



AFRICAN UNION



**AFRICAN MINISTERIAL CONFERENCE
ON SCIENCE AND TECHNOLOGY (AMCOST III)
THIRD ORDINARY SESSION
12 - 16 NOVEMBER 2007
MOMBASA, REPUBLIC OF KENYA**

AU/EXP/ST/6(III)

**AFRICAN NETWORK ON WATER SCIENCES AND
TECHNOLOGY:
BUSINESS PLAN**

**Securing and Sustaining Water: Building an African Network
of Centres of Excellence in Water Sciences and Development**

Strategic Plan 2007 – 2012

Messages from the AMCOST and AMCOW Chairpersons

Message from NEPAD OST

Executive Summary

This flagship programme on “Securing and Sustaining” water focuses on water quality, sanitation and water resources management. Emphasis is on promoting increased use and production of scientific knowledge and technological innovations to address Africa’s water challenges.

Developing science, technology and technology capacity will generate knowledge, which if well utilised will form the basis for good governance of water resources and will address most, if not all, the urgent needs regarding water. A mechanism to achieve capacity development is the establishment and development of centres of excellence for water research. There are at least two reasons why there is a need to establish a network of centres of excellence. The first is to enable the continent to pull together and efficiently use its scarce human and infrastructural resources. Many African scientists, engineers and technicians as well as institutions are confronting similar problems but tend to work in isolation. By networking the best available institutions, expertises and infrastructure spread over Africa, scientific productivity and innovativeness may be significantly increased. Secondly, establishing networks of excellence will enable the continent to exploit the diversity of institutions and programmes available across the continent.

The strategy focuses on putting an action plan together that establishes a continental network of institutions to address the identified water issues of the continent, through:

- Scientific assessment of Africa’s water resources and systems
- Research and technologies to assess and monitor water related disasters (emphasis on floods)
- Knowledge and technologies to improve water quantity and quality

The effectiveness, efficiency and sustainability of the proposed networks of centres of excellence will largely depend on the nature of the governance and financial mechanisms. The overall governance of the implementation of the flagship programme aligns itself to existing structures, with a technical advisory committee to support implementation. A suite of financial measures are proposed, but on the short- to medium-term there will be a reliance on donor contributions.

Understanding the Challenge of Water in Africa

(Excerpts taken from a paper by Beekman and Pieter sen, 2007)

“Access to safe water is a fundamental human need and a basic human right. And water and sanitation are at the heart of our quest to enable all the world’s people, not just a fortunate few, to live in dignity, prosperity and peace.”

Kofi A. Annan, Human Development Report 2006

The sustainable use of water resources is a fundamental requirement for the social and economic development of Africa. Freshwater is a necessary input for industry and mining, hydropower generation, tourism, subsistence and commercial agriculture, fisheries and livestock production, and tourism¹. Safe water is a precondition for health and for success in the fight against poverty and hunger.

Africa has huge river systems, vast lakes, extensive wetland systems and numerous groundwater aquifers. These natural resources are under threat due to natural phenomena, climate variability, climate change and human factors, such as population growth, competition over water and water pollution. The continent suffers from one of the most unstable rainfall regimes worldwide, causing severe aridity in areas like the Sahara and Kalahari and extremely humid areas and tropical conditions like the Congo Basin¹. The continent is marked by a recurrence of climatic extremes in the form of flooding and drought. The Third Assessment Report of the UNEP/WMO Intergovernmental Panel on Climate Change (IPCC) notes a warming of approximately 0.7°C over most of the African continent during the 20th century based on historical records. These extreme conditions pose a continuous risk to Africa’s people their livelihood and national economies.

There are about 80 internationally shared river and lake basins in Africa. Most of the surface water resources are concentrated in the Congo, Niger, Ogoûe, Zambezi, Nile, Sanga, Chari-longone and Volta Basins. Most of the groundwater resources are concentrated in the Atlas Mountains, North African Basins, West African Basement, sub-Saharan Basins, East African Basement, and East Africa Rift and associated basins.

Not only is the quantity of freshwater a fundamental instrument in the development of all sub-regions, but also the quality of the resource. Deterioration of water resources as a result from increases in the salinity and nutrient loads from various pollution sources is manifesting themselves throughout Africa. For the more arid countries, which are highly dependent on underground aquifers for their drinking water supplies, groundwater pollution is a particular concern.

Northern Africa is the most water-stressed sub-region of Africa and freshwater availability will become an even more important issue in the coming decades. Increasing water scarcity may lead to water-related conflicts.

For the western Maghreb countries (Morocco, Algeria and Tunisia), climate change scenarios predict a rise in temperature between 2 and 4 °C this century accompanied by a reduction in rainfall of up to 20% and increased evapotranspiration (IPCC 2001). This would result in decreased soil moisture and reduced surface and groundwater resources.

Salinization of soils, which threatens food production, is already a concern in irrigated areas, especially along the river Nile, and may worsen. Another concern is seawater intrusion resulting from over-exploitation of groundwater resources in coastal areas, where the main urban centres are located.

The **eastern African** countries Eritrea and Uganda are expected to experience water stress in 2025 whereas the other countries are expected to experience water scarcity.

General circulation models predict an increase in rainfall up to 20% for the sub-region, a change in seasonal distribution of rainfall and an increase in air temperature of up to 5 °C for this century (IPCC 2001) but there are also indications of increasing frequency and intensity of drought. In recent years, concerns have been raised about declining water quality in rivers and lakes due to a variety of reasons.

Future projections for the **Western Indian Ocean Islands** place Mauritius in the category of water-stressed countries and Comoros in the category of water-scarce countries by 2025.

IPCC's (2001) projected worst-case scenario of a 1m sea-level rise by 2100 would result in loss of coastal land, agricultural opportunities, groundwater resources (due to salinisation), biodiversity critical to community support and in loss of livelihood. The social impacts of a sea-level rise will cause migration and displacement of people, water-related diseases and water-supply problems.

Pollution in terms of improper disposal of solid wastes and eutrophication as a result of poor treatment facilities was identified by UNEP (2004) as the most severe concern in the sub-region. In Mauritius, for instance, intensive agriculture and industrialisation has led to pollution of water resources, especially within the coastal areas.

Future projections for **southern Africa** for 2025 (Chiuta et al. 2002) suggest that water availability per person will sharply decrease for most countries. Particularly for Malawi and South Africa the projection looks bleak. But also Lesotho, Tanzania and Zimbabwe are expected to experience water stress by 2025, while Swaziland is likely to experience water quality and availability problems in the dry season. The region has experienced floods in the northeast and episodes of severe and prolonged droughts in other places.

Southern Africa is among the few regions in the world for which most global climate models agree upon increase in aridity in the future and hence a further lowering of the water availability for livelihoods (DWC 2003). An early warning system, such as the SADC Early Warning System can predict heavy

rains, yet countries have to better prepare for the magnitude, duration and impacts of floods and droughts.

Pollution from especially agricultural drainage and wash-off, urban wash-off and effluent return flows, industries, mining and areas with insufficient sanitation services is increasing. Pollution of groundwater resources is of particular concern because it is costly and time-consuming to rehabilitate. Water quality management therefore should form an integral part of a strategy for water resource management (DWAF 2004).

Central Africa is characterised by an abundance of freshwater resources, except for the northern parts (Chad and northern Cameroon and Central African Republic) where in the past three decades there was a decline in rainfall (shrinkage of Lake Chad). The demand for water is rising but it is unlikely that the region's fresh water availability, which is currently well above the water-stress threshold of 1700 m³/capita/yr, will be affected much in the forthcoming years.

In parts of central Africa the water quality of water resources is declining due to pollution from industrial effluents and sewage outflows, agricultural runoff and in coastal areas from seawater intrusion.

Of the 16 **western African** countries, 2 currently experience water stress (Burkina Faso and Nigeria) whereas 4 more countries are expected to become water-stressed by 2025.

Climate change is expected to bring about reduced rainfall and increased evaporation in the areas to the north, thus advancing the rate of desertification in the Sahel (IPCC 2001).

There is also a growing concern of pollution of water resources. This is particularly the case in the Niger Delta in Nigeria with the frequent spillage from oil production and distribution.

The challenges posed by improper development and management of water resources have been identified by African leaders as a risk to Africa's economic development. Thus they have placed issues associated with the development, supply and management of water high on the agenda of the New Partnership for Africa's Development (NEPAD). A principle of the NEPAD is to anchor the development of Africa on its resources and resourcefulness of its people. Water as Africa's premier water resource will be critical to eradicate poverty and to place African countries both individually and collectively, on a path of sustainable growth and development.

The first African Ministerial Conference on Science and Technology (AMCOST) held in Johannesburg, South Africa November 2003 decided on water sciences and technologies to constitute one of the main flagship research and development programmes of NEPAD. The flagship programme will be designed to strengthen the continent's capabilities to harness and apply science and technologies to address challenges of securing adequate clean water as well as managing the continent's water resources.

At the second AMCOST held in Dakar, Senegal in 2005 adopted Africa's Science and Technology Consolidated Plan of Action. This plan of action consolidates science and technology programmes of the African Union (AU) Commission and the (NEPAD²). The Plan of Action places emphasis on developing an African system of research and technological innovation by establishing networks of centres of excellence dedicated to specific R&D and capacity building programmes². This was in response to the mandate given at the first AMCOST.

The role of Science and Technology in development

“Knowledge is the engine that drives economic growth, and Africa cannot eliminate poverty without first increasing and nurturing its intellectual capital.”

Philip Emegwali, 2003

“Meeting the [Millennium Development] Goals will require a substantial reorientation of development policies to focus on key sources of economic growth, including those associated with the use of new and established scientific and technological knowledge and related institutional adjustments. Countries will need to recognize the benefits from advances in science and technology and develop strategies to harness the explosion in new knowledge.”

Calestous Juma et al. Innovation: Applying knowledge in Development, 2005

Since their adoption at the United Nations Millennium Summit in 2000, the millennium Development Goals (MDGs) have become the international standard of reference for measuring and tracking improvements in the human condition in developing countries³. The Goals were adopted by political leaders at the World Summit on Sustainable Development in 2002 and set development targets to be achieved by 2015. There is consensus that Africa is falling behind in meeting the targets and a concerted effort is required to urgently find new and effective strategies to move forward.

One of the key limitations to a harmonious development and management of water resources in Africa is the lack of human and institutional capacity to assimilate the modern advances in science and technology necessary to deal with the complex interactions between the hydrological cycle and the societal needs, while conserving the environment⁴. It is unlikely that MDGs will be met through advances in health and environmental concerns without a focused strategy to develop science, technology, and innovation capacity in African countries.

Achieving the MDG goals on water will require investments in science and technology. Science and technology play important roles in water development, supply and management. They are crucial for assessing, monitoring and ensuring water quality. The WSSD Plan of Implementation recognizes the role of science and technology in meeting water goals. In

paragraph 27 it commits governments to “[i]mprove water resource management and scientific understanding of the water cycle through cooperation in joint observation and research, and for this purpose encourage and promote knowledge-sharing and provide capacity-building and the transfer of technology, as mutually agreed, including remote-sensing and satellite technologies, particularly to developing countries and countries with economies in transition.” In addition, to ensure that adequate clean water is available to majority of Africans, affordable rural water technologies will be required.

Developing science, technology and technology capacity will generate knowledge, which if well utilised will form the basis for good governance of water resources and will address most, if not all, the urgent needs regarding water. Since knowledge resides within people, there is a need to build people capacity and competencies. African people should be able to both develop and absorb water-centred knowledge and translate it into good policies, strategies and implementation plans. There is a recognized need to enhance capacity and develop tailor-made capacity-building programmes in Africa. This capacity should be developed at all levels, to allow both knowledge generation and its dissemination and transfer.

A mechanism to achieve the above is the establishment and development of centres of excellence for water research. There are at least two reasons why there is a need to establish a network of centres of excellence. The first is to enable the continent to pull together and efficiently use its scarce human and infrastructural resources. Many African scientists, engineers and technicians as well as institutions are confronting similar problems but tend to work in isolation. By networking the best available institutions, expertises and infrastructure spread over Africa, scientific productivity and innovativeness may be significantly increased. Secondly, establishing networks of excellence will enable the continent to exploit the diversity of institutions and programmes available across the continent.

The proposed African Network of Centres of Excellence in Water Sciences and Technologies may comprise of:

- (a) Multidisciplinary teams of individuals from different institutions either formal or informal. The teams are assembled to solve specific problems. These are largely networks of problem-solvers and innovators.
- (b) Networks of existing institutions whose facilities, expertise and structured get linked together to implement specific programmes
- (c) Single centres such as a university department or institute

These centres will address critical issues and will provide scientific assessment of Africa’s water resources and systems. The centres will conduct research and develop technologies to assess and monitor water-related disasters (emphasis on floods) and provide knowledge and technologies to improve water quality and quantity. These centres will be led by NEPAD and will develop effective systems for the generation and dissemination of water-centred knowledge.

The proposed networks will focus on water quality, sanitation and water resources management. Emphasis will be on promoting increased use and production of scientific knowledge and technological innovations. Its specific goals are to:

- (a) Improve the conservation (protecting aquatic and associated ecosystems and their biological diversity) and utilization of the continent's water sources
- (b) Improve the quality and quantity of water available to rural and urban households
- (c) Strengthen national and regional capacities for water resource management and reduce impacts of water-related disasters (e.g. floods, droughts and water related diseases)
- (d) Enlarge the range of technologies for water supply and improve access to affordable quality water.
- (e) Ensuring water for economic development such as industry, mining, power generation, infrastructure, transport and nature (wildlife) conservation.

Flagship Programme: Securing and Sustaining Water

“The programme under water science and technologies will be designed to strengthen the continent’s capabilities to harness and apply science and technologies to address challenges of securing adequate clean water as well as managing the continent’s water resources.”

Africa’s Science and Technology Consolidated Plan of Action.

This flagship programme focuses on water quality, sanitation and water resources management. Emphasis is on promoting increased use and production of scientific knowledge and technological innovations. Its specific goals are to:

- Improve the conservation and utilization of the continent’s water resources;
- Improve the quality and quantity of water available to rural and urban households;
- Strengthen national and regional capacities for water resource management and reduce impacts of water-related disasters; and
- Enlarge the range of technologies for water supply and improve access to affordable quality water.

Indicative Projects and Actions

The following project areas will constitute the core of this programme, at least in the short- and medium-term.

Project 1: Scientific Assessment of Africa’s Water Resources and Systems

There is a relatively poor knowledge base of and scanty information on Africa’s water resources and related ecosystems. Building scientific information on the continent’s water resources is crucial for improving their development and sustainable management. Scientific research and assessment are also important to inform the formulation and implementation of policies and development of technologies for integrated water management. This proposed project will focus on:

- (a) Developing common scientific methodologies and tools for conducting a systematic assessment of the continent’s water resources and ecosystems. Emphasis will be placed on river basins and underground water systems.
- (b) Training African scientists and technicians on the methodologies and tools to conduct water assessments
- (c) Launching and conducting water assessments at sub-regional and regional levels
- (d) Developing a databank of Africa water resources and ecosystems; and

- (e) Disseminating scientific information on the nature of water resources and ecosystems.

Project 2: Research and Technologies to Assess and Monitor Water-related Disasters (emphasis on floods)

Many African countries suffer from frequent floods along their rivers and other water bodies. The impacts of floods on the continent's economies are significant and increasing. Every year thousands of people die and infrastructure estimated at millions of US\$ is destroyed as a result of floods. While in the short-term floods cannot be prevented, their impacts can be reduced if appropriate technologies are used to conduct forecasts. Forecasts that provide relatively long lead time can be used to evacuate people from high-risk areas or even to create retention basins to reduce flood peaks and volumes.

This project will explore the possibility of developing and applying a continent-wide flood forecast system. It will focus on:

- (a) Identifying and assessing existing technologies for flood control to determine their applicability in Africa. Emphasis will be placed on the kinds of resources required to acquire, modify and apply the technologies in Africa
- (b) Developing a databank and disseminating information on the technologies
- (c) Conducting research to modify, improve and develop flood control technologies

Project 3: Knowledge and Technologies to Improve Water Quality and Quantity

A fundamental prerequisite to the development and application of technologies for improving water quality and sanitation in Africa is a systematic and extensive set of water quality data on both sources of impairments and existing technical responses. Data is required to assess the different sources of contamination and their impacts. Many African countries do not have scientifically strong systems for assessing water quality and quantity as well as the relative seriousness of the related environmental and human health problems.

In addition to the generation of data, deliberate efforts need to be made to develop technologies for improving quality as well as increase the supply of water to African households.

This project will focus on:

- (a) Reviewing existing international water quality assessment methodologies and techniques and promoting the use of appropriate ones through training workshops and postgraduate studies on water quality

- (b) Research on and development of desalination technologies, with emphasis on small modular units that use low and renewable energy
- (c) Research on and related technology development for treating and supplying drinking water from aquifers. This is crucial to ensure that poor populations in peri-urban areas have access to clean water
- (d) Research and application of knowledge on eutrophication. A key aspect of improving and managing water in Africa is the prevention of eutrophication of dams, rivers and lakes, and biological control of weeds. It is recommended that research be conducted to develop new technologies to address eutrophication related problems.

The above proposed projects will be further elaborated and implemented by a continental network of centres of excellence. The network will comprise of regional hubs and nodes.

Implementation, Funding and Governance

“Today, we still stand challenged to create that enabling environment in which science and technology play their rightful role in transforming lives.

Let us urgently marshal the necessary political will and courage to endow our continent with this vital knowledge, required to make Africa a better place”

H.E Paul Kagame, President of the Republic of Rwanda

The effectiveness, efficiency and sustainability of the proposed networks of centres of excellence will largely depend on the nature of the governance and financial mechanisms that are put in place by African governments. Clear structures for coordination, policy-making and resource mobilization are needed.

Overall governance

The overall governance of the implementation of the flagship research programme will align itself to mechanisms established in the Consolidated Plan of Action i.e.

- **African Ministerial Council on Science and Technology (AMCOST)** who are responsible for the establishment of policies and priorities and for more coherent and coordinated approaches on strategies for S&T cooperation. The Council is expected to exercise policy oversight in the implementation of the programmes.
- The **Steering Committee for Science and Technology** who oversees the development and implementation of programme activities, including the formulation of the business plans. It will be responsible for reviewing progress of implementation of the ‘Consolidate Plan of Action’.
- The **AU Commission** shall be responsible for providing overall political and policy leadership for the implementation of this Consolidated Plan of Action.
- **NEPAD Office of Science and Technology (NEPAD OST)**, as secretariat of AMCOST shall be to provide overall technical and intellectual leadership for the implementation of this Consolidated Plan of Action

In addition to the above overall governance structures a reporting mechanism is required to ensure that the African Minister’s Council on Water (AMCOW) is involved. The Mission of AMCOW is to provide political leadership, policy direction and advocacy in the provision, use and management of water resources for sustainable social and economic development and maintenance of African ecosystems and strengthen intergovernmental cooperation to address the water and sanitation issues in Africa⁵. The AMCOW institutional set-up consists of:

- Council of Ministers who consists of the minister responsible for water from each member country,
- Executive Committee with a President/Chair. The Executive Committee is composed of three representatives/water ministers from each of the 5 sub-regions (AMCOW member states are divided into five sub-regions: West Africa, Eastern Africa, Central Africa, North Africa and Southern Africa). Each sub-region has a sub-regional Secretariat (usually housed in the respective Regional Economic Community) for co-ordination of sub-regional activities. Each sub-region is headed by a Vice President.
- AMCOW Secretariat located in Abuja, Nigeria and is headed by an Interim Executive Secretary and support staff.
- Technical Advisory Committee who advises the Executive Committee

At the inter-ministerial dialogue held in Cairo Egypt, the Ministers opposed the creation of new layers of administrative bureaucracy. Existing structures should be utilised for this purpose. Similar to the NEPAD OST, the AMCOW Secretariat should provide overall technical and intellectual leadership for the implementation of the flagship research programme on water. A technical advisory committee will be established that would monitor and review the performances of the network. Its specific roles will include:

- (a) Selecting and proposing to AMCOST and AMCOW the institutions to be designated as NEPAD centres of excellence
- (b) Mobilizing and directing technical expertise, including networks of centers of excellence, to implement the programmes and projects
- (c) Monitoring and reporting to AMCOST and AMCOW regarding the progress of the implementation of the flagship research programme and projects
- (d) Providing technical leadership for the establishment of the proposed networks
- (e) Providing technical support to NEPAD OST and AMCOW Secretariat, and
- (f) Monitoring international trends in science and technology and ensuring that the necessary adjustments are made to the Strategic Plan to respond to the trends,

The technical advisory committee will consist of scientist, experts on institutional and financial management, experts on capacity building projects and experts on technology transfer.

Each network will have its own institutional mechanisms to deal with the day to day administrative and coordination tasks. There are a number of current models that can be followed, including:

- **WaterNet⁶** is a regional network of university departments and research and training institutes specialising in water. Membership of WaterNet is open to institutions in Southern and Eastern Africa that are involved in training education and research in fields directly related to Integrated Water Resources Management, preferably at graduate and post-graduate level. The University of Zimbabwe currently hosts the secretariat.

- **WA-Network**⁷ is a regional network of capacity building institutions in West Africa involved in education, training and research in IWRM. WA-Net is committed to support, strengthen and promote co-operation and partnership among regional capacity building institutions and individuals deliver capacity building services in various fields of IWRM in West Africa.
- The **Nile Basin Capacity Building Network for River Engineering** (NBCBN-RE)⁸ was initiated to create an environment in which professionals from the water sector sharing the same river basin would have the possibility to exchange ideas, their best practices and lessons learned. The NBCBN-RE knowledge network is young, active, has much potential and can contribute through its multi-national, multi-disciplinary and multi-stakeholder research to sustainable solutions for integrated water management, the achievement of the Millennium Development Goals and the Nilotic water and climate dialogue.
- **NETWAS**⁹ is a capacity building and information network for Africa focusing on water, sanitation and environment sector. It is comprised of resource centres in Eastern Africa implementing capacity building activities on training of professionals, applied research, networking and information sharing advocacy, advisory and consultancy services.

Financial implementation

“... Spending one percent of Gross Domestic Product on science, technology and research in our countries as recommended by African science ministers: is this not too little too late?”

HE Paul Kagame, President of the Republic of Rwanda

The success of the implementation of the flagship programme will depend on the financial resources made available for its implementation. A basket of measures to attract financial resources have been proposed by the African Task Team on Water Sciences and Technology Development and also emanating from the resolutions of the inter-ministerial dialogue between ACOSW and AMCOST. These include:

- (a) Allocating a percentage of funding in the proposed African Science and Innovation Facility (ASIF) to the African Network of Centres of Excellence in Water Sciences and Technology Development.
- (b) Establishing a special trust fund in the African Water Facility (AW) for supporting the African Network of Centres of Excellence in Water Sciences and Technology Development.
- (c) Host countries making a minimum contribution to support the proposed networks.
- (d) The establishment of a donors' group comprising of bilateral and multilateral donors private foundations, and others willing to contribute to the proposed trust fund. Clear principles would be adopted to ensure that donors do not unnecessarily cause incoherency in the network's programme as a result of different competing interests. Flexibility should

be created so that donors can also fund specific projects and programmes of the network.

- (e) Sale of products or patents, publications, etc from the network's projects to generate revenue. Such other ways as the collection of water fees and public-private partnerships should be explored to generate financial resources for the network.

These suites of measures have both long-term and short-term implications. It is clear that access to resources to both the ASIF and AW will not happen in the short- to medium-term. Self-generating sales will only materialise in the long-term. Therefore, for the short term, approaches should be made to donor groups and private foundations.

Putting the Strategic Plan into Action

*“Whatever the setbacks of the moment, nothing can stop us now!
Whatever the difficulties, Africa shall be at peace!
However improbable it may sound to the sceptics, Africa will prosper!”*

Thabo Mbeki, 1996

Implementing the strategic plan will be challenging and will require a concerted effort and political will. The Strategic Action Plan identifies key performance areas (KPA), using a balanced score-card methodology. This enables quantitative measurement of outcomes to support management of the process to build an African Network of Centres of Excellence in Water Sciences and Technology Development. The KPAs are the following:

- Stakeholder relationships
- Financial resources
- Business processes
- Learning and innovation

Stakeholder relationships

The objective of this KPA is to mobilise political support to establish the networks of water sciences and technologies and to receive feedback with regard to the relevance and effectiveness of the programme. This area is linked directly to the challenge of leading the AMCOST processes in establishing networks of centres of excellence in science and technology development. This area also addresses a number of identified strategic opportunities such as positioning of the networks; and the risk involved in the inability of the networks to keep abreast of changes (in Africa and globally) and the risk of the inability to build strategic alliances.

In order to attract the necessary resources and raise the profile of the importance of water, the initiative needs to be presented at important science and technology forums.

The date the flagship programme has been presented at the following science and technology events:

- OECD Workshop on International Scientific and Technological Co-operation for Sustainable Development, Kwa-Maritane, South Africa
- 1st Regional Consultative Meeting of the National Committees for the UNESCO-International IHP Programme, Abuja, Nigeria
- The InterAcademy Panel on Water for Africa, Pretoria, South Africa
- African Water Workshop on participating in FP7, Pretoria South Africa
- Needs assessment workshop on establishing a water research development centre and postgraduate training in water and development at MA and Ph.D. levels, Addis Ababa, Ethiopia

The initiative was also presented at the 2nd AMCOST meeting in Dakar, Senegal. The presentation was well-received and resulted in the endorsement for AMCOST and AMCOW to meet to discuss financial and governance mechanisms for the initiating of the networks.

The governance and financing mechanism proposals to support the implementation of the water sciences initiative has been submitted to an inter-ministerial dialogue between AMCOW and AMCOST arranged in Cairo, Egypt on 22 November 2006. The meeting was part of the programme of the Extra-ordinary Conference of AMCOST. The dialogue was attended by ministers from Lesotho, Senegal, South Africa and Zimbabwe, senior representatives from Algeria, Egypt, Ethiopia, and South Africa, and representatives from the Office of Science and Technology of the New Partnership for Africa's Development (NEPAD) and the African Union (AU) Commission. The delegates discussed issues related to criteria and guidelines, financial mechanisms and governance for the network of centres of excellence in water science and technology (the network), before agreeing to its establishment.

The 8th Summit of the African Heads of State took place in Addis Ababa during January 2007. The theme of the Summit was focused on **Science, Technology and Scientific Research for Development** and also **Climate change in Africa**. Accompanying the Summit was an exhibition on Science and Technology. The flagship programme also produced material to be exhibited. The impact of the exhibition was lessened by logistical problems that resulted in the various delegations descending upon Addis Ababa.

The impact of the flagship programme is best measured through the feedback or citations that result from stakeholders, whether through the media, forums or through speeches of political leaders. The programme has been mentioned in the following media publications and internet sources:

- Centres of Excellence as a response to the problem of access to water in Africa. Sources: http://www.eurekalert.org/pub_releases/2005-06/idrp-coe060605.php; and http://www.innovations-report.de/html/berichte/umwelt_natur_schutz/bericht-45047.html
- African Water Newsletter Volume 1. Available [Online] at http://www.africanwater.net/file_upload/2_tmpphpwsvs92.pdf
- Inter-ministerial dialogue on building an African network of centres of excellence in water sciences and technology development. The report is available [Online] at <http://www.iisd.ca/Africa/Amcost/>
- Solving Africa's water challenges through "nerve centres" of science and technology. Available [Online] at <http://news.ahibo.com/spip.php?article472> and <http://groups.google.com/pr/group/nepad-cam/msg/49a603635237f558>
- Recherche: les nations africaines doivent canaliser plus de fonds (L'Orient- Le Jour 29/05/2007). Available [Online] at http://www.africatime.com/ge/nouv_pan_a.asp?no_nouvelle=328659&no_categorie=3

- Research Africa. Not a drop to drink? Kevin Pieterse explains what policymakers need to know to boost water sciences in Africa. Available http://www.globalsciencecorps.org/Documents/Research_Africa_4.pdf and <http://www.research-africa.net/news.cfm>
- African Water in context. <http://www.esastap.org.za/esastap/stories/water.php>

Stakeholder relationships objectives for 2007/2008

GOAL/OBJECTIVES	INDICATORS	EXCELLENCE TARGET
Leadership in African S&T affairs <ul style="list-style-type: none"> • African initiatives • Public appreciation 	African initiatives of key importance to the water, S&T and other related regional sectors where the Water Initiative plays a significant role	Three African initiatives e.g. AMCOST meeting in Kenya, Nairobi.
	Strategic positioning initiatives aimed to position the Water Initiative for future sustainability and growth	Two strategic positioning initiatives e.g. AMCOW and ACPEU Water Facility
	Feedback regarding the relevance of the Water Initiative to Africa.	Three citations
Leadership in external affairs <ul style="list-style-type: none"> • Global 	International player (activities such as global partnerships, participation in global projects, etc.)	Two global initiatives e.g. the Stockholm Week

Financial resources

The objective of this KPA is to mobilise resources to support the implementation of the flagship programme. Limited progress has been made in this regard to date. The French Ministry of Foreign Affairs has been supporting this initiative financially and has funded a number of activities including:

- The task team on water sciences and technology development
- The inter-ministerial dialogue between AMCOST and AMCOW
- The development of the comprehensive business plan
- The design of the process to implement the flagship programme on water research and development
- Mapping the African water research sector

Financial objectives for 2007/2008

GOALS/OBJECTIVES	INDICATORS	EXCELLENCE TARGET
Improved financial performance	Income growth (income growth is measured as meeting the budgetary target of 2 million USD.)	Meet budget target in full
	Support the development of proposals to possible funding organizations	Three proposals developed to e.g. ACP EU Water Facility

Business process

This KPA focuses on the processes to support the implementation of the flagship programme on water research and development.

Specific criteria and guidelines have been developed for establishing the networks. This was incorporated into a call for information from African institutes to submit their institutional profiles. The indicators address issues related to: scientific innovation, social and economic issues and also issue related to capacity building and mentorship. Important considerations in the consideration of these institutional profiles are the financial viability of the proposed networks.

The intention of the call for institutional profiles was to:

- Gather their interest, their needs and to obtain information on institutions involved in water research in Africa that maybe interested in submitting a proposal to be part of the flagship research programme;
- Identify to which extent these institutions/organisations would be interested in participating in regional visits which was to be organized by the NEPAD OST and IRD/WRC, depending on availabilities, logistics support, etc.

The governance and financing mechanism proposals to support the implementation of the water flagship programme are discussed under the section Implementation, Funding and Governance.

The immediate next steps are to:

- (a) Constitute an evaluation committee to consider the institutional profiles and at the same time develop a terms of reference or a methodology to guide the committee in the analysis of the institutional profiles
- (b) Conduct regional information sessions to popularise the water research programme, especially in these regions under-represented in the initial call for institutional profiles
- (c) Assist the under-represented regions in compiling the necessary information forms
- (d) Submit a recommendation to NEPAD-OST which will then need to follow the necessary approval structures within AMCOST and AMCOW

Business processes objectives for 2007/2008

GOALS/OBJECTIVES	INDICATORS	EXCELLENCE TARGET
Improved functional excellence	Design and implementation of a review process to select NEPAD Centres of Excellence in Water Sciences and Technology Development	Approval of the outcomes by AMCOST and AMCOW

Learning and innovation

The aim of this KPA is to contribute towards the water-centred knowledge base in Africa, including capacity building as well as to enhance the water flagship programme's activities and positioning through knowledge sharing and leadership.

A database has been established consisting of the following fields: country, institution, department, unit, water research competencies, contact persons, address, email address, website, telephone numbers and fax numbers.

A draft business plan has been developed which is undergoing the necessary review processes.

Learning and innovation objectives for 2007/2008

GOALS/OBJECTIVES	INDICATORS	EXCELLENCE TARGET
Improved contribution towards capacity building (knowledge base)	Establishment and maintenance of a database of African water institutions and experts	Database established of African water institutions with their relevant expertise listed.
	Develop a comprehensive business plan for 2007 - 2012	Business plan accepted by all relevant stakeholders
	Identify nodes for the Water Initiative	One node identified per sub-region of Africa e.g. the UNEP project on "Vulnerability of Africa Water Resource to Environmental Change"
Knowledge sharing and scientific leadership	Capacity building and training workshops held with relevant institutions to access EU funding programmes ¹	Three workshops held

Five year budget plan

The table below presents an indicative 5-year budget plan to implement the flagship programme. In the short- to medium-term the implementation of the programme will be dependent on donor financing. It is hoped that eventually the programme will be sustained through a basket of financial measures that makes the programme less reliant on only one source of funding.

DESCRIPTION	BUDGET 2006/07	BUDGET 2007/08	BUDGET 2008/09	BUDGET 2009/10	BUDGET 2010/11
Funding of networks	2 000 000	2 500 000	3 000 000	3 500 000	4 000 000
Capacity development and support to the networks	100 000	110 000	121 000	133 100	146 410
Promotion	50 000	55 000	60 500	66 550	73 205
Administration costs	15 000	16 500	18 150	19 965	21 962

¹ UNEP (2006). African Environment Outlook 2. Our Environment, Our Wealth. Copyright © 2006, United Nations Environment Programme. ISBN: 92-807-2691-9. UNEP Job No. DEW/0801/NA.

² NEPAD (2006) Africa's Science and Technology Consolidated Action Plan. NEPAD Office of Science and Technology. ISBN: 978-0620-37633-4.

¹ The EU is supporting a project to facilitate African Involvement in the EU Framework Programme.

³ UN Millennium Project (2005). Innovation: Applying Knowledge in Development. Task Force on Science, Technology, and Innovation.

⁴ UN Water/Africa (2006). African Water Development Report 2006. Economic Commission of Africa.

⁵ Source: <http://www.amcow.org/index1.php>

⁶ Source: <http://www.waternetonline.ihe.nl/>

⁷ Source: <http://www.cap-net.org/>

⁸ Source: <http://www.nbcbn.com/Home.asp>

⁹ Source: <http://www.netwa.s.org/>