

**RECOMMENDATIONS OF EXPERTS' WORKSHOP ON DEVELOPING A NETWORK OF  
CENTRES OF EXCELLENCE IN WATER SCIENCES AND TECHNOLOGY**

**Organized by**  
**NEPAD Science and Technology Forum**  
**French Institute of Research for Development (IRD)**  
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**A. Background**

African leaders have identified water scarcity and related insecurity as one of the sources of their continent's underdevelopment and increasing economic decline. 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). In the framework of NEPAD, the leaders have committed themselves to "ensure sustainable access to safe and adequate clean water supply and sanitation, especially for the poor" and "[to] plan and manage water resources to become a basis for national and regional cooperation and development"

Achieving the goals on water will require investments in science and technology. Science and technology have important roles to play 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.

The first NEPAD Ministerial Conference on Science and Technology held in Johannesburg, South Africa 6-7 November 2003 decided on water sciences and technologies to constitute one of main flagship 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. The Conference decided that a network of centres of excellence in science and related technological innovation.

The importance of establishing centres of excellence in water sciences and technology has also been recognized by the G8 countries. The G8 Africa Action Plan also envisages international support for improving water resources management in Africa. It recognizes the importance of strengthening Africa's scientific research and technical institutes for water. Specific actions that the G8 commits itself to include:

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<sup>1</sup> 12 May 2005 post High Level segment; Rev.2 will reflect recommendations from the High Level segment

- Supporting African efforts to promote the productive and environmentally sustainable development of water resources;
- Supporting efforts to improve sanitation and access to potable water;
- Mobilizing technical assistance to facilitate and accelerate the preparation of potable water and sanitation projects in both rural and urban areas, and to generate greater efficiency in these sectors; and,
- Supporting reforms in the water sector aimed at decentralization, cost-recovery and enhanced user participation

At their Summit in Evian, France (June 2003), the G8 countries adopted an action plan on science and technology for sustainable development as well as an action plan on water for Africa. The plans put emphasis on strengthening scientific and technical institutions for water research and management.

The Commission on Africa has highlighted the special needs of Africa in terms of access to and management of water. The Commission has brought into sharp focus the need for the development and application of science and technology to achieve goals of providing clean water and managing Africa's water resources. It recommends that the international community should allocate US\$ 3 billion to the development of NEPAD centres of excellence in science and technology. In addition, the Commission's report recommends that:

- (a) more donor support should be directed to Africa's river basin organisations.
- (b) there is need for increased aid for water supply and sanitation, to enable African governments to achieve the Africa Water Vision commitment to reduce by 75 per cent the proportion of people without access to safe water and sanitation by 2015. The G8 will report back by 2007 on implementation of the G8 Water Action Plan agreed in 2003.
- (c) Governments and donors should work together to harmonise future delivery and focus on those countries most in need; and that the AMCOW should co-ordinate this and formally report on progress to the Africa Partners Forum.
- (d) water supply and sanitation strategies should be fully integrated into broader human development and environmental policies at the country level with funding allocated to maximise results.

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The African Ministers' Council on Water has created a road map for the way forward. At the Pan-African Implementation and Partnership Conference on Water, held in Addis Ababa in 2003, the Ministers considered practical ways and strategic approaches to be followed in pursuit of the water and sanitation targets.

International experts from Africa and France met in Nairobi, Kenya at the Headquarters of UNEP May 9-12, 2005 to generate specific recommendations on ways and means of establishing an African network of centres of excellence in water sciences and technology. They

- (a) reviewed global trends in water sciences and technology development and identified specific scientific and technological opportunities for addressing Africa's water challenges;
- (b) proposed specific criteria for the identification and designation of centres of excellence;
- (c) proposed a specific process and actions for the design of the network of centres of excellence and a programme of work or activities that would be implemented by the network;

- (d) identified ways and means of forging and sustainable regional and international cooperation, with emphasis on modalities of establishing partnerships between African and French institutions;
- (e) identified appropriate governance structures and instruments for the proposed network; and
- (f) considered appropriate financial mechanisms for ensuring the sustainability of the network of centres of excellence

**B. Proposed Process and Actions to Develop an African Network of Centres of Excellence in Water Sciences and Technology**

The experts recommended that:

1. NEPAD and AMCOW should establish a multi-disciplinary task team<sup>2</sup> of experts and policy-makers to prepare specific criteria and guidelines for identifying and designating centers or institutes that would be networked and strengthened to implement specific programmes for water research and related technology development. Such criteria and guidelines should spell out mechanisms for promoting sharing of centers' facilities and expertise across the continent as well as means of ensuring the sustainability of the network.
2. the task team should submit the criteria and guidelines to the African Ministerial Council on Science and Technology (AMCST), AMCOW and the NEPAD Heads of State and Government Implementation their consideration and endorsement
3. the secretariats of NEPAD and AMCOW should publish and disseminate the criteria and guidelines to all relevant government agencies and invite centers to prepare and submit their institutional capacity profiles for consideration and selection of those that meet the criteria.
4. Members of the task team would visit and conduct verification of the institutional capacities and make recommendations on which specific centers should be designated to establish the network.
5. AMCST and AMCOW should, through a inter-ministerial mechanism, select appropriate centers and formally designate them as Africa's centers excellence in water sciences and technology
6. The designated centers should develop and agree on a protocol for networking, including sharing of facilities, expertise and other resources.
7. An inter-ministerial mechanism of AMCOW and AMCST should consider and approve the governance and financing mechanisms proposed by the network of centers; and
8. The network of centers should prepare comprehensive project proposals and budgets based on the programmatic elements or issues proposed below.

The experts further recommended that, through the IRD, a number of French institutes that have complimentary scientific and technical capacities and potential to add value to the African network of centres of excellence should be identified and encouraged to forge strong partnerships with the African centres in specific activities aimed at implementing projects designed by the network.

In addition, the experts recommended that United Nations Agencies and international centres should be requested to provide technical and financial support to the establishment of the network and implementation of projects.

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The task team could comprise of representatives from the following groups of stakeholders: civil society, African Water Task Force, African Water Facility, European Union (EU), business representative and others groups. At least 30 percent of its members should be female.

### **C. Elements or Components of the Programme of Work for the Network of Centres of Excellence in Water Sciences and Technology**

The following issues and areas were identified and recommended by the experts as elements or components of the programme of work of the network

1. *Building knowledge of and information on Africa 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 for integrated water management.
2. *Research, assessment and monitoring of water related disasters*—Africa has limited scientific and technical capacity to conduct research on and assessments of the impact(s) of climate variability and other environmental changes. The proposed network of centres of excellence should, in partnership with French and other EU countries' institutes, develop and implement a comprehensive programme on water disasters (floods, droughts, etc).
3. *Research, capacity building and decision-making support on water issues*—The use and management of water and transboundary water systems are influenced by a wide range of complex social, economic, legal and political issues. Many of Africa's countries not have competent institutions and programmes on water economics, law and institutions. There is need to ensure that economics, law and policy studies are integral parts of the programme of work of the proposed network. Priority should be given to building and/or enhancing skills in the social science aspects of water use and management.
4. *Research on and development of desalination technologies*—Improving water quality and sanitation, and ensuring that majority of Africans have clean water, will require development of desalination technologies that are affordable . The proposed network should conduct research to develop such technologies that use low and renewable energy. Emphasis should be placed on sea and brackish water and technologies that are designed as small modular units.
5. *Research on water production and related technology development*—technology for treating and supplying drinking water from aquifers need to be developed. This is crucial to ensure that poor populations in peri-urban areas have access to clean water.
6. *Research on water quality and health linkages*—water quality and hygiene are interlinked. It is important that research is done on ways of removing contaminants, particularly natural, heavy metals and microbial and sediments.
7. *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.

### **D. Elements of Terms of Reference for the Identification and Designation of Networks of Centres of Excellence**

The following factors should be taken into account in the formulation of criteria and guidelines for the identification of centres and establishment of the networks on water sciences and technology:

- (a) Willingness to a member of the proposed network and to share facilities, expertise, etc.
- (b) Availability of infrastructural facilities in R&D and technical institutions
- (c) Geographical distribution of the networks hubs and nodes
- (d) Quality of ongoing research and capacity building activities of the centre
- (e) Diversity and quality of scientific and technical expertise held by the centres
- (f) Regional and continental outlook of the centre and ability to network within the institution's host country and in the continent
- (g) co-ordination centres of the network to ensure effectiveness and efficiency
- (h) Flexibility and ability to forge scientific and technical partnerships with competent or leading French, EU and other foreign institutes
- (i) Demonstrated capacity to create and retain skills or expertise as well as facilitate mobility and sharing of expertise
- (j) Outstanding academic excellence in water issues demonstrated by quality of scientific publications, etc
- (k) Adherence of set ethical principles such as gender sensitivity, cultural values and religious concerns.

2. In addition to the above, emphasis should be put on:

- (a) Strengthening co-operation between national technical departments and the centres of excellence to ensure that national capacity is also built or enhanced.
- (b) Seeking solutions to water problems that transcend State boundaries or are shared by several or many countries.
- (c) Using existing scientific and technological options to address specific water quality, use and management problems.
- (d) Providing assistance to African countries in the analysis, collation and correlation of data.

#### **E. Governance of and financial Mechanism(s) for the Sustainability of the Network of Centres of Excellence in Water Sciences and Technology**

The effectiveness, efficiency and sustainability of the proposed network of centres of excellence will largely depend on the nature of governance and financial mechanisms that are

put in place by African governments. Clear structures for coordination, policy-making, resource mobilization and allocation, are monitoring and evaluation will be required. To establish appropriate structures and related instruments, it is proposed that the Secretariat of NEPAD in collaboration with AMCOW Secretariat and IRD should prepare a comprehensive proposal with clear indication of various options for governance of the network. Such a proposal may consider

- (a) the establishment of an inter-ministerial committee bringing together bureaus of AMCOW and AMCST to constitute the overall governing council of the network. Representatives of partner countries can be invited to serve on the council. The council would be responsible for approval of the programme of work of the network and related policy-making matters relating to financing. It would report to the NEPAD Heads of State and Government Implementation Committee on the performance, financing and management of the network
- (b) the establishment of a technical advisory committee that would consider project proposals for competitive grants, monitor and review performance of the network, and submit reports to the proposed governing council
- (c) the creation of Network Coordination Office in one of the network's hubs or centres. The Office would deal with day to day administrative and coordination tasks

In terms of a financial mechanism, there is need to consider the following:

- (a) The establishment of a special trust fund in the African Water Facility. The trust fund would be the financial mechanism for the network. Africa governments would be called upon to make contributions to the fund on basis of clear criteria. These may include: host countries of the centres being required to make some minimum annual contributions, other contributing on access basis of the GDP, etc.
- (b) 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.
- (c) 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
- (d) Guidelines for the allocation of financial resources from the proposed trust fund would be developed and adopted by the governing council
- (e) The governing council would establish a special ministerial committee on funding the network. Such a committee would ensure that strategies for resource mobilization and allocation are designed and implemented.