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ALLY AGRICULTURAL BIOTECHNOLOGY WITH AGROECOLOGY FOR THE FUTURE OF AFRICA

Historical perspective: It was a great privilege for me, a young African scientist, to be invited, in 1975, to Uppsala Sweden, for this major International Union of Biological Sciences (IUBS). In the meeting, discussions on the formal recognition of a new branch of the biological sciences were held. The choice of names was between ***biological technologies, biotech and biotechnology.*** The first was judged too long, the second too 'american', so the last was unanimously chosen as it parallels an existing other science namely biochemistry. So **biotechnology** (defined as a discipline *for the use of technologies based on living systems to develop commercial processes and products*) was born, with little or no contribution from Africa.

Traditional experience: However, we, under the various tribal and national traditions, have practiced biotechnology for centuries. Among these are *ogi*, a fermented cereal gruel used as a weaning food, *pito* an alcoholic cereal beverages, *dawadawa* made from fermented oil seeds popular as nutritious non-meat protein foods, used as a condiments and flavor in soups. These and other such traditional crafts can be changed and improved by modern technology-based production system. These include the use of starter cultures, stabilization of spontaneous fermentations, and production of food processing enzymes.

Modern biotechnology: Food security remains a challenge for the 1,200 million humans in this continent today. That number is likely to increase to an estimated 2,200 million by 2030. As we struggle against traditional obstacles in agriculture as well as new ones due to climate change, it has now been suggested that African farmers need to adopt agricultural biotechnology, specifically genetically modified crops (GM crops) in order to boost their yields and production. But with the use of seeds produced within the continent itself, not imported seeds, to prevent a modern form of colonialism through building a dependence on major international corporations dominant in this field. Agriculture is moving from being a *resource-based* to a *science-based* industry as science and technology have been substituted for land and labor. It is achieving pre-eminence through innovation and substitution of knowledge for resources. However, for millions in Africa, agriculture is a way of life and a guarantee of security, both food-wise AND socially. Therefore agricultural biotechnology as it is applied in our respective countries MUST be a gradual process that involves all communities and respects traditional choices.

Biotechnology offers tremendous potential for improving crop production, animal production and bioprocessing. It can provide scientists with new ways to develop higher-yielding and more nutritious crop varieties, to improve resistance to disease and pests and produce varieties suitable for dry and desertic areas. It can also reduce the need for inputs of fertilizers and other expensive agricultural chemicals, thereby reducing land-based pollutions. In this respect AGRICULTURAL BIOTECHNOLOGY can be allied with AGROECOLOGY (reduced use of agro-chemicals and pest control using natural means) for the future of Africa.

Science-based advice to governments: Scientists and scientific organisations (such as Academies of Science) have a major role to promote national strategies with respect to agricultural biotechnology. Ultimately it is up to Governments, wisely advised, to adopt appropriate agricultural biotechnologies for each nation. Biotechnological techniques mostly practiced in laboratories such the techniques of recombinant DNA, gene transfer, embryo manipulation and transfer, plant regeneration, cell culture, monoclonal antibodies, and bioprocess engineering HAS TO CO-EXIST with farmers and farming communities who actually do the production, And profits musts be equitably shared.

Finally, biotechnology must find its place in educational systems. At tertiary level (e.g. **MSc in Microbiology and Biotechnology from several South African Universities,** Multi-university biotechnology Masters in West Africa) to produce the highly skilled scientists required, or at secondary-school level as a part of general education, most likely integrated in biology and economics courses or as part of education for sustainable-development (ESD).

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From the President

Prof. Mostapha Bousmina

I am pleased to present you with Volume 3 Issue 1 of *The Science Networker*. We are still on course in the production of this bulletin. This edition highlights activities that NASAC has undertaken in the first half of 2016.

NASAC collaborated with ANSTS-Senegalese Academy, GID- *Groupe inter académique pour le développement* and Hassan II Academy of Science and Technology, Morocco to host the 1st African Forum on Science and Technology for Development (FastDev), with the financial support from the French Academy of Sciences. This was a successful event that culminated in signing of the MoU between NASAC and GID.

NASAC continued to provide capacity building support to its members through a competitive award mechanism, with financial support from IAP-Science. This year, the grants were awarded to academies in Zambia and Burkina Faso.

Phase II project of the NASAC/German Academy-Leopoldina/BMBF Collaboration is also progressing well. The project is titled: "*The dialogue between science, policy and society as basis for independent science-based advice for policy-makers and the public*", with a focus of communicating the NASAC policymakers' booklets produced in Phase I of the project. The first communication event for the policymakers' booklet on Agricultural Biotechnology was held on the theme: *Harnessing Modern Agricultural Biotechnology for Africa's Economic Development.* This event was held in Addis Ababa, Ethiopia in April 2016, hosted by the Ethiopian Academy of Sciences (EAS) and had the participation of academy-nominees engaged in Agricultural Biotechnology work. The participation of the United Nations Economic Commission for Africa (UNECA) was also secured for this event.

NASAC Member-academies also participated in the 10th Anniversary Celebrations of Hassan II Academy of Science and Technology, held on 16th to 18th May 2016, in Rabat, Morocco under the theme: *South-South Collaboration and Partnership*. This event presented an opportunity for NASAC Members and other invited participants to discuss major scientific advances as well as the challenges, expectations and future of contemporary science. A field visit to Morocco's Tangier Port was arranged and discussions on the upcoming COP22 – 22nd Conference of Parties on Climate Change, were also organized. COP22 will be held in Marrakech, Morocco in November 2016.

This year also, ICSU – International Council for Science, signed a five-year agreement with the Swedish International Development Cooperation Agency (*Sida*) to support integrated science in Africa through a five million euro programme, in collaboration with NASAC and ISSC – International Social Science Council. This programme, entitled *«Leading integrated research for Agenda 2030 in Africa»,* will catalyze the generation and use of new integrated policy-relevant scientific knowledge in Africa, which is much needed to address the complex sustainability challenges in the region. NASAC will engage all its members to ensure that as many early career African scientists are involved in the project as much as is possible. Two-year collaborative research grants (each €90,000 for a two-year period) will be provided, with a thematic focus on global environmental change, disaster risk reduction, sustainable energy, human health and well-being in urban environments and related nexus issues.

I conclude by thanking all the NASAC Members, stakeholders and partners for the support that you have accorded NASAC this far and as we look forward to many more great initiatives in 2016. On behalf of the NASAC Board, you are all truly appreciated!

Activities and Events

1st African Forum on Sciences and Technologies for Development (FastDev)

Participants at the FastDev Forum held in Dakar, Senegal 22-24 February 2016

The Groupe intercademique pour le Développement (GID) and NASAC in collaboration with the Moroccan Academy (AHIIST), and the Senegalese Academy (ANSTS) hosted the First African Forum on Science and Technology for Development (FastDev) on the theme: "*Youth employment: The necessary co-construction of teaching-training programs and enterprises*". ANSTS hosted this event with sponsorship of the Ministry of Higher Education and Research of Senegal (MESRI) and the French Academy of Sciences on 22nd to 24th February 2016 in Dakar, Senegal.

In addressing the issue of youth employment in sub -Saharan Africa, FastDev's deliberations tackled the challenges faced by trainers and enterprises, at all levels, in attempting to improve employability of young people under favorable conditions for business development. Prof. Ahmadou Lamine Ndiaye (ANSTS), François Guinot (GID) and His Excellency the Ambassador of France in Senegal, the Director of Cabinet, representing the Prime Minister, gave the opening speeches. In attendance were representatives of NASAC-member-academies and various stakeholders - scientists, technologists, teachers, entrepreneurs, politicians, economists, etc.

Presentations were made during the forum followed by interesting and very fruitful discussions among various panelists and the audience around the following sub-themes:

- The present reality of youth employment,
- The co-construction of teaching-training programs and enterprises, a condition for better access to youth employment,
- Developing skills in the informal sector, the key factor for economic growth and employment, and
- Rethinking the cooperation policy between Europe and Africa in the fields of professional training and employment.

The forum gathered participants from Africa, Europe and Asia, and presented an opportunity for them to discuss the real needs of training and job creation for the youth. Concrete proposals on how to address these needs were also highlighted.

Communication Event on Harnessing Modern Agricultural Biotechnology for Africa's Economic Development

The Communication Event on *Harnessing Modern Agricultural Biotechnology for Africa's Economic Development* was held at the Intercontinental Hotel in Addis Ababa, Ethiopia on 21-22 April 2016. The meeting brought together biotechnology experts from a number of African countries, representatives from African Science Academies as well as the United Nations Economic Commission for Africa (UNECA) to communicate NASAC's booklet on agricultural biotechnology (agribiotech) and how to put it on the agenda of policymakers. The meeting further discussed how to better create and foster relationships that will influence biotechnology policy in the continent; and how to increase policymakers' awareness on agribiotech as presented in the booklet.

The objectives of the meeting were threefold: (i) To facilitate dialogue between scientists and policymakers together with other stakeholders, so as to enhance dissemination of the policymakers' booklet on Agricultural Biotechnology for Africa; (ii) To establish relationships and provide supportive mechanisms that will influence policy change in agricultural biotechnology in Africa; and (iii) To increase awareness of African policymakers on agricultural biotechnology key messages and recommendations made by scientists in the booklet.

Communication Event on Harnessing Modern Agricultural Biotechnology for Africa's Economic Development
21-22 April 2016 Addis Ababa, Ethiopia

Participants at the meeting developed strategic points that would ensure the agribiotech policy booklet will be widely disseminated. Some of the suggested strategies included:

- Commission a comprehensive study of impact of GM technology in African countries that have already adopted it, which are South Africa, Burkina Faso, Egypt and Sudan.
- Carry out a study of countries that have not yet adopted the technology and analyze change that has taken place in the countries that have adopted the technology.
- National academies to review policies in their respective countries and share the results of the review.
- Establish appropriate entry points into regional initiatives being undertaken by RECs (COMESA, EAC, ECOWAS, SADC) and continental bodies (NEPAD, ABNE).
- Partner with the private sector to create and upscale demand for the technology.
- Create exchange programmes between countries to avoid re-inventing the wheel and learn from other countries.

Participants at the Communication Event of the Agriculture Biotechnology Policy booklet

Expert Panel Workshop on Food and Nutrition Security and Agriculture in Africa

The Expert Panel Workshop on Food and Nutrition Security and Agriculture (FNSA), which was held in Nairobi Kenya on 9th and 10th May 2016, brought together experts from across Africa to provide background information on the key questions around the various FNSA thematic areas. Their contributions will be utilized to draft the key messages for the Policymakers' Booklet on FNSA for Africa. Once published, this booklet, which will contain evidence-based key messages, will be presented to African policymakers to facilitate the design and implementation of policy interventions to address issues on Food Security, Nutrition Security, and Agriculture.

EXPERT PANEL WORKSHOP ON FOOD AND NUTRITION SECURITY AND AGRICULTURE IN AFRICA
9th - 10th May 2016, Hilton Hotel, Nairobi-Kenya

The two-day workshop exhaustively addressed the ten thematic areas with key recommendations or suggested actions necessary for the development of the policymakers' booklet. These were in line with the workshop's objectives, which were to:

- Provide a discussion platform for African scientists in the Steering Committee and the Expert Panel of NASAC to initiate the drafting of the policymakers' booklet on Food and Nutrition Security and Agriculture (FNSA) for Africa.
- Support the development of science-based advice on FNSA for Africa by NASAC, with special input EASAC-the European Academies Science Advisory Council, in the context of addressing the Inter-Academy Panel's global template of questions.
- Determine and share the information and experience on by experts working in relevant fields so as to respond to the priority questions on FNSA in the African context.
- Establish an editorial team that will be responsible for generating content for various chapters in the FNSA policymakers' booklet

The 10th anniversary of Hassan II Academy of Science and Technology, Rabat, Morocco: May 16-18, 2016

This conference on the theme: *South-South Collaboration and Partnership* was held during the 10th Anniversary celebrations of Hassan II Academy of Science and Technology. The conference, which was held from 16-18 May 2016 provided a basis for debate and discussion on the pros and cons of *South-South collaborations*. The conference presentations and discussions that ensued provided excellent opportunities to take stock of the progress 'for' science, progress 'by' Science and Progress 'in' science.

The participants who included NASAC Members discussed major scientific advances, as well as the challenges, expectations and future of contemporary science, especially in some key disciplines such as natural sciences, life science and technology, universal science, information technology and scientific issues related to energy, environment, economy and agriculture of the future.

The objectives of the conference were two-fold:

- To identify promising research areas with high potential for innovation and technology transfer.
- To specify the best approaches for the full integration of science in social needs, particularly in terms of Human Development, in order to strengthen the economy and the knowledge society.

During the conference, Hassan II Academy of Science and Technology in Morocco signed an agreement with the Ministry of National Education and Training.

The NASAC Board members also had an opportunity to hold their fourth meeting during the celebrations.

10th Anniversary of Hassan II Academy of Science and Technology and Technology

Upcoming Events

Launch Event for the Climate Change and Adaptation Policymakers booklet

The launch event for the Climate Change Policy booklet entitled: *Climate Change Adaptation and Resilience in Africa-Recommendations to Policymakers* will be hosted by the Mauritius Academy of Science and Technology (MAST) on 4th and 5th July 2016 in Mauritius. This event is funded by the InterAcademy Partnership (IAP) and the German Academy of Sciences-Leopoldina and will be held in collaboration with NASAC, the Academy of Science of South Africa (ASSAf) and Gender in Science, innovation, technology and engineering (GenderInSITE)

The communication event on Climate Change Adaptation will endeavour to communicate the booklet's key messages to policymakers and deliberate on various climate change aspects. The participation of the United Nations Environmental Programme (UNEP) has been secured and the UNEP's Chief Scientist will deliver the Keynote Address.

Women for Science (WfS) Working Group (WG) Meeting

NASAC, with funding support from the InterAcademy Panel (IAP) will host the Women for Science (WfS) Working Group (WG) workshop on 4th and 5th August 2016 in Nairobi, Kenya. This will be the first meeting of the recently constituted WfS-WG.

The WfS-WG meeting will seek to set the criteria of identifying women scientists who will be documented in the NASAC publication titled: Women for Science Book of Inspiring Stories. Additionally, the meeting will also chart the way forward on programmatic activities that both the WfS –WG in Africa will undertake in order to fulfill their mandate and in collaboration with ongoing initiatives like OWSD and GenderInSITE.

COP22-UNFCCC EVENT IN MARRAKECH, MOROCCO

In 2015 NASAC and the Intergovernmental Oceanographic Commission of UNESCO (IOC-UNESCO) hosted two major side-events in France at the backdrop of the Twenty-first Conference of Parties (COP21) of the United Nations Framework Convention on Climate Change (UNFCCC) in Paris and Le Bourget.

The participation of the African delegation from academia enabled NASAC to contribute in building strategies that reinforce capacities of African countries for adaptation and resilience against climate change disasters. It was then recommended that NASAC should pursue continued engagement with COP22 process so as to offer leadership in the field of science-policy dialogue in the context of climate change adaptation in Africa, a high priority for the international community.

NASAC will therefore present a project proposal on Climate Change to the COP22 Conference Secretariat and pursue discussions on participating and holding side-events during the conference in Marrakesh, Morocco. The event will be held from 7th to 18th November 2016.

AMASA 12

The 12th Annual Meeting of African Science Academies (AMASA-12) will be hosted by the Academy of Science of South Africa (ASSAf) in Cape Town, South Africa. The conference is scheduled to take place from 4-9 November 2016 on the theme "*Poverty Reduction*".

The 5th meeting of the NASAC Board and the 12th General Assembly will also be held during that period, back-to-back the AMASA-12 Conference.

Announcements and Appointments

Prof. Nelson Sewankambo appointed to serve on the Programme Advisory Committee (PAC)

Prof. Nelson Sewankambo, President UNAS, NASAC Vice-Chair International Relations and

The International Council for Science (ICSU) signed a 5-year agreement with the Swedish International Development Cooperation Agency (Sida) to "Build Capacity for Integrated Research on Global Sustainability in Africa". The programme will catalyze the production of high quality, integrated (inter- and transdisciplinary), solutions-oriented research on global sustainability by early career scientists in Africa and increase institutional and financial support for this type of research in the region. This Programme will be implemented by the International Council for Science (ICSU) together with its Regional Office for Africa and in partnership with the International Social Science Council (ISSC) and the Network of African Science Academies (NASAC).

The Programme will be governed by a multi-stakeholder Programme Advisory Committee (PAC) and Prof. Nelson Sewankambo will serve in this committee. Prof. Sewankambo who is the President of the Uganda National Academy of Sciences (UNAS) also serves in the NASAC Board as the Vice-Chair for International Recourses and Outreach.

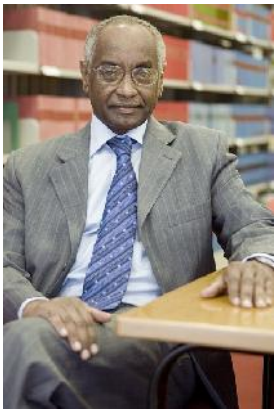
The key functions of the PAC will be to define the scientific strategy of the Programme (guiding the framing and of competitive calls for proposals) and to make research funding decisions based on the scientific review of research proposals and overall monitoring and evaluation of Programme's achievements.

NASAC Signs MoU with GID

NASAC signed an MoU with Groupe Interacademique pour le Developpement (GID) which is an initiative of the French Academy. NASAC is pursuing joint projects with the French Academy to seek for funding opportunities.

L-R: Ms J. Olang (NASAC), Prof. M. Bousmina (NASAC Chair), Prof. A. Ndiaye (NASAC VC) & Prof. F. Guinot (GID) during the signing of the NASAC GID MoU

Prof. Mohamed Hassan to serve as Chair of the Governing Council of the Technology Bank for the LDCs



The Technology Bank for Least Developed Countries has moved closer to starting operations following the UN Secretary-General's appointment of members to a Governing Council. The Governing Council will provide support to the Secretary-General in undertaking the necessary steps towards the operationalization of the Technology Bank. It will in particular formulate principles and policies governing the activities and operations of the Technology Bank, including preparing its Charter for consideration and adoption by the General Assembly.

Prof. Mohamed H.A. Hassan, Past and Founding Chair of NASAC, President of the InterAcademy Partnership (IAP) and former Chairman of the Council of the United Nations University will serve as Chair of the Governing Council.

Quote from the President of NASAC, Prof. Mostapha Bousmina: "*Prof. Hassan, your commitment to Africa has remained very important and the UN Secretary General, Ban Ki-moon, has honoured this commitment by appointing you to this high-level position*."

Prof. Jennifer Thompson receives the global Lifetime Achievement Award for Women in Science

Prof. Jennifer Thompson was awarded the **Global Lifetime Achievement Award** for Women in Science by UNEP on behalf of all women in science. She was awarded this at the closing ceremony of the Science Policy Forum of the second session of the United Nations Environmental Assembly (UNEA-2) which took place at the UNEP headquarters in Nairobi, Kenya from 23-27 May 2016 under the overarching theme, "Delivering on the Environmental Dimension of the 2030 Agenda for Sustainable Development."

Prof. Thompson, has also been elected President of the Organization for Women in Science for the Developing World (OWSD) at its 5th General Assembly and International Conference that was held from 16-19 May in Kuwait.

OWSD is an international forum uniting eminent women scientists from the developing and developed worlds with the objective of strengthening women's representation in scientific and technological leadership and their role in development.

On the Spotlight

ICSU signs a five-year agreement with Sida to work with NASAC and ISSC to support integrated science in Africa

In 2016, the International Council for Science (ICSU) signed a 5-year agreement with the Swedish International Development Cooperation Agency (Sida) for a 5 million euro programme. This programme will catalyse the generation and use of new intergrated policy-relevant scientific knowledge in Africa needed to address the complexsustainabilty challenges in the region.

The programme, which ends in December 2020, will be implemented by ICSU in conjunction with its Regional Office for Africa (ICSU ROA) based in Pretoria, South Africa, the Network of African Science Academies (NASAC) based in Nairobi, Kenya and the International Social Science Council (ISSC) based in Paris, France.

By providing support for integrated research projects on global sustainability across Africa, the programme seeks to develop the potential of next-generation scientists in Africa in production and communication of policy-relevant knowledge.

The programme will provide two-year collaborative research grants with a thematic focus on global environmental change, disaster risk reduction, sustainable energy, human health and well-being in urban environments and related nexus issues. ICSU's co-sponsored international research programmes - Future Earth, Integrated Research on Disaster Risk, and Health and Wellbeing in the Changing Urban Environment - will provide an overall thematic framing for the programme's activities. The programme will also promote the integration of gender and poverty reduction concerns.

The grants are intended to support integrated and solutions-oriented research by reaching across disciplines, and engaging with other knowledge partners (e.g. civil society, policy makers, and private sector). The grants are expected to foster research collaboration among early-career scientists in Africa, with an emphasis on researchers based in low income countries. Two Africa-based institutions, NASAC and ICSU-ROA, will manage the research funding scheme.

Activities will also include training for early career scientists on co-design and co-production, science communication and science advice to governments. The training will be delivered by ISSC.NASAC will engage the academies to ensure that they are part of the project by securing nominations from academies for the review committees, who assist in the peer-review process of research outcomes, as well as create a pool of senior scientists to mentor the early-career grantees.

Member-Academy's Feature

ANSTS ACADEMIC SOLEMN SESSION 2016

Under the Chairmanship of *His Excellency Macky SALL,*
President of the Republic of Senegal

THEME: THE LAND ISSUE IN SENEGAL: INVENTORY AND WAY FORWARD FOR THE MODERNIZATION OF AGRICULTURE

The National Academy of Sciences and Technology of Senegal (ANSTS) held its Solemn Academic Session on March 24, 2016, under the chairmanship of his Excellency Macky SALL, President of the Republic of Senegal themed "Land Issue In Senegal: Assessment And Prospects For The Modernization Of Agriculture." Also in attendance was the Minister of Higher Education and Research, members of the Government and the national parliament, representatives of the Economic, Social and Environmental Council, the Civil Society, the Diplomatic corps, ANSTS fellows, academics, researchers, University students, high and primary schools students.

The ceremony kicked off with the opening address from Professor Doudou BA, President of The National Academy of Science and Technology of Senegal (ANSTS) followed by the reading of the executive summary of the study on - **land issue in Senegal: Inventory and Way Forward for the Modernization of Agriculture**- by Professor Seydou Madani SY, Vice-President of ANSTS, Co-president of the task force.

His Excellency Macky SALL gave the event's keynote address. He recommended in his intervention, to be very cautious with the idea of giving powers or competence transferring to local authorities within the framework of the land reform. He announced that the management of the lands of the national Domain will not be transferred to local authorities, with the risk of seeing the country deprived of its arable lands for the benefit of multinationals, while these lands belong to the Nation.

The session was held against the backdrop of COP 21's reaffirmation of a responsible management of natural resources, within a context of increasing world population, climate change and scarcity of arable land. Landholdings remain the most important resource and a pillar for any economic activity.

Like many countries in Sub-Saharan Africa, the Senegalese land tenure is characterized by a plurality of standards visible through the coexistence of customary law, widely applied by local communities and modern land legislation (IPAR LGAF / WB, 2013). This legislation includes specially, Law No. 64-46 of 17 June 1964 on the national Domain (NDA) and Law No. 72-02 of February 1, 1972 which determines the organization of territorial administration.

Fifty years after its enactment, the NDA has encountered real problems arising from the lack of accompanying measures for its implementation. Indeed , this law can no longer allow to take into account the changing context related among others to a tougher competition to land acquisition and control, the modernization of family farms, the increasing of agricultural productivity and the need to attract investment in the agricultural and rural sector. Today, all actors are favorable for a land reform adaptable to the challenges of food security and sustainable management of natural resources. A new dynamic based on an inclusive and participatory approach was launched in 2012 with the new National Commission for Land Reform (CNRF).

In accordance with its mission as advisor to the State and the Public and Private Institutions, the National Academy of Sciences and Techniques of Senegal (ANSTS) has decided to bring its contribution to the resolution of this complex land issue.

For organizations of producers, "modernization simply means motorized agriculture, with the use of substantial capital. According to these organizations, privileging this type of farming would marginalize them. However, **the modernization we are advocating for our agriculture is a sustainable** transformation that integrates in its practice, scientific, technical and technological progress, and which also requires capital. This option of modernization is based upon the vision of the Emerging Senegal Plan (ESP) regarding the agricultural sector, vision that **should make agriculture one of the drivers of Senegalese economic growth, making it more competitive, diversified, sustainable and climate change-resilient.**

To meet the identified challenges, ANSTS formulates some of the main recommendations mentioned below:

- Drawing inspiration from experiences in the Valley, create at the national level, a land information system allowing enlightened decision making, and draw up a national land registry.
- Update the soil map at a larger scale that will allow an inventory of available lands and their potential uses and establish an observatory for land governance.
- Pursue the implementation of territory hubs to organize the Country into competitive and viable entities capable to ensure a sustainable development.
- Promote land dimension through inter-communality and promotion of small farms merging into entities that would justify economically viable joint investments.
- Involve Research and technical services in evaluating and scaling up of tools relevant to land management (Land Occupation and development Plan, Land Information System, Registry, Cadastre, irrigated land Charter, land layout plan).
- Spend the necessary time for the participatory approach for better appropriation of the process.

Members of the Academy At the center is the President of the Republic of Senegal

HEM. Macky SALL, President of the Republic making his speech; On his left Prof Mary Teuw NIANE, Minister of Higher Education and Research/ ANSTS Fellow, and Prof Oumar SOCK the Permanent Secretary; on his right Prof Doudou BA, ANSTS President.

The Network of African Science Academies (NASAC) was established on 13th December 2001 in Nairobi, Kenya, under the auspices of the African Academy of Sciences (AAS) and the InterAcademy Panel (IAP)

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 in the cause for creation of new academies where none exist.

As at June 2014, NASAC comprised of the following nineteen members:

- African Academy of Sciences
- Cameroon Academy of Sciences
- Ghana Academy of Arts and Sciences
- Kenya National Academy of Sciences
- Madagascar's National Academy of Arts, Letters and Sciences
- Nigerian Academy of Science
- Académie Nationale des Sciences et Techniques du Sénégal
- Uganda National Academy of Sciences
- Academy of Science of South Africa
- Tanzania Academy of Sciences
- Zambia Academy of Sciences
- Zimbabwe Academy of Sciences
- Sudanese National Academy of Sciences
- Mauritius Academy of Science and Technology
- Hassan II Academy of Science and Technology, Morocco
- Academy of Sciences of Mozambique
- Ethiopian Academy of Sciences
- Académie National des Sciences, Arts et Lettres du Benin
- Académie Nationale des Science, Arts, Lettres du Togo

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