



Water Programme Launch Report

NASAC Water Programme Launch, 2-3 August 2010, Hilton Hotel, Nairobi, Kenya





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Contents

Acronyms and Abbreviations	iv
Executive Summary	v
Session 1 – Opening Session	
1.0 Opening Speech	1
2.0 Overview of the NASAC Water Programme	1
Session 2 – Presentations from Lead Academies	
1.0 Presentation on the State of Water in South Africa – Study Proposal Overview by Academy of Sciences of South Africa	3
2.0 Presentation by the Académie Nationale des Sciences et Techniques du Sénégal	5
3.0 Presentation on Water Issues in Kenya: Policy Perspectives	5
Session 3: Water Programme Steering Committee	
1.0 Editing TORs for the Water Programme Steering Committee Guidelines	9
2.0 Setting Up of the Water Programme Steering Committee	9
3.0 The IANAS Experience	9
Session 4: Water Programme Proposals	
1.0 The Contributions of NASAC and WRC	11
2.0 Critical Areas on Water that Require Action	12
3.0 Potential Funding Agencies	14
Session 5: Closing Session	
1.0 Way Forward	15
2.0 Closing Remarks	15
Appendix 1: Meeting Programme	16
Appendix 2: Participants’ List	17
Appendix 3: Edited Guidelines on the Establishment of a Steering Committee for the NASAC Water Programme	18
Group photo of the participants	23

Acronyms and Abbreviations

AAS	African Academy of Sciences
ACDI	Agricultural Cooperation Development International
AMCOST	African Ministerial Council on Science and Technology
AMCOW	African Ministers' Council on Water
ANSTS	Académie Nationale des Sciences et Techniques du Sénégal
ASSAf	Academy of Science for South Africa
CAS	Cameroon Academy of Sciences
ZAAS	Zambia Academy of Sciences
CISR	The Council for Scientific and Industrial Research
DANIDA	Danish International Development Agency
EC	Executive Committee
IANAS	InterAmerican Network of Academies of Sciences
IAP	InterAcademy Panel on International Issues
IDRC	International Development Research Centre
IID	Institute for International Development
JICA	Japan International Cooperation Agency
KNAS	Kenya National Academy of Sciences
NAS	National Academy of Sciences
NASAC	Network of African Science Academies
NEPAD	The New Partnership for Africa's Development
SADC	Southern African Development Community
UNAS	Uganda National Academy of Sciences
UNECA	United Nations Economic Commission for Africa
UNEP	United Nations Environment Programme
UNESCO-IHE	The Institute for Water Education
WPSC	Water Programme Steering Committee
WRC	Water Research Commission
WWAP	World Water Assessment Programme

Executive Summary

Water scarcity remains an unsolved issue to policy makers and water researchers. This crisis is likely to worsen due to climate change compounded by high population growth. However, stakeholders through collaboration can bolster water management through research and innovation, hence the role of the NASAC water programme broadly and the merit of the water steering committee specifically.

The Water Programme Launch Meeting took place from the 2nd through to the 3rd of August 2010. It drew participants from several member academies of the Network of African Science Academies (NASAC). Discourse flowed from panel presentations to plenary debates. The discussions also involved a video conference session, via Skype, during which the exemplary IANAS programme was expounded. The meeting had three substantive sessions: (a) three presentations from lead academies, (b) the setting up of the water programme steering committee, and (c) analyses of water programme proposals.

Panel discussions were informative especially about the state and challenges of water management in South Africa and Kenya. Ensuing plenary discussions were enlightening, with participants raising pertinent questions on the theoretical and pragmatic problems related to water conservation. Participants were informed about the need to introduce innovative water and sanitation technologies and build capacity across several domains of competence, including equipping researchers with the skills with which to meaningfully dialogue with policy makers.

An equally urgent case was made for instituting sound ground water monitoring systems, pursuing demand-driven and high quality research, and for forging close relationships with a range of stakeholders, including governments, and regional and international entities, such as the NEPAD and UNEP. Participants were encouraged to compile joint proposals, carry out collaborative research and explore alternative funding. Importantly, the participants endorsed the terms of reference for the water steering committee, assigned members to lead the committee and agreed on the tenure of this committee. They also isolated areas that the NASAC Water Programme should prioritise.



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Session 1 – Opening Session

Facilitator – Ms Jacqueline Olang

1.0 Opening Speech¹

By Dr Shem Arungu-Olende

(Acting Executive Director and Secretary General of the AAS/NASAC)

After inviting the participants to the meeting, Dr Olende gave a brief history of the African Academy of Sciences (AAS) since its founding in 1985 by Prof. Thomas Risley Odhiambo. An honorific members' organisation, which draws its membership from over 30 countries in Africa, the AAS has grown tremendously since then. The vision of the AAS, Dr Olende remarked, is to facilitate and spearhead scientific and technological development in Africa. To this end, the AAS formed the Network of African Science Academies (NASAC) in 2001, in collaboration with other academies. An umbrella organisation, NASAC comprises 17 science academies, including the AAS. NASAC was established to co-ordinate the efforts of science academies in Africa and provide them with a discussion forum. The AAS hosts the NASAC secretariat and provides it with legal and administrative support.

According to Dr Olende, one of the main developmental challenges facing Africa is the provision of potable water. He pointed out that the scope and impact of this water crisis is daunting; however, stakeholders should endeavour to provide innovative solutions. In line with this mandate, Dr Olende asserted that the NASAC Executive Committee established a Water Programme Steering Committee, to serve as a foresight and oversight team for the NASAC Water Programme. Dr Olende averred that a core objective of the meeting was to unveil the members of the steering committee and draft their Terms of Reference. In conclusion, Dr Olende thanked the participants for attending the meeting and wished them success in their deliberations.

2.0 Overview of the NASAC Water Programme

By Ms Jacqueline Olang (NASAC)

Ms Jacqueline Olang began her discourse by describing the constitution, mission and objectives of the Network of African Science Academies (NASAC), which she said is made up of 17 national science academies. In addition, she pointed out that NASAC's membership will soon include the Namibian and Egyptian Academies of Science.²

Ms Olang then outlined the governance structure of NASAC. NASAC has a General Assembly (GA), an Executive Committee (EC), a Standing Committee (SC) and a Secretariat. Representatives of member academies constitute the GA, while the EC is made up of a president, three vice presidents and a secretary general. The president of the committee is from the AAS and the vice presidents come from the academies of South Africa, Nigeria and Uganda. The Secretary General is from Académie Nationale des Sciences et Techniques du Sénégal. The standing committee focuses on programmatic objectives. In executing its mission, the NASAC secretariat collaborates with the secretariats of its constituent academies. The mandates of NASAC are to:

1. Establish academies in countries where none exist;
2. Empower existing academies;

¹ Speech read by Ms Jacqueline Olang.

² Present membership comprises of the following countries: Cameroon, Nigeria, Ethiopia, Senegal, Ghana, Sudan, Kenya, South Africa, Mauritius, Tanzania, Madagascar, Uganda, Morocco, Zambia, Mozambique and Zimbabwe.



3. Serve as a credible voice for the scientific community; and
4. Ensure that policy makers and regional institutions respond to the voice of science.

Ms Olang then outlined the following programmatic issues that NASAC seeks to address:

- Packaging its findings to suit policy makers;
- Contribute to solving water problems through research;
- Participate in local and international fora to articulate the contribution of the water programme;
- Encourage the Water Research Commission to share its work and experiences;
- Collaborate with other water bodies, funding agencies and institutions;
- Interact with policy and decision makers to promote the harmonisation of water policies aspects in the context of regional integration.

At the pragmatic level, the obligation of NASAC is to:

- Document findings on water in Africa;
- Identify strategic partners;
- Develop and share expertise on funding opportunities;
- Explore extra sources of funding;
- Share experiences on salient points of the water programme³;
- Support networking with policy makers and the community of researchers in the Diaspora;
- Propose policy interventions.

After expanding on the organisation and mission of NASAC, Ms Olang detailed the expectations of the meeting programme:

- Form a steering committee represented by the academies of Senegal, South Africa, Kenya and NASAC supported by the Brazilian Academy of Sciences;
- Distribute a summary of the deliberations of the meeting to members and the NASAC executive committee;
- Draft a Terms of Reference for the steering committee;
- Launch the water programme for 2010 and do in-country work involving the KNAS, ASSAf and ANSTS;
- Commence compilation of country water status reports and a database of water experts;
- Seek additional funding from IAP for the water programme;
- Learn from the experiences of the IANAS water programme.

Discussion

The nature of the working arrangement between NASAC and the Brazilian Academy of Sciences was clarified. In its collaboration with this academy, NASAC hopes to optimise learning and sharing opportunities and draw a possible action plan with regard to championing the water issue. The perception that the constitution of the Executive Committee was exclusive—reserved for Kenya, Nigeria and South Africa—was clarified. These countries hold these positions as regional representatives. Membership to these positions is otherwise open to all the 17-affiliate academies of NASAC. Besides, representatives of Kenya, South Africa and Nigeria do not sit in other committees of NASAC.

NASAC should strive to appear as all-inclusive in its governance structures and should steer research work and position itself to attract extra funding. It should also work towards specifying the value of its Water Programme.

³ The experiences of the Water Research Commission and the Cameroon Academy of Sciences are notable.

1.0 Presentation on the State of Water in South Africa – Study Proposal Overview by Academy of Sciences of South Africa

By Dr Eiman Karar (WRC for ASSAf)

Dr Karar stated that the water crisis has become a central challenge to public policy—a reality that climate change and high populations have aggravated. This crisis presents academies with opportunities of carving out research niches. Dr Karar informed participants that most South Africans are poor and suffer water scarcity. She gave an overview of the state of water resources and identified key causes of water scarcity. Average rainfall in South Africa is about 50% less than the world average of 860 mm/yr. South Africa dams about half its rainfall water—37 billion m³. Though groundwater is instrumental to rural water supplies, only 20% of it is useful in terms of scale. Another serious threat to water supply, Dr Karar noted, is industrial waste. This form of contamination involves the discharge of heavy metals, such as asbestos, mercury, arsenic and lead, into water resources.⁴ In addition, agricultural waste and the emission of herbicides and insecticides, also pollutes water sources, a harmful process that is likely to intensify given the increasing and widespread use of fertilisers.⁵

The legal regime in South Africa is favourable to provision of adequate potable water. The South African constitution enjoins the state, at all levels of authority, to meet the water needs of all South Africans and to protect their environments. Administratively, several pieces of legislation, Dr Karar said, deal with water specifically, including the National Water Act 36 of 1998 (NWA). These laws aim to ensure that water resources are exploited equitably, efficiently and sustainably. Importantly, South Africa has effected a paradigm shift in the management of water resources. According to Dr Karar, this shift has meant the following:

1. An appreciation of the environmental impact of water projects;
2. A focus on water supply and not just demand;
3. Directing energy to conserving water resources and not just on harnessing them;
4. Applying participatory, bottom up decision making;
5. Replacing huge schemes with small ones;
6. Dealing with water issues using a multi-disciplinary approach;
7. Anticipating conflicts over water resources;
8. Enhancing the ability to forecast rainfall;
9. Thinking more of water quality and not just quantity.

Dr Karar then mentioned the challenges facing water management in South Africa as follows:

1. The execution of co-operative governance at the three spheres of government and between government departments can lead to difficulties for water management.
2. There is poor co-ordination of water management between the central government and devolved governments.
3. The rate of implementation is, likewise, unsatisfactory. For example, local governments lack water planning and have limited capacity in operational and technical terms. Moreover, these authorities are sluggish in enforcing water laws.

⁴ World Water Development Report (WWDR 3) *Water in a changing world*. Chapter 8. World Water Assessment Programme (WWAP).

⁵ *The UNEP Global Environment Outlook-4*.



The foregoing notwithstanding, South Africa has a good knowledge base of water management issues.

The Water Commission in South Africa has embarked on a study to:

1. Furnish scientific based analysis of problems and propose recommendations;
2. Provide perspective, a fresh eye, to analyse pragmatic problems in new ways;
3. Supply scientific and evidence based data with which to advocate for policy change at the highest levels;
4. Suggest realistic and practical recommendations;
5. Focus on decentralisation of services;
6. Identify opportunities for sustainable water resources while meeting national growth targets; and
7. Identify areas of priority and promote sharing of ideas.

In conclusion, Dr Karar said that a sub-committee is to be formed to steer research efforts and define the approach, scope and methodology of the pilot study within a year. The committee will determine whether independent consultants or academy members will do the study. Dr Karar stated that academies should assume an active role in issues of water, including embarking on more integrated planning and coordination of work and setting up of platforms from which water practitioners and stakeholders can share ideas and monitor water problems and challenges. There is also need to establish agencies to manage water catchment areas.

Discussion

The Water Research Commission (WRC) opted to assign ASSAf, and not the CSIR, to assess the status of water in South Africa chiefly because ASSAf is adept in packaging research outputs for policy advocacy.

To meet the problem of poor coordination of water management, the WRC aims to integrate research output, ensure that government departments communicate better and assist in identifying priority areas of research. In brief, the WRC seeks to bridge the gap between research and implementation, and research and ecology, among other areas.

Reportedly, the South African Academy works well with researchers because it is consultative. It has a panel that draws its members from universities. The panel collates research done, within and without South Africa, and synthesises these findings to draw policy recommendations. The panel is multi-disciplinary in composition and includes experts who are not members of ASSAf.

Part of the reason academies enjoy enormous credibility is that they give useful, independent and scientific advice to policy makers. South Africa has a huge amount of data that it ought to share with other academies. Topical issues of discussion include sharing how to secure new water sources. Using simple but effective technologies, South Africa has successfully applied innovative approaches of harvesting water. The country needs to develop mechanisms for effective implementation, for example, by drawing from experiences in other places, such as Brazil.

Academies need to look beyond just doing research and engage in policy advocacy about water issues. The academies in South Africa, Senegal and Kenya are working towards influencing the way these countries conserve water.

The WRC's experience in working with other African countries, within SADC and even beyond is through developing 'communities of practice'. Most of its work is at the project,

discipline, or thematic level. It has networks in different countries. Some of the avenues it has used to interact include linking with continental entities, such as NEPAD. The WRC also works with institutions or country delegations that approach it to replicate its model.

2.0 Presentation by the Académie Nationale des Sciences et Techniques du Sénégal

By Prof. Oussaynou Fall Dia (ANSTS)

Prof. Oussaynou Fall Dia informed participants that ANSTS was founded in 1999 and is composed of 48 parent members, seven associates and 50 honorary members. ANSTS seeks to capitalise on the global and general human resources in Senegal and make science central to the country's development. It also aims to advance science and technology in the country by addressing problems of underdevelopment in areas like water management and agricultural production. It further seeks to nurture a scientific culture and provide linkages between science and the society. Prof. Dia also reported that the ANSTS Strategic Plan of 2006–2010 on science technology and society seeks to encourage scientific and technological innovations including nurturing a scientific culture in the society by promoting the early teaching of science and technology.

The methodological approach employed by ANSTS is carrying out studies and compiling reports for stakeholders. To illustrate this, over the last few years, because of improper land use, the lowland areas in Senegal have been prone to flooding. In a collaborative approach, ANSTS involved stakeholders, drawn from governmental and non-governmental authorities, international research centres, private sector operatives and others to address this issue. Prof. Dia also noted that ANSTS also disseminates information and participates in scientific deliberative fora. Still, ANSTS faces two key challenges: (a) a narrow knowledge base, and (b) a poor stream of funding.

Discussion

A clarification was sought on Senegal's approach to carry out research on water. Prof. Dia pointed out that ANSTS has just taken an interest in water and the country is working towards building capacity across the board to better manage and research water issues. ANSTS' approach to research is multi-disciplinary and multi-sectoral. Funding for the study on the flooding of lowlands in Senegal totalled to a cost of USD 10, 000, which was funded by the French Academy of Sciences.

3.0 Presentation on Water Issues in Kenya: Policy Perspectives

By Dr Daniel Olago (Kenya National Academy of Sciences)

Dr Olago narrated the status of water in Kenya. He cited the challenges, opportunities and recommendations concerning the water sector in Kenya. Water scarcity in Kenya is due to several factors, chief of which is the low renewable fresh water per capita, which stands at 647 m³ and is projected to fall to 235 m³ by 2025 if supply does not keep up with population increase. Besides, much of the water sources are saline. Climate change only seems likely to aggravate water scarcity.

In Kenya, water management is organised in the following fashion: The Water Resource Authority provides water at source, while several water service boards supply the population with it. The Ministry of Water and Irrigation merely oversees water management, coordinates irrigation and drainage development, and at the same time is charged with

drawing policy. In general, some of the challenges afflicting the water sector include pollution, over-abstraction, and damage to the aquatic ecosystems, climate change and under-funding. Even so, Kenya has underutilised capacity in water conservation.

According to Dr Olago, the level of research on water in Kenya is unsatisfactory. Much of the available knowledge is held by foreign research institutions, while there is little sharing of research reports between government departments. For instance, the Ministry of Higher Education receives such reports of which the Ministry of Water is unaware. Equally, water agencies, such as the Kenya Water Institute, may provide data for research activities but fail to profit from the subsequent research output. The academy should do more to collate and process data held by different stakeholders in the water sector. Likewise, research output tends to be discontinuous; worse, in many cases, such studies have questionable quality. Dedicated research, which is demand-driven, should focus on specific thematic clusters. The packaging of research output is too wanting, diminishing its utility in informing policy formulation and implementation. Another key hurdle to effective water management in Kenya, as Dr Olago pointed out, is the failure to monitor ground or surface water. Therefore, not enough is known about the quantity of abstraction, water balance, or quantity of recharge, in key rural and urban areas.

Despite the foregoing challenges, the water sector has numerous opportunities. Thanks to water sector reforms, the Water Act 2002 and development of the Vision 2030, the Kenyan government seeks closer collaboration with water researchers, while the Ministry of Water and Irrigation is seeking to develop an information sharing protocol for use by stakeholders. The Ministry is also seeking to: (a) collaborate with researchers and consultants in policy drawing and implementation, (b) work towards understanding the challenges encountered by researchers, and (c) enhance the coordination of research activities. To this end, it is working towards developing a database of researchers in the water sector and encouraging collaboration among water practitioners. To advance research, the Ministry has identified probable areas of research that it is prepared to fund, a situation that offers the academy with a broad scope for engagement in executing a 'demand-driven' research agenda. Probable areas of research include identifying new water sources (including deep groundwater) in key rural and urban areas, exploring inter-basin water transfers, and addressing the problem of sustainable water supply (e.g. harvesting and storage) and linking it to economic development. Research is also needed in water and sanitation technologies. The Ministry of Water and Irrigation and Water Resources Management Authority are considering how to induce artificial groundwater recharge, including through re-directing of flash floods to areas of groundwater recharge. Kenya has so far shifted policy from large-scale projects to small-scale ones. The use of sand dams has proved effective in water conservation. According to Dr Olago, the Ministry of Water and Irrigation has pinpointed the following areas that require improvement:

1. Water saving and efficiency techniques;
2. Efficient water and land use, water catchment protection/restoration;
3. End-of-pipe treatments;
4. System design;
5. IT-tools for management, monitoring and control systems;
6. Flood forecasting techniques;
7. Ecological engineering;
8. Appropriate technologies;
9. Desalination, and so on; and
10. Assessment of deep groundwater potential.

In conclusion, Dr Olago put forward the following recommendations to the Ministry of Water and Irrigation to augment water management in Kenya:

1. Formulate a comprehensive policy on water harvesting and develop strategies on efficient water use;
2. Enforce the Water Act more rigorously;
3. Deepen the skills of workers in the sector at all levels;
4. Collaborate more closely with all stakeholders in, developing, sharing, network links and dissemination protocols;
5. Organise an annual Ministry–Researcher–Consultant workshop;
6. Pursue advanced sustainable water and sanitation technologies;
7. Apply powerful management tools—monitoring, automation and control systems, as well as improving instruments to cope with the demands of an integrated water resources management framework;
8. Address barriers to applying water technologies;
9. Strive at closer collaboration between water training and research institutes; and
10. The institutional capacity of water training institutions, that is, the Kenya Water Institute, needs enhancing.

Discussion

Clarification was sought on what sand dams are and their effectiveness. Sand dams are among the innovative solutions to water management/storage. They are sub-surface structures that trap water in seasonal rivers. These dams can hold about 40% of the water *vis-à-vis* the volume of sand and they filter water naturally, reduce evaporation and raise the water table levels. They also boost rural economies; with research showing that, income streams within these areas have been diversified and expanded up to 20 times, from less than USD 1 a day to approximately USD 20 a day.

Another key question that surfaced during the discussion was about defining the role of academies in policy advocacy. To begin with, research on water issues should be of acceptable quality, done by water specialists and using appropriate methodologies.

The role of academies also emerged during the discussion. Academies should be independent and competent. Moreover, they should develop the means to influence developmental entities of stature, such as the World Bank and international donors. Proposals that promise to churn out significant research are more likely to attract funding, more so if local bodies



Participants listening attentively to the deliberations

can attest to the value of such studies. Academies should thus coordinate their work and explore funding opportunities especially for national studies. They should consider tapping into the InterAcademy Panel that can afford up to USD 50,000. Collaborative research by academies seems the way to go, a case in point being collaborating with the Brazilian academy.

Academies should take on the role of recommending consultants, including those who are not their members. They should set mechanisms of transmitting country and regional reports and facilitate information sharing. They also need to make policy makers aware that research is vital in water conservation.



1.0 Editing TORs for the Water Programme Steering Committee Guidelines

Participants read the guidelines and amended the text appropriately. (See Appendix 3 for the edited guidelines.)

2.0 Setting Up of the Water Programme Steering Committee

It was agreed that the Steering Committee shall remain as it is for the first phase of the programme; after which, a new steering committee will be selected. A Chair and Vice Chair of the Steering Committee were unanimously elected. The particulars of these officers are as follows:⁶

- (a) Chair of the Steering Committee – Kenya National Academy of Sciences (KNAS)
- (b) Vice-Chair of the Steering Committee – Academy of Sciences of South Africa (ASSAf).

The Interim Steering Committee will be made-up of the following academies:

- (a) Southern Africa – ASSAf and ZAS
- (b) Central Africa – CAS
- (c) Eastern Africa – UNAS/KNAS
- (d) Western Africa – ANSTS/NAS.

3.0 The IANAS Experience

Professor Tundisi and Dr Marcos Scheuenstuhl from the IANAS, via Skype connectivity, lauded the establishment of the NASAC Water Programme. They then gave a background of IANAS, described its mission and experiences and entertained questions from participants.

Launched five years ago, IANAS is a network of Academies of Science of the Americas. IANAS aims at influencing managers of Water Programmes in member countries to influence national policies on water, making the impact of the Academies felt in respective regions. The characteristics of the IANAS programme are outlined as follows:

1. Each of its constituent academies is required to develop working programmes detailing the focal problems faced in each country;
2. Each of its constituent academies is required to develop White Papers in which they would highlight the main water problems in their countries; and
3. Each of the constituent academies is required to contribute to policy advocacy in their respective countries.

Professor Tundisi and Dr Scheuenstuhl stated that the IANAS programme has been successful because the network has stimulated the leadership in each academy to discuss water issues and influence national economic policies. According to them, the IANAS programme encourages academies to forge networks with stakeholders,

⁶ The Duties of the Chair and Vice Chair are as listed in Section 6 of the Guidelines.



including local universities, churches, and so on. The programme has engaged in exploiting water technologies and in building the technical capacity of managers of water programmes. The following are areas in which the NASAC water programme might emulate what the IANAS programme is doing:

1. In seeking long-term sustainability,
2. In internalising at the national level the activities done at the regional level;
3. In working at the national and regional levels towards making the academies more proactive in national water debates, policy issues, and so on;
4. In learning how to integrate water technologies with the development and management plans of their respective countries; and
5. In consolidating science academies in member countries.

Discussion

Participants made observations about the design and work approach of IANAS, the lessons NASAC might learn from the IANAS model, and the work arrangement that IANAS and the NASAC could have. The IANAS management involves at least two academies that seek to forward the IANAS activities in different realms. This management arrangement helps in the sharing of responsibilities and developing of the network. IANAS gets its funding partly from its constituent academies and through private funding. There is merit in national academies compiling a joint proposal.

NASAC and IANAS can develop a common water project that would bolster the NASAC's water programme. This proposal can be taken up during the meeting scheduled for September 2010. Still, the NASAC, or African countries at large, should augment the pool of its technical expertise at all levels. IANAS is willing to support NASAC in such areas as capacity building.

A question was raised on whether NASAC should engage in implementing programmes or keeping an advisory function. As part of its public advocacy role, NASAC implements projects and sponsors programmes and initiatives. IANAS on the other hand goes beyond just doing research. Among other things, IANAS has defined its niche by carrying out capacity building, training and collaborating with academies in Africa.

1.0 The Contributions of NASAC and WRC

Objective: To identify areas in which the NASAC Water Programme can be involved in and the feasible activities it can undertake.

Background: The NASAC submitted a proposal to IAP towards the establishment of a Network of African Science Academies (NASAC) Water Programme for Africa. IAP granted NASAC funding of USD 50,000 for year 2010 that will go towards the following activities:⁷

1. Launching the NASAC Water Programme for Africa;
2. Organising three regional meetings—southern Africa, West Africa, and East and Central Africa;
3. Developing a database of water experts in Africa; and
4. Conducting a survey in selected African countries to determine the status of water initiatives.

1.1 Way Forward

The following was agreed as the way forward in terms of carrying out the set activities by the participating organisations:

1. NASAC to write a modification to IAP on, (a) changing the framework as the funding will not permit for the carrying out of the activities as planned earlier, and, (b) highlight the three components that will be used to carry out the set activities, which include:
 - (i) Electronic meetings,
 - (ii) Hiring of a researcher to carry out a desktop research to determine the status of water initiatives in Africa and identifying water experts in the region, and
 - (iii) A report that details the status of water initiatives in Africa and that contains a database of water experts in the region.
2. Communication from NASAC to be done to the lead academies giving the position of the exercise including drafting the contracts for all in terms of what needs to be done and by when.
3. Timeframe:
 - (a) 6th August 2010—NASAC to email the Academies the contractual guidelines,
 - (b) 11th August 2010—Academies to email NASAC their write-ups and budgets of their activities,
 - (c) 15th August 2010—All contractual agreements signed and funds transferred⁸,
 - (d) 22nd August 2010—Contractual agreement with the researcher completed,
 - (e) 30th September 2010—Draft report ready,
 - (f) 31st October—Final Report (to be prepared in a standard format by NASAC).
4. One report per country will be required that will eventually be synthesised to form a regional report.
5. Participating organisations will work with countries that have academies. The following are the countries that will be involved in this process:

⁷ Funding Breakdown: Lead Applicant – \$20,000, KNAS – \$10,000, ASSAf – \$10,000, ANSTS – \$10,000.

⁸ 80% of funds will be transferred in advance while 20% will be transferred on the completion of the work.



- (a) West Africa—Senegal, Nigeria, Ghana,
- (b) East and Central Africa—Kenya, Uganda, Tanzania, Ethiopia,
- (c) Southern Africa—South Africa, Zimbabwe, Zambia, Mauritius, Mozambique.

2.0 Critical Areas on Water that Require Action

Participants listed the following as critical issues that need to be addressed by NASAC as it awaits the national status reports:

2.1 Critical Issues

1. Capacity building for NASAC staff, e.g. in policy advocacy.
2. Deepen networks. Networking should be on top of the agenda under the auspices of the water programme. Networking can entail reaching out to various partners, including NEPAD, UNECA, UNESCO, IHP-International Hydrology Programme, Water Research Council, among others. Networking opportunities also implicate conflict resolution.
3. Look for additional funding opportunities. In South Africa, the German government is establishing regional science centres on research areas related to climate change in South Africa, Namibia, Angola, Botswana and Zambia.⁹
4. Engaging in policy advocacy through drawing up of a White Paper on water-related issues. This can be through synthesising and packaging existing information and then presenting it to policy makers for consideration.
5. Improving water management. This could include issues related to water stress, effects of extreme climatic events (droughts and floods) and trans-boundary issues for both surface and groundwater resources. It also includes how to address pollution, deforestation, population and climate change.
6. Address deficiencies in science technology data. In many regions, there is need for improved data acquisition and use. In this connection, collaborations with agencies, such as UNEP, would be helpful.
7. Improve monitoring and data. Monitoring stations should be sustained to ensure that research maintains its value. WRC has commissioned a study to look into the minimum data requirement for running reasonable hydrology assessments, e.g. water quality assessments. Extrapolations and interpolations ought to be done.
8. Contemplate trans-boundary water issues. NASAC should consider tapping into discussions on the concept of sharing water resources in the setting up of economic corridors.
9. Formulate a NASAC Statement on Water. The statement should target policy makers and should have clearly articulated recommendations. The two-page statement can be prepared in time for circulation at the climate change meeting due to occur in Mexico in November 2010. The statement should target African heads of state, Ministers for Environment, Ministers for Water, and Ministers for Science and Technology. Academies can also pass this statement to their respective policy makers in the water sector.
10. Responding to the changing institutional landscape by 2050, academies should develop proposals accordingly.

2.2 Priority Areas for Follow-up by NASAC

Regarding the above critical areas on water that require action, NASAC should tackle the following priority areas:

⁹ University of Hamburg is the lead institution.

1. Draw-up the NASAC Statement on Climate Change and Weather¹⁰;
2. Build the capacity of academies and nurture networking¹¹;
3. Produce a White Paper on advocacy;
4. Address trans-boundary issues and resolve conflicts;
 - (a) Arbitrate on trans-boundary projects between different academies (evidence-based advice);
 - (b) Discuss the benefits of sharing in regional economic corridors;
5. Resolve data gaps and improve data acquisition.

Note: The outcome of the reports will address actions 3, 4 and 5.

Discussion

Participants made several comments and suggestions as summarised below.

1. NASAC should glean data from the WRC and distribute it to scientists and policy makers.
2. There is need to identify national activities that are defining or addressing issues in the water sector. Such an approach will provide NASAC with a research agenda.
3. The NASAC Water Programme should use the recently released report of the African Development Programme on Water and Sanitation. The report details the critical water issues in various regions of Africa.
4. The niche of the academies is supplying evidence for policy advocacy. Academies also stimulate and catalyse research, influencing the research agenda/focus of scientists.
5. Regarding the regional centres of excellence, NEPAD is forming regional centres. NEPAD has already established such centres in South Africa and Senegal. NASAC should collaborate with continental bodies, such as NEPAD.



A light-hearted moment during the NASAC Water Programme Launch

¹⁰Dr Eiman Karar, Prof. Mathias Fonteh and Prof. Cheikh Gaye will formulate the Zero Draft of the NASAC Statement. The Statement will profile the water landscape in sub-Saharan Africa water, isolate the critical issues and include specific recommendations to be presented to policymakers.

¹¹This should be done during the September 2010 meeting. Results of the discussion will be circulated to NASAC members.

3.0 Potential Funding Agencies

The following are agencies as proposed by participants to which NASAC can approach for funding:

1. UNECA (*Jackie Olang, Paul Nampala*)
2. NEPAD (*Dr Karar to initiate contact*)
3. ADB-African Water Facility (*Prof. Fonteh to initiate contact*)
4. Brazilian Academy of Sciences
5. African Water Services
6. IAP
7. Nordic funds (*Cheikh Gaye*)
8. IDRC (*Regional Centres*)
9. ACDI (*Canadian*)
10. UNESCO-IHE (*Capacity Building*)
11. JICA (*Japan*)
12. World Water Council (*Dr Karar to initiate contact*)
13. SADC (*Division on Water*)
14. IID (*French Development Agency – Dr Karar*)
15. DANIDA (*Dr Karar*)
16. AMCOST, AMCOW (*partners and contacts*)
17. Foundations and NGOs.

Action: Concept notes to be drawn-up around the five priority areas to develop funding proposals.

Session 5: Closing Session

Facilitator: Prof. Cheikh Becaye Gaye

1.0 Way Forward

1. By 7th August 2010, NASAC will dispatch e-mail messages to the lead academies to receive reports on how they plan to spend the USD 10,000 allocated for the 2010 activities. It will, thereafter, draw up contracts and release funds.¹²
2. By 7th August 2010, NASAC should have sent the revised version of the guidelines to the academies in readiness for the NASAC Executive Committee endorsement.
3. By 12th August 2010, the NASAC will dispatch a draft report of this meeting to participants.
4. NASAC to isolate the critical areas identified in this meeting and follow-up on funding opportunities.
5. NASAC to get ready a press release about the launch of the water programme. A write-up will be prepared and circulated widely.
6. The NASAC Statement should be prepared in time for the Mexico meeting on climate change in November 2010.
7. For continuity purposes, the Steering Committee will remain as it is. KNAS and ASSAf were selected as chair and vice chair, respectively, for three years.
8. NASAC will create a portal on its website to facilitate exchange of experiences and information.

2.0 Closing Remarks

By Dr Daniel Olago – Chair, NASAC Steering Committee

Dr Olago thanked all participants for selecting KNAS and ASSAf as Chair and Vice Chair, respectively, of the Steering Committee. He observed that the meetings/discussions were rich and fruitful. He challenged participants to lobby the leadership of the academies in their countries to own and prioritise the water programme. For purposes of enriching each other, he encouraged participants to share information between themselves through NASAC's website portal.

¹² The funds will be released on 80–20% fractions based on when the reports are received.



Appendix 1: Meeting Programme

Date and Events	Time	Activity
2 August 2010	SESSION 1: Opening Session – Facilitator: Prof. Eric Odada	
Launch Event	8.30 am – 9.00 am	Registration of participants
	9.00 am – 9.15 am	Self introduction by participants
	9.15 am – 9.30 am	Welcome address: Dr Shem Arungu-Olende (AAS/NASAC)
	9.30 am – 10.00 am	Water Programme overview: Ms Jacqueline Olang (NASAC)
	10.00 am – 10.30 am	Group photo/coffee break
	SESSION 2: Presentations from lead academies – Facilitator: Dr Eiman Karar	
	10.30 am – 11.00 am	Academy of Sciences of South Africa: Dr Eiman Karar (WRC for ASSAf)
	11.00 am – 11.30 am	Senegalese Academy of Science and Technology: Prof. Oussaynou Fall Dia (ANSTS)
	11.30 am – 12.00 pm	Kenya National Academy of Sciences: Prof. Daniel Olago (KNAS)
	12.00 pm – 1.00 pm	Participant discussions
	1.00 pm – 2.00 pm	Lunch Break
	SESSION 3: Water Programme Steering Committee – Facilitator: Prof. Folorunso Adu	
	2.00 pm – 3.30 pm	Editing TORs for the Water Programme Steering Committee
	3.30 pm – 4.00 pm	Coffee Break
4.00 pm – 5.30 pm	The IANAS experience: Prof. Tundisi	
6.00 pm – 8.00 pm	Cocktail/Reception	
3 August 2010	SESSION 4: Water Programme Proposals – Facilitator: Dr Paul Nampala	
Funding Proposals	9.00 am – 10.00 am	NASAC and WRC contributions
	10.00 am – 10.30 am	Coffee Break
	10.30 am – 12.00 pm	Critical areas on water that require action
	12.00 pm – 1.00 pm	Fundraising for the water programme
	1.00 pm – 2.00 pm	Lunch
	SESSION 5: Closing session – Facilitator: Prof. Cheikh Becaye GAYE	
	2.00 pm – 3.00 pm	Discussions on: Country water status reports, water experts and workshops to be hosted by ANSTS and KNAS
	3.00 pm – 3.30 pm	Way forward: TBC chair of the Steering Committee
	3.30 pm – 3.45 pm	Closing remarks: Dr Shem Arungu-Olende (AAS/NASAC)

Appendix 2: Participants' List

No.	Name	Country	E-Mail
1.	Prof. Mathias Fru Fonteh	Cameroon	matfonteh@yahoo.com
2.	Dr Eiman Karar	WRC (SA)	eimank@wrc.org.za
3.	Ms Dorothy Mutheu Ngila	ASSAf (SA)	mutheu@assaf.org.za
4.	Prof. Folurunso Adu	Nigeria	foluadu@yahoo.com
5.	Dr Paul Nampala	Uganda	paulnampala@unas.or.ug
6.	Mr Alick Muvundika	Zambia	muvmun@yahoo.com
7.	Prof. Cheikh Becaye Gaye	Senegal	cheikbecayegaye@gmail.com
8.	Prof. Oussaynou Fall Dia	Senegal	odia@orange.sn
9.	Dr Daniel Olago	Kenya	dolago@uonbi.ac.ke; olagodan@yahoo.co.uk
10.	Ms Jacqueline Olang	NASAC	j.olang@aasciences.org
11.	Dr Jasper Kirika	NASAC	j.kirika@aasciences.org
12.	Ms Rose Nyingi	NASAC	r.nyingi@aasciences.org
13.	Ms Rahab Gitahi	NASAC	r.gitahi@aasciences.org

Appendix 3: Edited Guidelines on the Establishment of a Steering Committee for the NASAC Water Programme

Decision EC-11/10: Guidelines on the establishment of a Steering Committee for the NASAC Water Programme and relevant to Article 6.2.i. of NASAC Statutes and Rules of Procedure

1.0 Preamble

Africa's water resources are facing a serious risk with the situation expected to worsen in future. This has led to an increase in the proportion of people living in countries chronically short of water. This might make the prediction that water could be the main cause of conflicts in Africa in future to come true.

It is with this background that during the IAP Water Programme meeting held in Pretoria on 30–31 March 2009, the representatives of 13 African academies of science resolved to establish a regional Water Programme for Africa under the auspices of NASAC. The principal objective of the programme is to assess and report on the status of water resources in Africa. In addition, this programme will define critical problems and assess the ability of African countries to cope with water-related stress and conflict.

1.1 *The NASAC Executive Committee*

Recalling that the NASAC Statutes and Rules of Procedure provides for the establishment of Standing or ad hoc Committees [such as a Steering Committee] for the purpose of providing guidance to NASAC projects or programmes,

Welcoming the submission of nominees from NASAC membership water programme,

Expressing its appreciation for the voluntary acceptance of the duty by nominated members of the Steering Committee,

Recognizing the usefulness of providing guidelines for the establishment and operation of the Steering Committee.

The Executive Committee:

- I. *Decides* hereby to establish a NASAC Water Programme Steering Committee (WPSC);
- II. *Agrees* that WPSC will be made up of at most eight (8) experts of broad and diverse experience in water resources;
- III. *Encourages* all concerned to consider the guidelines, where practicable and feasible, in the development of action plans and other activities related to the activities of NASAC;
- IV. *Takes note of* the need for further work to enhance or strengthen the guidelines document to address those priority areas which have been identified in the terms of reference for the WPSC, so that these guidelines may be adopted by the WPSC at its meetings.

2.0 Mandate

The WPSC established by the NASAC Executive Committee, by decision EC-11/10 and its work is technical and advisory in nature. The general task is to provide input, both as an oversight and a foresight team as per the terms described under mandate and tasks thereof.

3.0 Tasks

The WPSC will advise and support the EC on the realisation of the NASAC Water Programme, with emphasis on the following:

- 3.1 Review of recent literature on the status of water in each of the participating African countries, followed by an identification of key gaps where further research and collaborative initiatives would focus on.
- 3.2 Ensure coordination and cooperation with other players in the water sector.
- 3.3 Keep abreast and build on current available knowledge on water issues, science, technology and innovation relevant to Africa and bring key ideas for further deliberations by the WPSC.
- 3.4 Any other tasks that the NASAC Executive Committee may assign the WPSC.

4.0 Membership and Participation in Committee Activities

- 4.1 To enhance the efficiency of the WPSC, the number of members in the meetings of the WPSC shall be kept to a manageable level. Each region (East, West, Central and South Africa) shall determine for themselves a nomination criterion of selecting two experts, who would be ratified by the NASAC Executive Committee.
- 4.2 The tenure of the WPSC members shall be for a term of three years with a possibility of request to stay on for a second term at the discretion of the EC, taking into consideration continuity and renewal.
- 4.3 The meeting of the WPSC shall be open to non-members and observers, as follows:
 - 4.3.1 The Chair of the WPSC may invite additional experts as needed for the meeting with the status of observer. Other experts may include those associated with relevant field or theme under consideration.
 - 4.3.2 To promote open and transparent processes, regional networking should be encouraged to ensure the input of a broad representation of views and to offset differences in expertise available to countries at varying stages of development.
 - 4.3.3 Furthermore, all documents under consideration by the WPSC shall be made available to all interested parties (to the extent feasible), who shall be encouraged to provide written comments.
 - 4.3.4 The NASAC coordinator will serve as an ex-officio member.
- 4.4 Qualifications of WPSC Members. Members of the WPSC should have expertise in water issues and experience in at least two of the following:
 - I. Science-based policy advice;
 - II. Capacity enhancement for science-based organisations;
 - III. Networking and communication; and
 - IV. Water resources management.

5.0 Administrative and procedural matters

5.1 Funding for Participation

NASAC will be responsible for direct costs that will facilitate the execution of members' responsibilities as determined by the EC.

In relation to meetings, NASAC will cover fares for travel using the most economical route and fare (NOT business class), hotel accommodation with allowances for meals and incidentals. The allowance-rates shall vary from country to country and shall be based on rates provided by the NASAC secretariat.

When considering the invitation of additional experts, the WPSC shall take into account the availability of resources, unless covered by the Academies.

5.2 Modalities of WPSC Work

The meetings of the steering committee activities shall be electronically done and/or take advantage of NASAC events to convene.

The WPSC will hold face-to-face meeting to deliberate on, and compile recommendations in the form of action items for follow-up.

The findings and recommendations arising from the WPSC's work shall be documented and communicated to the EC for appropriate and timely action.

5.3 WPSC Secretariat

The NASAC Secretariat will provide the administrative and secretarial support for the WPSC.

The WPSC shall apply, *mutatis mutandis*, the Rules of Procedure of the NASAC except as otherwise provided in these terms of reference or as advised by the Executive Committee.

5.4 Agenda and Relevant Documents

The Secretariat, in consultation with the Chair of the WPSC, shall prepare a provisional agenda for each meeting of the Committee. The provisional agenda shall be communicated to all participants of the WPSC and all interested parties at least four weeks before the meeting. The documents relevant to the agreed agenda shall be circulated to members two weeks in advance.

5.5 Language

English shall be the working language of the WPSC.

5.6 Decision-making on Guidelines and Provisional Guidance

The members of the WPSC shall seek to reach an agreement by consensus. Should consensus not be reached by members, the range of views of members and observers shall be reflected in the report to be submitted to the Executive Committee.

5.7 Reporting

The WPSC will summarise its findings in the form of succinct meeting reports to the Executive Committee addressing the specific tasks under article 3 above. The reports to the NASAC Executive Committee shall indicate:

- I. Regular WPSC activities related to their roles and responsibilities.
- II. Monitoring and evaluation tasks undertaken by the Committee members and their findings.
- III. Comparisons, reconciliations and any actions in light of the aforementioned findings.
- IV. Gaps and mitigating measures to be taken by NASAC officials, the secretariat and/or the Executive Committee.
- V. Recommendations and the way forward.

The WPSC shall consider and adopt its report at the meeting, which report in its final form shall be circulated to all WPSC members. The Chair shall subsequently submit each report to the Executive Committee at least four (4) weeks before the scheduled meeting.

6.0 Election and Duties of the WPSC

6.1 Election of Chair and Vice Chair

The WPSC shall have a Chair and a Vice Chair from among the members through consensus. At the first meeting, members should agree on the *modus operandi* for the Committee.

6.2 Duties of the Chair and Vice Chair shall include but not restricted to:

- I. Guiding the WPSC processes and operations;
- II. Chairing the meetings of the WPSC;
- III. Ensure reports generated by the WPSC are timely submitted to the NASAC Executive Committee, and
- IV. The Vice Chair will act in the absence of the Chair.

6.3 Duties of WPSC Members

Members of the WPSC:

- I. Shall have delegated authority from and be accountable to the NASAC Executive Committee and must exercise their mandate in good faith and for the benefit of NASAC.
- II. Should ensure that confidential information, particularly information about individuals, is handled with regard to the best interests and reputation of NASAC and is not used for private purposes or disclosed to the media or any other third party.
- III. Shall take responsibility to decide what view to take and how to vote on any question that the WPSC has to decide upon, even while they may very properly be influenced by the views of others. In carrying out WPSC business, members shall make decisions entirely on merit.

6.4 Code of Conduct of WPSC Members

- I. Shall have a duty to declare to the NASAC Executive Committee any personal or private interests relating to their duties and to take steps to resolve any conflict

arising in a way that protects the interests of the WPSC. When/where necessary, members shall make relevant declarations of interest at meetings of the WPSC. Members may take part in the consideration of questions that come before WPSC unless there is a conflict of interest between their personal or private interest and the Committee's interest in the matter, in which case they should preclude themselves from participation. As well as avoiding actual impropriety, members shall avoid any appearance of it.

- II. Members shall not accept gifts or hospitality that might reasonably be thought to influence, or be intended to influence, their judgment, or were it to do so could bring discredit upon the WPSC. Members shall be obliged to record, at meetings of the WPSC, all gifts and hospitality received in connection with membership of WPSC.
- III. Shall promote and support the foregoing principles by leadership and example, always acting in such a way as to preserve public and professional confidence in the WPSC.
- IV. Shall respect, but not be bound by the role of NASAC staff, and treat them in a way that engenders mutual respect at all times. Members shall also treat other members of the WPSC with courtesy and respect.

6.5 Quorum

A quorum must be identified before the initiation of WPSC business. Unless otherwise approved by the Executive Committee, a quorum shall be defined as a simple majority of the WPSC, membership. If a quorum is not present, actions may be taken subsequent to confirmation by a letter or electronic mail from other members not present at the meeting.



Group photo of the participants

Standing from left to right: Rahab Gitahi, Paul Nampala, Ousaynou Fall Dia, Matheus Fru Fonteh, Daniel Olago, Alick Muvundika and Jasper Kirika. **Sitting from left to right:** Dorothy Mutheu Ngila, Rose Nyingi, Cheikh Becaye Gaye, Jackie Olang, Folorunso Adu, Eiman Karar.

The Network of African Science Academies (NASAC) was established on 13 December 2001 in Nairobi, Kenya, under the auspices of the African Academy of Sciences (AAS) and the Inter Academy Panel (IAP). For more information on IAP, the global network of science academies, visit www.interacademies.net.

NASAC is a consortium of merit-based science academies in Africa and aspires to make the “voice of science” heard by policy and decision makers within Africa and worldwide.

NASAC is dedicated to enhancing the capacity of existing national science academies and champions the cause for creation of new academies where none exist.

For more information, please contact
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