

## **Improving Access to safe Water: perspectives from Africa and the Americas Symposium Report**

The International Institute of Ecology (IIE) in partnership with the Brazilian Academy of Sciences (BAS) - and with support from the Inter-American Network of Science Academies (IANAS), the Network of African Science Academies (NASAC), the Academy of Sciences for the Developing World (TWAS), IAP: the global network of science academies, the Brazilian Innovation Agency (FINEP), the Brazilian Sectoral Fund for Water Research (CTHidro), the Brazilian National Council for Scientific and Technological Development (CNPq), and the Brazilian Ministry of Science and Technology - held an International Water Symposium titled, 'Improving Access to safe Water: perspectives from Africa and the Americas' on 13-17 September 2010 in Sao Carlos, Brazil.

The symposium was attended by participants from six (6) African countries namely: Angola, Cote d'Ivoire, Kenya, Senegal, South Africa, and Zimbabwe; and five (5) Latin American countries namely; Argentina, Brazil, Mexico, Nicaragua, and Venezuela who exchanged vital information water issues and management examples in both continents.

Information was shared among participants with regard to: reforestation projects, for instance, the Great Green Wall project in Africa; methods for the recovery of water quality, which includes the removal of macrophytes and artificial de-stratification; initiatives on the appropriate inclusion of communities in solving water supply and sanitation problems; monitoring of water quality, for example through observatories; integrated watershed management; and virus monitoring techniques, and water and human health.

Participants agreed on nine (9) key topics where there were similarities on water issues and its management in the two continents as follows:

1. Water governance and research
2. Collection, analysis and dissemination of data on water resources
3. Capacity building
4. Surface and groundwater interactions
5. Access to drinking water in rural areas
6. Sanitation and waste water treatment
7. Strategies to cope with climate change
8. Integration and coordination of water activities between and within Africa and Latin America
9. Strategies for the reduction and mitigation of environmental impacts of dam construction

The workshop participants further identified, for all abovementioned nine topics, common problems, good examples, and recommendations for action in Africa and Latin America as follows:

1. While in Africa, there are more centralized systems for water management, in Latin America water governance varies from country to country with very different levels of organization. Most African countries represented in the meeting have established a legal framework for water management whereas in Latin America many countries still do not have water laws. In both Africa and Latin America efforts are being made to coordinate management of trans-boundary waters but conflicts still exist.

**Recommendations:**

- **Progress is needed to implement water legislation**
- **The continents need to share experiences in integrated development strategies for international watersheds**
- **It is necessary to share monitoring and environmental impact mitigation experiences between the two continents**
- **The continents need to advocate for the increase of funding support to achieve the MDG in reducing the proportion of human population without access to safe drinking water**

2. Data collection is a major problem in both African and Latin American countries. There are capacity building deficiencies for technical staff with regard to data collection and analysis. There is also a lacking of data application in policy decision making as well as in monitoring tools, and where these are present, they are not implemented accordingly. The data collected is inaccurate and inconsistent, and sufficient information dissemination is lacking in both continents.

**Recommendations:**

- **Data collection and monitoring tools need to be adapted to African and Latin American conditions**
- **Capacity building initiatives need to be established and strengthened**
- **There is a need for the establishment of Digital Atlas and Observatories on water and the environment, and good water monitoring laboratories**
- **There is need to strengthen the linkages between scientists and water managers as well as improve the institutional frameworks on water management**
- **Sustainable funding should be made available to support data collection and monitoring**
- **Dissemination of data should be improved and increased information sharing and public awareness should be encouraged**
- **There needs to be a bridge between science and how scientific information is packaged for the public and policymakers**

3. In Africa, appropriate capacity building programs are generally lacking and where they exist there are no networks to ensure that implementation is done efficiently. In Latin America, local capacity building programs are relatively well developed in some countries at postgraduate and technical education levels.

**Recommendations:**

- **Capacity building courses need to be developed in a more interdisciplinary, multidisciplinary and integrated approach**
- **There is a need to establish and consolidate national and basin wide programs of capacity building**
- **Strategies for capacity building of managers at specialized level with an integrated approach are needed**

- **There is a need to upgrade access to internet facilities and provide virtual programs of capacity building, and facilitating access to literature, videos and scientific papers**
  - **NASAC and IANAS should stimulate local scientific communities to advocate the improvement of capacity building in water management**
  - **African and Latin American countries could benefit from existing education facilities in both continents to speed up capacity building at postgraduate levels**
  - **The continents need to increase social awareness on water issues by implementing educational mobilization programs**
4. Studies on ground and surface water are usually performed separately in both Latin America and Africa. Impacts on water quality in both continents are caused by industrial activities, agriculture, animal husbandry, poor urban land use planning and poor waste water treatment leading to the discharge of untreated or semi-treated water to surface water. Researchers in both continents are beginning to look at integrated water resource management and the interaction between ground and surface water.

**Recommendations:**

- **Interdisciplinary research on topics related to the interaction of ground and surface water should be continuously encouraged**
  - **Stronger monitoring systems should be put in place to monitor new pollutants, organic pollutants, and emergent microorganisms**
  - **Studies also need to be conducted on factors related to the distribution of vectors for infectious diseases like malaria, dengue, yellow fever, filariasis on water systems**
  - **Long-term studies should be undertaken to characterize pollution dynamics water bodies so that management tools can be developed and appropriate water treatment techniques are adopted**
  - **Researchers in both continents should be stimulated to undertake comparative studies in order to enhance capacity building, the formation of international scientific teams, networks of scientists, and to encourage the exchange of expertise**
  - **Exchange programmes aimed at encouraging further collaboration between faculty members students, water managers and decision makers on issues related to surface and ground water should be developed and strengthened**
5. There are two main ways in which access to water in rural areas in both continents is ensured, which include: through cisterns, rain water harvesting, water kiosks and shops, transportation from long distances in tanks, surface runoff and ground water; and water from special or specific points.

**Recommendations:**

- **Three main stages are needed to ensure safe access to water for rural areas: obtain the water; control the water quality and treatment; and distribution of safe water**
- **There is a need to encourage community cooperation, technical water management and secure financial support from relevant water authorities**
- **Public awareness should be raised on issues related to bad water quality**

6. In both Africa and Latin America, sanitation in peri-urban and rural areas is a major problem but there is reasonably good coverage in most urban and metropolitan areas. Socio-economic aspects regarding sanitation and treatment of waste water are not usually considered in decision-making on sanitation and waste water treatment. There is a general lack of proper sanitation in both continents, which contributes to water pollution, contamination and deteriorating human health. Sanitation is usually not a priority for most governments and waste water treatment is almost inexistent in urban, peri-urban and rural areas in both continents. There is a lack of proper implementation of policies on sanitation and waste water treatment and water re-use and its regulation is limited in both continents.

**Recommendations:**

- **Innovative and inexpensive approaches in providing sanitation to rural and peri-urban areas should be sought and implemented**
- **Public engagement should be encouraged before design and implementation of sanitation and waste water treatment facilities**
- **There is a need for socio-economic considerations in infrastructural designs**
- **Public awareness on the use of sanitation should be improved**
- **Long term public funding for the establishment and maintenance of sanitation and waste water treatment plants should be made available**
- **The scientific community should be involved in the design of systems that are adapted to local realities**
- **Financing of waste water treatment from the polluter should be encouraged through government policies**
- **Water reuse policies and practices should be developed and implemented to ensure safe use of waste water**

7. In Africa it is necessary to establish International Programs of Climate Change Mitigation for water resources, human health and biodiversity. The Project of the Great Green Wall in several African countries of the Sahel was presented as a positive example of mitigation. In the Americas there are national programs for studies and adaptation to climate changes. It is important to establish more international programs for capacity building especially for water resource managers and at postgraduate level.

**Recommendations:**

- **In both continents it is essential to increase dissemination of information on climate change for the general public**
- **For both Africa and the Americas, incentives should be introduced e.g. carbon budgets for financing**

**For Africa:**

- **It is important to introduce steps for adaptation to climate changes: mechanisms and technologies.**
- **There is a great need for large reforestation projects**
- **Development of systems of water retention is needed**

**For the Americas:**

- **It is necessary to increase the use of historical series of environmental data to understand climate change and to improve the installed capacity to promote and develop scenarios for climate change**
  - **It is important to ensure the protection of the quantity and quality of water resources as this has implications for reforestation and protection of wetlands**
8. Water impacts on the environment such as desertification, drought, and floods are experienced in both Africa and Latin America. These problems should be solved by identifying suitable practices to circumvent natural conditions.

**Recommendations:**

- **It is important to identify best practices of management currently used in Africa and in Latin America in order to adopt these in either continents whenever appropriate**
  - **It would be important to diffuse and exchange local practices of water management, mainly those that affect vulnerable communities**
  - **Dissemination of research results between scientists, stakeholders, decision makers, and general population should be improved through environmental education**
  - **There is a need to include water concerns in environmental policies and in the economic development agenda of the countries in Africa and Latin America**
  - **Water research should be conducted on environmental problems such as desertification, drought, floods, and others and these should take social and development issues into consideration**
9. It was pointed out that dams for both storage and hydroelectricity generation have caused huge environmental impacts. In both continents, construction has been poorly planned and dams have caused threats to some conservation areas, for instance, the National Wildlife Reserves in Africa and the Amazon area in Latin America.

**Recommendations:**

- **It is necessary to organize and subsidize communities that are moved from areas affected by flooding. This should include preparation of conditions for the population concerning adaptation to living and work in the new locations**
- **It is important to have proper planning before the building of dams, which should include complete feasibility and socio-economic impact studies**
- **Provisions should be made regarding fish populations after dam construction**

Participants agreed upon the following key topics and actions as priorities for academies of science and researchers in Africa and Latin America:

**Indicative priority Topics**

1. Water related environmental, social and economical issues in arid and semi-arid areas
2. Water related environmental, social-economic and health impacts due to the construction of dams
3. Management of trans-boundary watersheds
4. Water sanitation and waste-water treatment examples for peri-urban and rural areas
5. Monitoring Water quality and quantity
6. Impacts on water resources related to climate change

### **Indicative Priority Actions**

Mobilization of the academies of science and their networks to encourage:

1. Knowledge transfer and the interchange of experiences
2. Information and opinion dissemination
3. Stimulation of capacity building
4. Engagement of stakeholders (outreach to communities, policy and decision makers, universities, research centers, and the media)

### **Sao Carlos Water Declaration**

Participants of the International Conference on Safe Water: perspectives from Africa and the Americas present in S. Carlos from 13th to 16th September 2010:

**TAKING INTO ACCOUNT** the mutual understanding of common scientific and managerial problems, and their willingness to establish collaboration

**CONSIDERING** the similarities of problems in African and Latin American countries related to organic water pollution and degradation

**CONSIDERING** both the similarities of problems of Africa and Latin America regarding loss of forest cover, wetlands and dry lands, desertification with consequences on water quality and quantity

**CONSIDERING** present and future problems of sufficient water in semi-arid areas of both continents

**URGE** academies of science, governments, financial and technical partners and stakeholders:

- I. To increase the cooperation between academies of science and their networks in Latin America and Africa
- II. To develop mobilization programs for sanitation and waste water treatment
- III. To develop mobilization programs for forest and wetland conservation in order to preserve water quality and quantity
- IV. To Develop water management programs for arid and semi-arid areas

**URGE** the networks of Latin America and African science academies to stimulate the creation and strengthening of academies of science in the different countries

International Conference on Safe Water: perspectives from Africa and the Americas