 27th to 30th of April: local people were invited to learn the main techniques for mangrove restoration in order to conduct these operations on their sites. A work plan was produced for each country
- the last training workshop was held in Mauritania from 13th to 16th of June on techniques of dune stabilization



Adaptation to climate change. Responding to Shoreline change and its human dimensions in West Africa through integrated coastal area management (ACCC)

The web site has been reactivated: www.accc-africa.org. Support has been given to the regional forum of parliamentarians and local decision makers of the PRCM and ECOWAS region (3rd-6th August) which created the sub regional network of parliamentarians and local decision makers to protect the coastal environment in countries of the West African littoral zone (APPEL).

We also have organized together with the science and education sectors in BREDa a training of trainers for the Sandwatch programme which is a UNESCO supported activity allowing young scholars to monitor a beach, define the main problems and try to discuss with local users in order to find solutions. This activity was organized in Praia (Cape Verde) from the 25th to the 28th of August.



The participants to the training workshop on dune stabilization

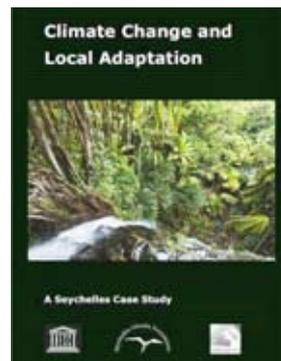


Participants to the training of trainers on Sandwatch programme

Seychelles

Workshop on Integrated Water Resources Management

Participants from Seychelles were among those training in Integrated Water Resources management for urban water supplies managers which held from 21 to 22 July 2008 in Victoria Seychelles. The Public Utilities Corporation of Seychelles organized the workshop which had 65 participants drawn from water-related agencies and also participants from Madagascar and Mauritius. The training involved hands on approaches and visits to some water catchment areas within Seychelles. Participants learnt new techniques for the management and control of pollution in water catchment areas used for urban and semi-urban areas. The integrated approach highlights the role of public participation in the management of water catchment areas.



Climate Change Knowledge Advancement

As part of knowledge building and understanding of the climate change impact on biosphere reserves and small island states as a whole, UNESCO Dar es Salaam has supported a study aimed at documenting local coping strategies for climate change in Seychelles focusing on the tourism sector within the Vallee de Mai. Survey carried out and responses from a cross-section of society on the second largest island in Seychelles, the information and opinions gathered raise certain issues of importance for both mitigation and adaptation in the face of almost certain climate change-related challenges.

The results show that there is a local recognition of change taking place – particularly in relation to rainfall and temperature. However, the degree of change amidst already variable weather patterns; and how much is attributable to climate change and how much to other factors is often unclear, with many people admitting as much. To a greater or lesser extent, the changes are being felt as impacts upon the ‘normal’ daily Praslinois lifestyle, particularly amongst those working in the primary sector. Indirect impacts were also raised, but have yet to take prominence. Overall, though, the level of impact is apparently not yet sufficient to be consistently noticeable, nor to raise any specific alarm, particularly amongst those working in the tertiary sector.

As pointed out in the study, there is a high degree of awareness of at least the terminology, though not necessarily an understanding of the underlying issues relating to global climate change and the implications for Seychelles and/or Praslin going forward.

The study also shows that to be substantiated is a sense that, despite a certain amount of information being available and people at least being aware of climate change as an issue, it is not a particularly tangible concept and the lack of clear future predictions leaves many people either disinterested, or not actively engaging, at a time when understanding more of the potential consequences: for them as individuals, as a community, and as an island, could assist in mitigation and advance adaptation.

As noted in relation to development, whether employed or self-employed, those working on Praslin, as represented by the interviewees here, have achieved a certain standard of living where-by energy, notably through electricity, but also through vehicular use, is gaining prominence. Similarly, residential use of water is an important consideration, particularly if climate change exacerbates current availability problems. Of concern, then, is the apparent lack of awareness of linkages between actions and outcomes and the limited planning for change even through comparatively small-scale initiatives such as the use of water tanks or energy efficient light-bulbs.

(Fisheries Management in the Seychelles (SFA/SMD



Deploying the current meter and CTD at Dividi.

This project focuses primarily on understanding the hydro-dynamics of important fisheries habitats and around Mahe and Pralin, in particular the influence on fish larvae and particle dispersal. The primary partners are Seychelles Fishing Authority, Nature Seychelles (NGO) and Marine Protected Areas (MPAs) management and education programmes. The Stakeholders are SFA (Research and Development, and MPA sections), Ministry of Environment, and other Environmental NGOs involved with marine issues. A number of current activities in the Seychelles can benefit from an understanding of the hydrodynamics of the area, and development of DSTs based on this. One is the WIOMSA-MASMA funded project 'Incorporating reef fish spawning aggregations into optimal

designs for no-take fishery reserves: Strengthening fisheries management and coral reef resilience in the Western Indian Ocean'.

As a key output for stakeholders will be information on the effect of ocean circulation on fish larvae and particle dispersal, information on fish spawning and larval characteristics is also addressed and will be used in DST development. The project builds on previous modelling work with the Seychelles Meteorological Services, with high quality meteorological data and bathymetric data used.

Sierra Leone

During the biennium 2008-2009 the following two activities were implemented in Sierra Leone.

After the transfer of Sierra Leone to the Accra cluster and because of the post conflict status of the country, it was felt indispensable before any activities on natural science programmes in the country to have a real state of science in the country. A support was given to National Commission for UNESCO and has produced a report on the state of science in the country with a focus on the UNESCO international science programmes (IOC, MAB, IHP, IGCP, IBSP). Future activities of the office will be based on the priorities identified during the assessment and diagnosis of science in the country.

In the framework of the promotion of study and careers among youth particularly girls, National Commission for UNESCO was supported to conduct a campaign of sensitization on science in the country by the National Science Council. The support was used to implement a pilot for two

schools (Jamatur Nashir primary school and Peninsular Secondary School in Freetown) in order to sensitize students about the role and the importance of science and technology and to donate prizes to deserving students who have excelled in science and technology.

South Africa



Since 2002, UNESCO Windhoek develops FETWater, the Framework Programme for Research, Education and Training in Water (www.fetwater.co.za), with financial support from the FUST (Flemish UNESCO Trust Funds for Science), and the South African Government. FETWater addresses the needs of practitioners in the South African water sector, through effective cooperation between universities, government departments, research institutions and the public and private sector. The second phase of the programme started in 2007 and will finish in 2010.

Up to the end of 2009, 1052 professionals in the South African water sector received training through the FETWater programme (Table 1). Concurrently, a vast amount of training material has been produced, and two groundwater tests sites were developed at the universities of Pretoria and KwaZulu-Natal.

(1st SADC Workshop on Managed Aquifer Recharge (MAR



Photo: Workshop participants at an artificial recharge site in the vicinity of Cape Town and at University of Western Cape



UNESCO Harare in partnership with UNESCO-IHP HQs and the University of Western Cape, South Africa which holds the (UNESCO Chair in Hydrology) organized a 4-day MAR Training workshop at the University of Western Cape from 26-29 October, 2009. This 1st SADC workshop on MAR saw the participation of 2 country designated delegates from each country

under the Harare Cluster Office i.e. Zimbabwe, Zambia, Botswana and Malawi; three from Mozambique and other self-sponsored participants from South Africa and Namibia. Groundwater is extremely important in Africa. According to the Africa Water Vision 2025, it is estimated that more than 75 percent of the African population uses groundwater as its main source of drinking water. Effects of Climate change on water resources is dictating needs to find innovative solutions for water resources management including aquifers. Managed Aquifer Recharge (MAR) is becoming a choice of solution for groundwater resources management for arid and semi-arid regions but the idea is still new or unknown in Sub-Saharan Africa. The workshop was aimed at

raising awareness and increasing knowledge on the effects of climate change on groundwater resources and to engage the cluster countries in MAR concepts and practices. It also contributed to the knowledge of adapting to the impacts of global changes on river basins and aquifer systems.

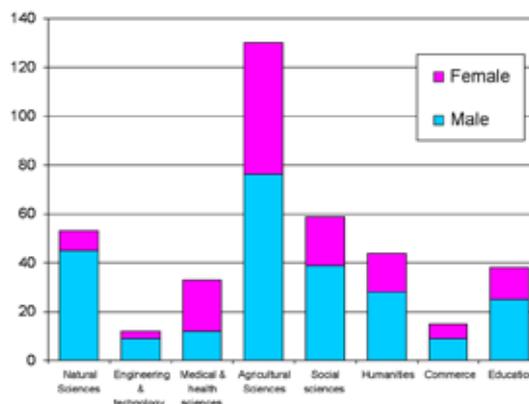
Below is the list of experts who were invited to share their experience at the workshop:

- Professor Yongxin Xu
- Dr. Peter Dillon: CSIRO Land and Water, Australia
- Dr. Arjen de Vries Acacia Managing Director
- Dr. Ricky Murry: Groundwater Africa
- Dr. Gideon Tredoux Formerly CSIR
- Mr. R.C. Jain Central Ground Water Board, India
- Mr Rodney Bishop: Cape Town Water Department
- Mr. Greg Christallie: Namibia DWAF
- Mr. Fanus Fourie DWAF

Swaziland



River Basins of Swaziland



Swaziland, Total number of researchers (Headcounts), by fields of sciences, 2008

Swaziland has promulgated the Water Act in 2003, to “ensure that the nation’s water resources are developed, managed, used, controlled, conserved and protected in a sustainable and equitable manner for the benefit of all citizens”. The Water Act foresees the establishment of River Basin Authorities (RBAs). In this framework, UNESCO Windhoek, jointly with the Department of Water Affairs, conducted a “Skills Inventory and a Training Needs (capacity building) Analysis” for the River Basin Authority (RBA) Board members, Water User Districts (IDs) as well as DWA technical staff. During the next biennium, the corresponding training activities will be carried out in order to capacitate the stakeholders for the application of the Water Act.

As a contribution to the establishment of a National Science, Technology and Innovation Policy in the Kingdom of Swaziland, UNESCO Windhoek supported the production of the first “National Profile of Science and Technology (S&T) in Swaziland”. The Profile was presented during the celebration of World Science Day for Peace and Development on 10 November 2009. The National S&T profile, together with a number of other documents prepared, will support the production

of a policy document and strategy in the coming years, in consultation with stakeholders of the public and private sectors, as well as researchers and academics, and the local community. The “National Profile of Science and Technology (S&T) in Swaziland” can be downloaded from www.unesco.org/windhoek.

Tanzania

3rd World Congress on Biosphere Reserves Madrid, Spain, 2008

The United Republic of Tanzania participated in the 3rd World Congress on Biosphere Reserves Madrid, Spain, 2008 with the support of UNESCO Dar es Salaam.

Workshop on Integrated Water Resources Management for Zanzibar

Participants from the United Republic of Tanzania were trained in Integrated Water Resources management for urban water supplies managers. Participants learnt new techniques for the management and control of pollution in water catchment areas used for urban and semi-urban areas. The integrated approach highlights the role of public participation in the management of water catchment areas.

Improving Science Education in Zanzibar

About 20 secondary school teachers in Zanzibar are benefitting from the support of UNESCO in a training workshop to strengthen science education focusing on improving delivery through the application of micro-science kits and new teaching methodologies. The expected outcome includes the improved confidence of teachers who hitherto had been teaching without any demonstration of concepts in the classrooms, secondly, improved students' ability to understand abstract concepts better.

Support for the National MAB Committee

After over 6 years of meeting last, the national MAB Committee was supported to hold a meeting which enabled the nation to participate in the Trans-boundary reserve programme between Kenya and Tanzania which was supported by Japanese Funds in Trust held in the Nairobi Office.

Support to understudying the review mechanism

In the month of February 2008, some key stakeholders of the Tanzanian national system of innovation namely the Ministry of Communication, Science & Technology, the Commission for Science and Technology, the Tanzania Commission for Universities and the Institute of Developmental Studies University of Dar es Salaam were supported to visit the Department of Science & Technology South Africa for an overview of the review of the South African national innovation system completed in 2005. An outcome is the agreement to have a cooperation agreement between the South African Department of Science & Technology and the Ministry of Communication, Science and Technology of Tanzania.

Stakeholders Meeting on methodologies for national science reviews

All stakeholders of the national innovation system in Tanzania were supported in a two-day meeting which held between 15 and 16 December 2008 at Bagamoyo. The meeting was facilitated by experts from Canada and South Africa and focused on methodologies of national science systems reviews. This helped in the finalization of the STI Reform project document preparation by the Ministry of Communication, Science and Technology.

Support for the Review of the Development Strategy documents of Tanzania mainland & Zanzibar MKUKUTA & MKUZA

As the PRS for Tanzania expires in 2010 and the UN also develops a new UNDAF for 2011 – 2015, UNESCO was requested as the chair of the Innovation and Technology Thematic Group of the Division of Labour for the Development Partners (DPs) to provide a document for mainstreaming science, technology and innovation into the new PRS document to be released in 2010. UNESCO subsequently supported the Tanzania mainland and Zanzibar by conducting a study which assessed the extent of integration of science, technology and innovation into the outgoing PRS documents. The assessment/study document has been completed and is now being used in the planning for the new PRS documents.

Development of Management Plan for East Usambara Biosphere Reserve

UNESCO has assisted the Government of Tanzania to get funds through the One UN Funds for the first phase of a pilot programme to improve the management of the East Usambara Biosphere Reserve. In December 2009 a consultative workshop was held to formulate plans on the way forward for the development of management plans for nature reserves in the East Usambara BR. The Chairman of the UK MAB, Mr. Andrew Bell was the guest speaker and introduced the topic on the use of new technologies (Remote Sensing and GIS) for the management of Biosphere Reserves. A follow up is taking place in Arusha in March 2010 where 35 persons drawn from over 12 institutions would be trained by experts from the Centre for Earth Observation and Digital Earth (CEODE) and the SuperMap Group of China on the use of Remote Sensing and GIS for the management of Biosphere Reserves. In May 2010, the new development plans for about 35 nature reserves in East Usambara will begin through a participatory approach and looking also at the use of new technologies. It is hoped that at the end a comprehensive management plan would be developed for the pilot site the East Usambara BR. Spin offs would include the assistance for the Institute of Resource Analysis of the University of Dar es Salaam to become a Centre of Excellence for capacity development in Remote Sensing and GIS in Tanzania and the acquisition of a LiDAR system.

Technological Entrepreneurship and National Research Agenda

UNESCO has started the process of assisting the Universities to set up a programme on Technological Entrepreneurship in a selected University through funds obtained from one of the Joint Programmes namely Joint Programme 1 on Wealth Creation, Employment and Economic Empowerment. A study is now in place to define the framework and courses of the programme

that will be set up at the University of Dar es Salaam. The Tanzanian Commission for Science and Technology is responsible for jointly setting up the programme with the University and other stakeholders.

An international expert from Cuba has been engaged by the IFAKARA Health Institute with the support of UNESCO under the Joint Programme 1 to undertake a rapid assessment in the area of bio-entrepreneurship to reveal the potential areas for the application of biotechnology on commercial basis in line with the developmental and economic objectives of the Government of the United Republic of Tanzania as outlined in the current Poverty Reduction Strategy (MKUKUTA/MKUZA) and the Vision 2025 document for the mainland and Vision 2020 for Zanzibar. The work will provide details of the role of biotechnology-related entrepreneurship for economic competitiveness and determine the actual and potential economic uses (agricultural, industrial, medical, etc.) and the added value of biotechnological applications for Tanzania's development. It will also mark out areas with potentials for increasing women/girls participation and the possible value-addition that this could contribute to national growth and the success of bio-enterprises. The findings will be presented at a mini-stakeholders workshop for additional comments before finalizing the document for submission to the Government of Tanzania and UNESCO Dar es Salaam Cluster Office;

Strengthening the Participation of Women in Science and Technology in Tanzania

UNESCO is supporting the Ministry of Community Development, Gender and Children and other gender-supporting organizations to improve the participation of women in science. Consideration is also being given to support capacity development for rural women in the application of technologies for economic empowerment. Plans are underway to undertake a holistic study on the status of women in science, technology and related subjects in Tanzania. This will help shape feature interventions and guide policy for increasing women participation.

Capacity Development for the Management of Tanzania's Sciences System

UNESCO Dar es Salaam has obtained funds from the Delivering as One programme to support training activities for government officials and other key stakeholders for the management of the national science system. A forum on science, technology and innovation programming and budgeting will be held in April 2010 with international facilitators from Advansis Finland and others from the Department of Science & Technology South Africa. The objectives of the Forum are:

- To sensitize top government officials of Ministries, Departments and Agencies (MDAs) such as Finance and Planning, Science-related Ministries and Agencies, and the Private Sector on the processes of programming and budgeting for science, technology and innovation in Tanzania;
- To enhance capacities of top officials of government through best practice and hence enable the:
 - a. Explicit identification of appropriations to science, technology and innovation [R&D and Science and Technology Services (STS)], which shall assist in the preparation of a consolidated budget of the R&D and STS activities of each science-related Ministry and hence:
 - Serve as a way of harmonizing interdependent STI activities being carried out in a number of disciplines or economic sectors, and of organizing inter-institutional

- projects in a more rational manner;
 - Help to improve the interdependence existing between innovation and the education system which supplies its manpower needs and those educational and research functions related to the production of goods and services;
 - Assist to stimulate a democratic and national budget debate on the government's STI policy.
- b. Consider the possibility of formulating an explicit science and technology budget as from the Fiscal Year 2010/2011.

The Tanzanian Commission for Science and Technology will serve as the focal agency for the forum

Another important activity for the development of internal capacities of Tanzania's science system are the discussions between UNESCO, SPRU and CENTRIM of the UK to set up a programme of short-term courses at the Institute of Development Studies at the University of Dar es Salaam in the following areas:

1. Science and Technology Policy;
2. Innovation and Technology Management;
3. Knowledge production and Intellectual Properties

SPRU and CENTRIM have agreed and will start the first programme in May 2010 for a set of Tanzanian trainers who shall eventually manage the programmes. Beneficiaries would be the staff of science-related Ministries, departments and agencies. The programme will be designed to be self-sustaining and may eventually take candidates from the East African Region. The IDS is undertaking a capacity needs assessment within science-related ministries, departments and agencies on the above listed programmes.

Inter-Sectorial Platform Programme for Science Education

From the One UN Funds, the science sector working together with the Education Sector of the Dar es Salaam Cluster Office has raised funds for the improvement of science education teaching and learning. Activities within this programme will include the development of a science education policy for United Republic of Tanzania, review of curriculum for science subject at primary and secondary levels, the purchase of micro-science kits for 8 regions including Zanzibar and for the training of teachers in pedagogy for effective delivery of science subjects.

Evaluation of the Performance of Higher Education science, technology and innovation

A major activity has been planned for 2010 which is to undertake an evaluation of the performance of Tanzania's Higher Education science, technology and innovation vis-a-vis the performance of their economic functions and contribution to the national development strategies. Outcomes are expected to assist the Ministry of Education and Vocational Training in their current sector-wide reform of the Education Sector. UNESCO Dar es Salaam is overseeing this action through funds from the One UN in the Joint Programme for Education (JP10).

Developing Tanzania's Tourism Industry with Innovation and Technology

UNESCO supported a desk study and a short field visit to design a project that will use science and technology in Tanzania's tourism industry to promote innovation and entrepreneurship, within a cluster framework. This is the first stage of a more complex process of creating the development project involving multiple Tanzanian and international stakeholders. The major development project to be considered for implementation will include; building management and cluster coordination capacity; supporting more university research and teaching on tourism, with a strong orientation to innovation and entrepreneurship; developing business incubation focussed on application of technology and innovation in the tourism sector.

Empowering Non State Actors in Tanzania to plan for sustainable coastal livelihoods using Decision Support Tools

In Zanzibar, Tanzania, IMS is coordinating a consortium of local and national partners to implement a project titled Empowering Non State Actors in Tanzania to plan for sustainable coastal livelihoods using Decision Support Tools. This is funded through the EU's Regional Programme for the Sustainable Management of the Coastal Zones of the Countries of the Indian Ocean (ReCoMaP), and is coordinated by UNESCO IOC.

The project runs for two years and in 2009 activities included: collection of data; development of a hydrodynamic model; presentation of a scientific report on the hydrodynamics of the Jambiani Coast, Zanzibar; a training workshop involving 10 participants concerning the preparation of hydrodynamic models; stakeholder analysis addressing issues of coastal livelihoods at the site; and "Training of Trainers" from NGOs, government departments and institutions on participatory management and stakeholder analysis methodologies. Trainers then in-turn led the project stakeholder workshop with 38 local participants.

Togo

During the biennium 2008-2009 the following five activities belonging to IHP, MAB and basic science programmes were implemented in Togo.

In the framework of the International IHP programme within its major activity on the associated programme ISARM (Internationally Shared Aquifer Management), a study has been conducted on the transboundary hydro-geological system Keta and shared. This study is a follow up to the Action Plan of the ISARM West Africa network established in 2007 who agreed to prepare an Atlas for transboundary aquifers in the sub-region. In this framework, data and information on the Keta hydrogeological basin have been collected and analyzed by the Togo ISARM focal point under the supervision of the National IHP committee hosted by the General Direction of Water Resources. Data collected will be sent later to the ISARM focal point for Keta basin who will produce a global report on Keta with emphasis on the transboundary nature of aquifers within the system.

Within the framework of the MAB program, the National MAB committee hosted the department of wildlife and hunter of Togo was supported to conduct Ecological mapping for the



Damaged and abandoned houses on the Jambiani coast, showing the remaining sea wall in the background.

identification and characterization of the two identified sites: national parks of Fazao-Malfakassa and Keran-Oti-Mandouri. The activity comprises the review and updating of the proposals submitted so far and for which more data and information have been requested. The complementary information and data collected will allow the Togo MAB national committee to submit soon for nomination as biosphere reserve the application documents of the two sites.

In the framework of the promotion of study and careers among youth particularly girls, National Commission for UNESCO was supported and has granted fellowships to the three best females for their entry 2008-2009 to university. National Commission has also organized a conference on gender and science and has sponsored a TV game on science. The activity was successfully implemented with the close collaboration of the University of Togo.

Uganda

The Statutory framework for Biosphere Reserves recommend that countries review their biosphere reserves functioning , including the level of integration amongst the three functions (Conservation-Development-Logistic) , at least once every ten years after the inclusion of a site in the World network of Biosphere reserve. The so called periodic review, which is also one of the targets of the Madrid action plan (2008-2013), is an important exercise to assess the management of the Biosphere Reserve, especially for those which have been nominated before Seville, i.e. 1995. The intention is to encourage support countries to take the necessary steps to update them to a post Seville and MAP vision.

With Mount Elgon, The Queen Elizabeth Biosphere reserve is one of the 2 Biosphere reserve in Uganda. It has been designated in 1979, and its periodic review was due. UNESCO Nairobi office provided financial and technical support for the completion of the assessment. The results of the periodic review will help Uganda to improve the conformity of Queen Elizabeth Biosphere Reserve with Seville and Madrid recommendations.

In 2010-2011, five other sites will be reviewed with UNESCO Nairobi technical and financial support.

Zimbabwe

The British Council and UNESCO Harare Cluster Office embarked on a three-year Climate Change Mitigation and Adaptation Project (2008-2011) entitled Our Climate, Our Future. The initiative has the following objectives:

- Build awareness and create a demand for action
- Support relationships and networks which lead to action on Climate Change Mitigation and Adaptation
- Match and adapt materials to a local context-specific information
- Adopt a medium of delivery to suit the needs and expectations of local context



Climate Change Activities

Addressing this challenge requires a multi-disciplinary approach and facing to the stark reality of climate change requires the following actions:

- Build and maintain the requisite knowledge base;
- Adopt measures for adapting to the impact of climate change
- Contribute to the mitigation of its causes; and
- Enhance sustainable development

Whilst climate change is a wide topic, the British Council and UNESCO formulated a project based on three topical issues that are affecting Zimbabwe. These are Water, Deforestation and Air Pollution. The project also brings on board other partners and relevant government ministries, public and private entities such as NGO's. This was done to maximize resources as well as to increase ownership of the Climate Change Adaptation and Mitigation process of the proposed project. The three phases of the proposed project are as follows:

Phase One: Awareness Stage

The aim of the first stage is to train the media on how to effectively report on environmental issues in a manner that is easily understood by all audiences.

Phase Two: implementation Stage

The aim of the implementation stage is to implement programmes that will educate school children on what climate change is and what they can do to join the campaign against climate change. This stage also looks at involving students from agricultural colleges by influencing change in their syllabi to incorporate Climate Change as this will affect the work they will be doing upon completion of their studies.

Phase Three: Lobbying

The final stage will culminate in a conference between decision makers, government departments and students whereby students and decision-makers can debate and raise important questions on climate change and map a way forward.

Within the framework of this initiative, the following activities were organized:

1. British Council-UNESCO Stakeholders Dialogue on Climate Change 4-5 February 2009. As part of bringing on board other players, a multi-disciplinary approach was adopted and relevant government ministries, NGOs; public and private entities undertook a two-day Stakeholders Dialogue on Climate Change. The Stakeholders Dialogue also sought to increase ownership of the proposed project and foster partnerships in order to maximize resources. Experts from the academia, various environmental institutions, United Nations, performing arts, government ministries, the media and NGOs made presentations on an array of topics on climate change.
2. Capacity Development workshop for Mass Media Professionals were held in June 2009 and for Zimbabwe Parliamentarians was held from 19-21 October, 2009 as an awareness exercise on climate Change issues and its effects.
3. Competition was organized for several schools around Harare on the impact of climate change on water resources. The competition consists of questions, drawing context and poems. Prizes were awarded on World Water Celebration Day on 22/03/2009. This exercise served to sensitize school pupils on the issue of climate and adaptations to climate change.

Ministry of Water Resources Development and Insitute of Water and Sanitation: IHP Library



Book Donation Ceremony. Photos feature standing from left to right, the SC programme specialist, Marcel Tchaou, Harare office Director, Soo Choi, The Minister of Water Resources and Development, Samuel Sipepa Nkomo, and the permanent secretary, Ringson CHITSIKO

Within the framework of helping Zimbabwe strengthen its institutions and build capacity for water resources management, UNESCO Harare in cooperation with UNESCO-IHP HQs provided books and water resources educational materials to the Ministry of Water Resources Development and The Zimbabwe Institute for Water and Sanitation. In addition to the books, UNESCO also donated rulers, pens and T-

Shirts, all inscribed with the 2009 World Water Day theme (Shared Water Share Opportunities), a water conservation message (Think Globally Act Locally: Promote the Sustainable Use of Shared Water Resources) and the UNESCO-IHP logo. This book donation largely contributed to boost the libraries of those two government entities. The donation ceremony was presided by the Minister of Water who pledged support to IHP activities in Zimbabwe and requested that all staff of the Ministry wears the T-Shirt the last Friday of the month.

A Girls Science Camp held in Zimbabwe's Mlezu Agricultural College

A Girls Science Camp was held in Zimbabwe's Mlezu Agricultural College in the Midlands Province to promote participation of girls in science and technology so they could effectively be involved in the development of the nation and as a way of changing attitudes of girls towards science and mathematics so they could perform better and become encouraged to take up science subjects in schools; to encourage girls to share experiences and encourage each other to take up science subjects; to provide models so that girls become encouraged and develop confidence to take science related careers and to promote a network of teachers teaching science subjects and girls taking science subjects. The camp was very successful with many testimonies from girls demystifying science and vowing to pursue fields like medical, engineering, mathematics, physics.

Science and Technology Policy Review

UNESCO provided financial support to the tune of US\$40,000 for the Zimbabwe Science and Technology Innovation Policy Status Review. The purpose of this review is to identify existing policies and legislation, profile roles and mandates of public institutions, ascertain the levels and adequacy of infrastructure and determine institutional linkages and collaboration. A Stakeholders Consultative workshop was held on 24 August, 2009 to discuss the draft report before its finalization. The review is expected to lead to the reformulation of the country's science and technology policy to address new challenges and circumstances that meet national science and technology innovation needs, and promote economic growth and wealth creation through rapid industrialisation. For more information visit: <http://allafrica.com/stories/200904300413.html>

Multi-country activities:

Angola, Lesotho, Namibia, South Africa and Swaziland



Compilation of Water legislations, policies and strategies of Angola, Lesotho, Namibia, Swaziland and South Africa

With the support of UNESCO WIN, the UNESCO Chair in Geohydrology at the University of the Western Cape in South Africa produced the set of guidelines for community water supply and sanitation provision in Africa, published as “Sustainable Groundwater Resources in Africa - Water Supply and Sanitation Environment” by CRC Press and UNESCO IHP (<http://www.crcpress.com/product/isbn/9780415876032>). This book presents and advocates for a range of good practice

measures for the sustainable utilization of groundwater for community growth and development in Africa, under the framework of integrated water resources management (IWRM), addressing –not only technical solutions, but also the need to tackle major issues concerning hydro-social and public health components. The book was presented by the UNESCO Chair during the Second African Water Week in Johannesburg, South Africa, 10 November 2009, in the framework of the first meeting of the African Groundwater Commission.

During the 2nd African Water Week in Johannesburg in 2009, the need for compiling water-related legislation and policies in African countries was identified, in order to provide policy support to the African Ministerial Conference on Water (AMCOW) and other regional and sub-regional bodies, such as SADC.

UNESCO Windhoek started the process for the five cluster countries at the end of 2009 and has published a website with the existing information in February 2010, available on www.unesco.org/windhoek. The compilation presents the status of the water sector in the cluster countries in 2009 and should serve as a reference document at both regional and country levels, by providing various sector-related informations; and establishing itself as a source of advocacy for water needs in the referred countries.

The documents are listed per country in the following structure:

- Water Legislation
- Water related Legislation
- Policies and Strategies

- Institutional arrangements
- Miscellaneous (incl. experiences, studies and cooperation projects).

Namibia, South Africa and Botswana



Potential conceptual model area of the Auob transboundary aquifer

The “Preliminary Study of the Auob Transboundary Aquifer in the South East Kalahari/Karoo Basin” was produced by the UNESCO Chair in Geohydrology (University of the Western Cape) on behalf of UNESCO Windhoek, to inform the debates taking place in the framework of the Internationally Shared Aquifer Resources Management (ISARM) – SADC initiative. Research on Trans-boundary Aquifers, through furthering integration in the water sector, contributes to enhancing regional development and avoiding potential future water-related conflicts.

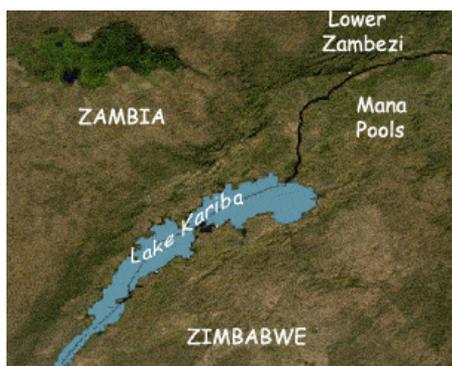
This particular transboundary aquifer (also known as “Stampriet Aquifer”) spans Namibia, South Africa, and Botswana, countries in which many communities rely on it for their water supply. The report advises “that the management and responsibility of the aquifer system (...) need to be equitably divided and jointly monitored between the member states. The intergovernmental management and cooperation of the Auob aquifer system is necessary in order to ensure that all stakeholders in will have access to this vital resource.” As a consequence of the recommendations, a project is currently under development by the Government of Namibia, UNESCO and various other co-operation partners aimed at developing a strategy and process for management of transboundary aquifers based on case studies in two aquifer pilot areas within two River Basin Organizations (“Sustainable Development and Management of Transboundary Aquifers”).

Kenya and Tanzania

The Kenya/Tanzania project on “Biosphere reserves as learning laboratories for sustainable development in Africa – Ecosystems and livelihoods in the Amboseli Biosphere reserve (Kenya) – Mt. Kilimanjaro World Heritage (Tanzania) transboundary complex’ took place in the cross border area (corridor) between these two famous internationally recognized sites. Given the economic and environmental situation, sustainable management of the transboundary area between Amboseli Biosphere Reserve and Kilimanjaro World Heritage has become a major challenge affected by Climate Change impact. The project aimed at contributing to a better management of the area and to build capacity of stakeholders to better understand the linkages between integrity of ecosystem and livelihoods sustainability. Among other outputs, the one training session on future scenarios visioning provided to administrators, decision makers and representatives of local authorities was very successful. During the training the views/experiences of the various categories enriched the common understanding on what was happening in the ground. These interactions were extremely powerful when it comes to local experience and knowledge sharing. We can also report that updated information on the sites have been collected and shared with

relevant stakeholders during a final workshop organised in Nairobi. The workshop was opened by Noah Wekesa, Honourable Minister of Forestry and Wildlife in Kenya. During the workshop governance and management issues of the site were discussed. At the end of the workshop, the participants agreed on a way forward and committed themselves to better manage the area, especially through the possibility of nominating a transboundary Biosphere reserve.

Zambia, Zimbabwe and Malawi



Zambia, Zimbabwe Joint Transboundary Meeting

A joint Zimbabwe/Zambia meeting was held in Kariba, Zimbabwe from 17-18 September, 2009 to share information regarding the establishment of a Transboundary Biosphere Reserve (TBR) on the Lower Zambezi River. The meeting was followed by a field visit to Mana Pools. This activity was co-sponsored by UNESCO Nairobi and UNESCO Harare with participation from UNESCO Yaounde. The meeting was to build the foundation for cooperation between Zambia and Zimbabwe to explore the possibility of a TBR between the two countries. The process started well, but further talks between the two countries are needed to clearly define a way forward.

Water Education for Communities, Stakeholders and Mass Media professionals

UNESCO Harare provided support given to Mass Media Professionals and other Stakeholders in Malawi and Zambia for sensitization and awareness workshops for water education and conservation.

In Zambia, a stakeholder workshop within the Ng'ombe community in the rural areas of Zambia was organised as an awareness session for Water Use efficiency to increase stakeholder's knowledge base in managing water as a scarce resource.

PART II-REGIONAL ACTIVITIES

(QUERIES OR REQUESTS FOR ADDITIONAL INFORMATION TO BE SENT TO THE DIRECTOR OF
THE REGIONAL OFFICE)

Basic and Engineering Sciences

The following three (3) categories of regional activities were pursued under the Basic and Engineering Sciences:

- Capacity-building in basic sciences and engineering education and research;
- Improvement of capacities in science, technology and innovation policies; and
- Regional coordination and small grants for conferences.

Capacity-building in basic sciences and engineering education and research

In pursuing the goals under this category, activities aimed at providing support to regional networks, enhancing cooperation with regional organizations involved in the development of science and technology activities, such as ICSU, and improving research and training capacities were implemented. One can specifically highlight:

- Awards of post-graduate training fellowships towards Msc. and PhD in science and engineering were provided through ANSTI and the financial support from the German Academic Exchange (DAAD). Several post-graduate awards were granted to academic staff of institutions from all the sub-regions of the Continent.
- Also through ANSTI, with funds coming from the Dutch Government, staff members of African Universities were supported to undertake short-term research and teaching assignments in universities other than theirs as visiting professors. The objective of the awards is to provide short-term solution to staff shortage in Science. In other cases the awards were used to facilitate the research work of senior scientists.
- In an effort to identify the potential and increase the utilization of the African scientists in the Diaspora (outside of Africa), UNESCO, through ANSTI, has pursued activities to develop a database of existing scientists in the Diaspora.
- UNESCO's efforts to improve the capacities of researchers also took the form of financial supports granted to them to attend conferences and share their experiences and the results of their work with their peers. The demand for such interventions remains very high on the continent. Through ANSTI, UNESCO awarded an average of \$2,500 to African researchers to travel and present the results of their work to international conferences held on the continent. UNESCO also provided additional conference attendance awards financed on its regular budget.
- UNESCO and ANSTI organized a Regional Training Workshop for E-Content Development from 22-28 June 2008. The training which took place at the ICT Center of the University of Nairobi, aimed at promoting the use of modern technologies in the provision of science and engineering education in higher learning institutions. UNESCO/ANSTI also produced four course CDs on: Electrochemistry, Highway and Traffic Engineering, Organic Spectroscopy and Organic Chemistry. The CDs were distributed to institutions in the region.



A snap shot of the Scientist website
<http://scientists.ansti.org/>



The four covers of the CDs produced

Improvement of capacity in science, technology and innovation policies

In recognition of the fact that Science, Technology and Innovation can contribute effectively to poverty reduction and economic development only when institutions, resources and laws and regulations are adequately designed and provided for, more and more countries are requesting support from UNESCO to review their existing or formulate new STI policies. The process of evidence-based policy making involves the acquisition of sufficient knowledge of the STI environment and status before key skill gaps can be identified and filled at national levels. Consequently UNESCO's approach in supporting Member States is based on activities related to mapping of STI status in countries, STI policy review, and capacity-building for STI policy formulation and technical assistance to address specific needs in cluster countries for STI policy formulation. This approach was translated into a number of activities. During the period under consideration, activities in this area included:

- The commissioning of international expertise for developing an STI policy formulation training module that can be used in an e-learning format aimed at training an unsupervised large number of policy-makers. This is done with the collaboration of the African Technological Policy Studies (ATPS);
- Technical assistance offered to member states to improve and formulate their STI policy. Regional coordination and small grants for organization of conferences UNESCO continues to work towards institutional capacity building in Africa in the fields of science by strengthening its partnership/cooperation with African STI related organizations such as the AUC Human Resource and Science and Technology

Conference of Vice-Chancellors, Deans of Science, Engineering (and Technology) (COVIDSET 2009)

In November 2009, the third edition of the Conference of Vice-Chancellors, Deans of Science, Engineering and Technology (COVIDSET) was organized in Kampala Uganda. The meeting was a product of the collaborative effort of African Network of Scientific and Technological Institutions and its parent body, the UNESCO Regional Office for Science and Technology in Africa. The Conference was initiated in 2005, by the African Network of Scientific and Technological Institutions (ANSTI), as a forum for university leaders responsible for science and engineering education to meet and dialogue on strategic issues in science and engineering education. COVIDSET is a forum both for the exchange of ideas and experience as well as for the sensitization of university leaders on trends in science and engineering education and research in the African Region and globally.

The forum has thus become an important and regular biennial platform for exchange, debate on ideas, capacity-building and design of concrete action to improve high level training and research in Science and Technology in Africa.

COVIDSET 2009 was held from 23rd to 25th November 2009 and was hosted by Makerere University, Kampala. Participants deliberated on the theme: "Revitalizing Science, Engineering and Technology Research and Deployment for Sustainable Development in Africa." Over 150 university leaders and representatives of various organizations and donor community attended. Participants came from 23 countries and 43 institutions in Africa. The large gathering of university leaders provided an opportunity for UNESCO and ANSTI to highlight some of their major programme activities.

Regional coordination and small grants for organization of conferences

UNESCO continues to work towards institutional capacity building in Africa in the fields of science by strengthening its partnership/cooperation with African STI related organizations such as the AUC Human Resource and Science and Technology Division, the AU/NEPAD, ICSU and others. Activities take the form of participation in high level meetings organized by these organizations, support through grants and technical interventions in various events. This can be illustrated by the UNESCO leadership in the UN Regional Coordination Mechanism Cluster on Science and Technology; various partnerships with the AUC on key issues related to the development of science and technology and the participation of UNESCO with a high level delegation in the ICSU General Assembly held in Maputo, etc. Through these partnerships UNESCO continues to play an advocacy role for STI in development for Africa. UNESCO provided grants to a number of Universities and research centres to organize international conferences.

Water Sciences

Contribution to the organization of the International Conference on Integrated Water Resources Management: Lesson from Implementation in Developing Countries and organization of the 2nd Sub Saharan Regional Consultative Meeting of the IHP (National Committees (Cape Town, 10-13 March 2008

The two events were sponsored and co-organized by the Water Research Commission, the department of water affairs and forestry of South Africa, the water institute of southern Africa and UNESCO-IHP. The Africa UNESCO delegation was led by Mr Naah, regional hydrologist and composed of Amani, Plea, Makarigakis, Tchaou and Maduekwe from Accra, Bamako, Windhoek, Harare and Dar Es Salaam Offices.

The conference attended by more than 300 participants composed by academics, policy makers, Students from more than thirty countries. The aim of the conference was to assess local practices and experiences based on the founding principles as formulated in Dublin in 1992. Examples were given on how African countries are implementing IWRM. The scale of implementing IWRM varies from regions, shared river basins, countries and local levels. The main conclusions of the conference are:

- IWRM has to be considered in the global framework of development;
- At local level, involvement of communities is crucial;
- IWRM as tool for ecosystem preservation.
- Lack of data in quantity and quality could jeopardize the success of IWRM implementation.

The second meeting of African IHP national committee was officially opened by Mr. A Tedja-Guilbert (SC/HYD, Paris) and attended by IHP representatives from Ghana, Benin, Cote d'Ivoire, Bamako, Niger, Zimbabwe, Botswana, Malawi, Zambia, Rwanda, Burundi, Uganda, Namibia, Swaziland, Lesotho, Angola, Togo, and Chad. It was chaired by South Africa. The main outcomes of the meeting have been:

- a) IHP Delegates have identified the following priorities
 - Impact of climate change on water resources
 - Ground water; supporting the establishment of the African Commission on Ground Water as per AMCOW recommendation
 - Water management in arid and semi-arid zones
 - FRIEND and HELP.
 - Urban water management
 - Rural water supply
 - Capacity Building at all levels
- b) UNESCO to be requested to facilitate the process of strengthening the establishment and functioning of National IHP committees in such a way to enhance their profile.
- c) Establish coordination mechanisms for African IHP National Committees
 - Recommend African member countries in the IGC to be the first Coordinating Committee for Region Va (countries to be able to co-opt other members, as they see fit)
 - To support the host country of the next regional IHP consultative committee meeting.
- d) National committees to provide biannual reports to the UNESCO IHP Regional Office.

3rd International Conference on Managing Shared Aquifer resources in Africa, Tripoli, Libya, May 2008.



The above meeting was jointly organised by the General Water Authority, Libyan Arab Jamahariya, UNESCO-IHP and Sahel & Sahara Observatory.

It provided a forum for the international community (Scientists, experts, managers and decision makers), around

150 participants, to take stock on the current knowledge on trans-boundary aquifers in Africa.

Contribution to the organization of the international conference on climate and groundwater in Africa held in Kampala 24-28 June 2008.

This conference was co-organized by the Ministry of Water and Environment of Uganda, the University College in London (UCL), UNESCO-IHP and the IAEA. The conference was attended by more than 300 participants coming from various areas, water and climate scientists from research/academic institutions, government departments, and private sector as well as policy makers and representatives from international agencies, donors and consortia. UNESCO was represented at the conference by a delegation led by Prof. Joseph Massaquoi, Director of Nairobi office and comprising Mr Naah, regional hydrologist, Mr Amani, science program specialist from Accra office and Mr. Treidel representing the water division. This international conference was organized in order to raise awareness on the importance of groundwater in the context of climate change in Africa. Indeed, due to many reasons current assessments of the impacts of climate variability and change on water resources commonly exclude groundwater. In Africa current usage and future adaptations in response to climate change and rapid population growth, place considerable reliance upon groundwater to meet domestic, agricultural, and industrial water demands. The Groundwater and Climate in Africa conference enabled water and climate scientists and policy makers to share knowledge and expertise and thereby improve current understanding of the impact of climate and development on groundwater resources in Africa. In addition to scientific publications as major results of that conference, a Kampala statement on groundwater and climate change in Africa was issued (<http://www.gwclim.org>).

During a side event to the conference, the Africa network on GRAPHIC (Groundwater resources Assessment under the Pressure of Human activities and climate change) was also launched. More than fifty participants attended the GRAPHIC side event and expressed their interest for the network.

Contribution to the establishment of the African Ground Water Commission (AGWC)

The need to accord greater attention to groundwater management in Africa has been recognized by the continental institutions including the Ministerial bodies. Following the decision of AMCOW, the President of AMCOW requested UN-Water/Africa, in collaboration with the Government of Kenya, to organize a working session of experts and representatives of AMCOW EXCO and TAC in order to prepare a proposal on establishment of the Groundwater Commission. Based on the proposals formulated by the above meeting, AMCOW EXCO decided to establish a Commission on Groundwater Management in Africa. It will act as a sounding board for implementing decisions by AMCOW and other multi-stakeholder consultations in order to provide strategic advice on collaborative aspects of groundwater resources management in Africa. AMCOW has designated an interim secretariat for the Groundwater Commission and composed of UNEP, UNESCO and University of the Western Cape (UWC). A task force team was set up to assist the interim secretariat and held its first meeting in Cape Town from 25 – 27 February 2008. This meeting was attended by UNEP, UNESCO the University of the Western Cape, the University of the Free State in South Africa, the University of Dakar and the University of Cocody in Cote d'Ivoire. A roadmap to the constitution and functioning of an AGWC was launched at the First African Water Week in Tunis, 26-28 March 2008. The 1st Africa groundwater Commission meeting



Members of the task force team set up to assist the AMCOW interim secretariat during their first meeting in Cape Town from 25 – 27 February 2008.

was organized in March 09 in Cape Town South Africa. Contribution to the promotion of the AGWC during the second Africa water week held in South Africa in November 2009.

Support for capacity building through training workshops

The following training sessions have been organized or supported:

- Training on geophysics and field work in the Kenya Rift Valley ;
- Organization of training on groundwater management at the University of Abomey-Calavi, Cotonou, Benin, May 2008;
- Capacity development through training activities within the framework of FRIEND (referring to the FRIEND/Nile Ecohydrology, Hydrologic Modelling and Erosion and Sediment Transport Modelling concurrent workshops, Nairobi, Kenya Jan.09)
- training course on Groundwater Modelling, University of Western Cape (UWC), June 2009

Ecological Sciences

Tanzania and Kenya commit to improve transboundary management of the Amboseli-Kilimanjaro corridor



The last stakeholders meeting of the project “Biosphere reserves as learning laboratories for sustainable development in Africa – Ecosystems and livelihoods in the Amboseli Biosphere reserve (Kenya) – Mt. Kili-

manjaro World Heritage (Tanzania) transboundary complex, was held on 29 April 2009. The meeting was officially opened by Hon. Noah Wekesa, Kenya’s Minister of Forests and Wildlife.

Participants also included conservation Non-governmental Organizations (NGOs), national wildlife authorities, local community representatives, local authorities, universities and researchers from both Kenya and Tanzania. In addition, there was representation from UNEP, the Intergovernmental Authority on Development (IGAD) and Climate Prediction and Applications Centre (ICPAC). This is a one year project being implemented in the cross border area (corridor) between these two famous internationally recognized sites. Given the economic and environmental situation, sustainable management of the transboundary area between Amboseli Biosphere Reserve

and Kilimanjaro World Heritage has become a major challenge affected by Climate Change impact. The project aims at contributing to a better management of the area and to build capacity of stakeholders to better understand the linkages between integrity of ecosystem and livelihoods sustainability.

At the beginning of the project, in order to ensure national ownership, the project document content was revised in order to actualize its objectives, expected results and outputs with the current situation (time constraints, resources available, stakeholder's needs). This led to a new logical framework which actually respected the initial project document.

Despite some constraints such as short duration of the project, or shortage of financial resources, the project implementation phase was successful and almost all the outputs have been produced and results achieved. Updated information on the site has been collected and shared with relevant stakeholders. Capacity of the stakeholders has been strengthened in the area of sustainable natural resources management as well as Climate Change impacts. The value of multi-stakeholder approach was essential for the project success. There should be a follow up of this project to ensure the sustainability of the action undertaken.

The International Workshop on the Relevance of Biosphere Reserves to Testing Sustainable Development Approach

The Workshop held in Kigali from 4-7 November 2008, was co-organized by Rwanda National Commission for UNESCO (CNRU), Rwanda Environment Management Authority, (REMA), Office Rwandais du Tourisme et de Parcs Nationaux (ORTPN) and UNESCO Regional Bureau for Science and Technology in Africa. The meeting gathered 57 representatives of key stakeholders in the area of biodiversity conservation, sustainable use of natural resources and sustainable development. The workshop was attended by Rwandan and international participants from Benin, Canada, Costa Rica, Cote d'Ivoire, DRC Congo, Germany, Malaysia, South Africa, Uganda and the United Kingdom.

Earth Sciences:

International Conference and Workshop of the Association of (African Women Geosciences (AAWG

The 4th biennial meeting was held in Cairo, Egypt, from 14-16 April 2008. About 60 participants from 20 countries in Africa, Asia, USA and Europe assembled at the Cairo University in Gizah. Africa was represented by delegates from Algeria, Cameroon, Egypt, Ivory Coast, Kenya, Morocco, Mozambique, Tunisia and South Africa. UNESCO Nairobi Office was represented at this meeting. The conference and workshop served as a forum and opportunity for women geoscientists to interact and share experience, ideas and knowledge

African Regional Conference for Launching the International Year of the Planet Earth (IYPE)



President Jakaya Kikwete of Tanzania, Mr Koichiro Matsuura, former UNESCO Director-General and the Prof. J Massaquoi, Director Regional Office for Science and Technology in Africa during the launching of the IYPE in Arusha, Tanzania

The conference was convened at the Ngurdoto Conference Center in Arusha Tanzania and was attended by about 200 participants from about 15 African countries and political dignitaries mainly from Tanzania.

The President of Tanzania, H.E Jakaya Kikwete and Mr. Koichiro Matsuura, the then Director General of UNESCO jointly launched

the conference. Mr. Matsuura noted that UNESCO was designated the lead agency for the IYPE in recognition of its long experience in the Earth sciences, notably through IGCP.

Ocean Science - Intergovernmental Oceanographic Commission (IOC)

During the Biennium, IOC continued to be active in the region in developing coastal and ocean science and management. This was primarily through the Ocean Data and Information Network for Africa (ODINAFRICA) project (funded by the government of Flanders, Belgium), and activities of the Self-Driven Capacity-development programme (funded by the Swedish and Italian governments).

ODINAFRICA

The implementation of the third phase of the Ocean Data and Information Network for Africa was completed in 2009, with the installation of a tide gauge at Alexandria in Egypt, and the publication of the book: "The African Oceans and Coasts". This was followed by the commencement of the project on "Integrated Data and Information Products and Services for the Management of Oceans and Coastal Zones in Africa" (which is also the fourth phase of ODINAFRICA-IV) to be implemented in the period 2009 – 2013.

Capacity Development

The first phase of the Self-driven Capacity-development programme, came to an end in 2009, focused on leadership, team building and proposal writing workshops and training. During 2009, activities begun on the second phase of implementation. This involved prioritized training on hydrodynamic modelling in West Africa, and institutes in East Africa undertook bathymetry mapping and implemented a number of projects addressing coastal management issues:

- Kenya: Malindi - sea level rise and flooding (Kenya Meteorological Department - KMD)

- Kenya: Shimoni - fisheries habitats (Kenya Marine and Fisheries Institutes – KMFRI)
- Mozambique: Bon Sinais - water quality (University of Eduardo Mondlane School of Marine and Coastal Sciences - UEM/ National Institute for Hydrography and Navigation - INAHINA)
- Mozambique: Beira - dredging and sediments (INAHINA/UEM)
- Seychelles: Fisheries habitats (Seychelles Fisheries Authority – SFA)
- Tanzania: Zanzibar – Coastal erosion (Institute of Marine Science - IMS)

Project development workshops were held to support the development of the above activities, and further information on the projects can be found in the corresponding country sections of this document. Regional training and awareness workshops that were held earlier, lead to the formation of these activities. The workshops held in East and West Africa were:

- Applied National Hydrodynamic Modeling in the Western Indian Ocean Region, Nairobi, Kenya, 24 November – 5 December 2008, co-sponsored by WIOMSA, and hosted by the Kenya Meteorological Department and Kenya Marine and Fisheries research Institute.
- Awareness raising and data collection workshop in the IOCEA region (Kribi, Cameroon, on the 23-27 November 2009).

Regional activities and meetings of both ODINAFRICA and the Capacity-Development programme are included below.

- 3rd Leadership Workshop for the Western Indian Ocean Regions, Maputo, Mozambique, 10-14 April, 2008
- 7th Session of the IOC Regional Committee for Western Indian Ocean (IOCWIO-VII)
- Ocean Data and Information Network for Africa -ODINAFRICA Planning and Review Workshop
- Climate change and Coastal Zones

3RD Leadership Workshop for the Western Indian Ocean Regions, Maputo, Mozambique, 10-14 April, 2008

The Intergovernmental Oceanographic Commission of UNESCO (UNESCO/IOC) held its leadership workshop in Maputo, Mozambique from the 10 to the 14 April 2008. This workshop was the final in a series of leadership workshops in the Western Indian Ocean Region towards implementing its Capacity Development Programme (CD). The CD Programme aims to develop the capacity of senior role players and their scientists empowering them with the skills to identify, collaborate, plan and implement change in the institutes and make them more sustainable and better serve their National stakeholders.

7th Session of the IOC Regional Committee for Western Indian Ocean (IOCWIO-VII)

The meeting held in Mombasa Kenya from 18 to 21 July 2008 was attended by delegates representing Comoros, Kenya, Mauritius, Madagascar, Mozambique, Seychelles and Tanzania, as well as representatives of other regional programmes and organisation. The session reviewed a report on activities implemented since the previous session and endorsed a work plan for the period 2008-2010, focusing on: oceans and climate, linking oceanography to fisheries, strengthening the regional sea level network, and training on use of decision support tools (modelling, GIS and remote sensing). The proposal for the next phase of the Ocean Data and Information Network



Participants during the Ocean Data and Information Network for Africa-ODINAFRICA Planning and Review Workshop.

for Africa (ODINAFRICA) was endorsed and a Regional Group of Experts on Ocean Dynamics and Climate established.

Participants during the Ocean Data and Information Network for Africa-ODINAFRICA Planning and Review Workshop.

Ocean Data and Information Network for Africa-ODINAFRICA Planning and Review Workshop.

The 7th planning and review workshop for the Ocean Data and Information Network for Africa (ODINAFRICA) was held immediately before the IOCWIO-VII session from 14th to 16th July 2008 and was hosted by the Kenya Marine and Fisheries Research Institute. The Objectives of the workshop were to:

- Review the achievements of the current phase,
- identify challenges and potential for further development,
- Discuss and finalise the directions for a possible next phase of the project.

In his opening address, Kenya's Permanent Secretary in the Ministry for Fisheries Development, Prof. Micheni Ntiba noted that the symposium came at an opportune time when a number of coastal states were trying to survey their continental shelf with a view to laying claim to expanded continental shelf. He pointed out that as the available productive land gets smaller from desertification and population pressures, the attention is turning ocean-ward to the resources in the shelf areas and the sea bed.

Climate change and Coastal Zones

In the lead up to the Climate Change Conference (COP15), the African Union Commission, with support of UNESCO/IOC and a network of marine institutions, highlighted the increasing costs attributed to climate change impacts on the coastal zones of Africa – presented and discussed during consecutive AMCEN meetings in both Nairobi and Addis in preparation for COP15. The presentation in the Addis meeting (19-23 October 2009) was made by the Kenyan Special Programmes Permanent Secretary, who was the previous coordinator of the NEPAD Coastal and Marine Secretariat. Subsequently, support was provided to African ministers and negotiators in preparation for the Climate Change Conference (December 7-18, 2009). This included expert advice and documents at meetings before the conference, and coordination of a team of African experts at COP15. All documentation is being made available through UNESCO/IOC and the AU Commission.

